NI Productivity 2040: Addressing Northern Ireland's productivity gap for greater prosperity

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Abstract

Northern Ireland persistently lags the UK's productivity level. This is despite Northern Ireland's devolved government, the NI Executive, having key policy levers that can drive productivity growth. While there are several explanations for Northern Ireland's low productivity, the role of policy and institutions is central to why the productivity gap persists. Past policy interventions have a poor track record of reducing this productivity gap. This failure has been linked to policies being implemented in isolation, with siloed policymaking creating a barrier to more effective action. This report addresses this problem, by identifying the key productivity drivers where Northern Ireland lags other parts of the UK, the relationships between these drivers, and how each of these links to the NI Executive departments and delivery partners. This provides a roadmap for how policy can address Northern Ireland's productivity challenge by 2040 for greater prosperity.

Contents

Executive Summary

1. Northern Ireland's productivity persistently lags that of the UK and the Republic of Ireland by a substantial amount. The purpose of this report is to set out a roadmap to help the Northern Ireland Executive set in motion a range of policies that will close this productivity gap by 2040. This report identifies the five key categories of productivity drivers where Northern Ireland is a laggard, and how each of these drivers can be influenced and affected by Northern Ireland Executive departments and delivery partners, to provide a guide for how policy can address Northern Ireland's productivity challenge.

2. The first category is to do with **business performance and characteristics**. Based on our analysis of where Northern Ireland lags behind, there are four main policy objectives that need to be addressed by the Department for the Economy in partnership with the likes of Invest NI: (i) increase the export intensity of firms; (ii) increase innovation activity, including R&D and supporting the adoption of new technology; (iii) support firms to overcome barriers to accessing external finance to drive investment; and (iv) increase the rate of entrepreneurial activity.

3. The second category is **skills and training**. Our analysis identifies four main policy objectives that need to be addressed by a combination of the Department of Education, Department for the Economy, Department for Communities, and Department of Agriculture, Environment and Rural Affairs, in partnership with the likes of the FE colleges and universities: (i) reduce the attainment gap by ensuring that fewer young people leave education with no or low qualifications, and increase the proportion of the workforce with higher level qualifications; (ii) retain more graduates in the region, and increase attractiveness for returning graduates and students from outside Northern Ireland; (iii) reduce the skills deficit by supporting employer training and helping firms improve their management practices; and (iv) increase rates of lifelong learning.

4. The third productivity category concerns **policy and institutions**, which are important determinants of Northern Ireland's productivity gap over the long run. Northern Ireland lags other jurisdictions substantially with regards to this fundamental driver. To close the gap, our analysis suggests there are four important policy objectives for The Executive Office and Department of Finance, working alongside all other departments, and in partnership with the likes of the NI Audit Office, NISRA, and ONS: (i) policymaking needs to be joined-up with a long-term focus, which requires stable government; (ii) the administration of the public finances needs to be improved, by having multi-year budgets and a thorough reform of public service delivery, so as to improve the effectiveness of public expenditure; (iii) more detailed and timely data is required for policy evaluation; and (iv) increase trust and accountability through electoral engagement and the transparency of the policymaking process.

5. The fourth important category is the **health and wellbeing** of Northern Ireland's citizens. Based on our analysis of where Northern Ireland is lagging, there are three main policy

objectives that need to be addressed by the Department of Health, Department for Communities, Department of Justice, and Department for the Economy, in partnership with the likes of the Health and Social Care Trusts: (i) lower the rate of economic inactivity, including better access to employment for those with a disability; (ii) improve the health care system by implementing reforms such as those in the Bengoa report, including setting achievable targets, reforming service delivery, and reducing waiting list times; and (iii) tackle social issues that create barriers to workforce participation and career progression, including support for those from deprived backgrounds, improving job opportunities for women, and providing affordable childcare, to ensure those who would like to work can do so.

6. The final category is **investment, infrastructure and connectivity**. Our analysis suggests that there are three main policy objectives for the Department for Infrastructure, Department for Communities, and Department for the Economy, in partnership with the likes of NI Water and Translink: (i) increase levels of economy-wide investment and attract greater foreign direct investment; (ii) improve water and sewerage infrastructure and invest in the renewable energy transition; and (iii) increase connectivity and improve transport infrastructure.

7. Examining the relations between our identified policy challenges demonstrates their interconnected nature and the need for joined-up policy to address Northern Ireland's productivity gap. Out of a total of 18 policy challenges, 14 have at least three preconditions that will determine their successful implementation. Addressing these preconditions should be prioritised in the sequencing of policy. 14 policy challenges work in synergy with at least one other policy, where the implementation of each complements the other. This means the development of policy interventions in these areas will require careful design.

8. Northern Ireland's productivity gap is not inevitable. Ultimately, improving productivity is about our economy, and realising the full potential of the people who live here. That requires a commitment from the government to addressing the barriers to productivity growth. This report argues that three things are necessary to meet this challenge.

9. First, there needs to be a recognition that there is no silver bullet to closing Northern Ireland's productivity gap. Given our analysis demonstrates that many policy challenges and objectives are interconnected, there needs to be a blueprint in terms of sequencing policies to close the productivity gap. The conclusion to this report highlights how to approach the sequencing of productivity-enhancing policy.

10. Second, closing the productivity gap is the task of the whole Northern Ireland Executive, and will require close working across departments and delivery partners. In other words, there needs to be a full implementation of power sharing. More fundamentally, the 25 years of stop-go government has hurt Northern Ireland's economy. Another government collapse will doom the economy to another generation of low productivity.

11. Third, a commitment to closing the productivity gap requires commitment to long-term and perhaps unpopular policies. A pro-productivity institution, such as a **Productivity and Growth Board**, can help overcome these issues, and is therefore essential to help Northern Ireland boost its productivity and prosperity.

1. Introduction: Northern Ireland's productivity challenge

"There has been an immense amount of economic research on barriers to productivity growth but far less on how they relate to each other, as well as on the need to co-ordinate policies and decisions by business and individuals. Investment is needed in all of the components of wealth because they complement each other. The returns to any single element will be higher if they are treated as a portfolio."

Diane Coyle, 2020[1]

"Very rarely, if ever, does a Department have all the means needed to make the intended changes. In fact, it is impossible to imagine that any strategy worthy of the name can be delivered without the participation of partners. To be effective, public policy needs to get partners involved."

The Executive Office, 2023[2]

1.1 Northern Ireland persistently lags the UK's productivity level. This is despite Northern Ireland's devolved government, the NI Executive, having key policy levers that can drive productivity growth. While there are several explanations for Northern Ireland's low productivity, the role of policy and institutions is central to why the productivity gap persists.[3] Past policy interventions have a poor track record of reducing this productivity gap. This failure has been linked to policies being implemented in isolation, with siloed policymaking creating a barrier to more effective action.[4] This report addresses this problem, by identifying the key productivity drivers where Northern Ireland lags other parts of the UK, the relationships between these drivers, and how each of these links to the NI Executive departments and delivery partners. This provides a roadmap for how policy can address Northern Ireland's productivity challenge by 2040 for greater prosperity.

1.2 A focus on productivity should be central to policymaking because it ultimately determines our standard of living. Productivity measures how inputs are turned into economic output. Improving productivity will require turning scarce resources into better outcomes for people, firms, and places.[5] Higher productivity means businesses are more competitive and more resilient, allows them to pay higher wages, and can mean more money available to fund public services.

1.3 Fundamentally, productivity is about maximising the full potential of our economy. Yet despite its importance, Northern Ireland's economy has persistently struggled with low productivity. Figure 1.1 shows how Northern Ireland performs compared to the UK level, UK regions, and international benchmarks, using the most recent data from the Office for

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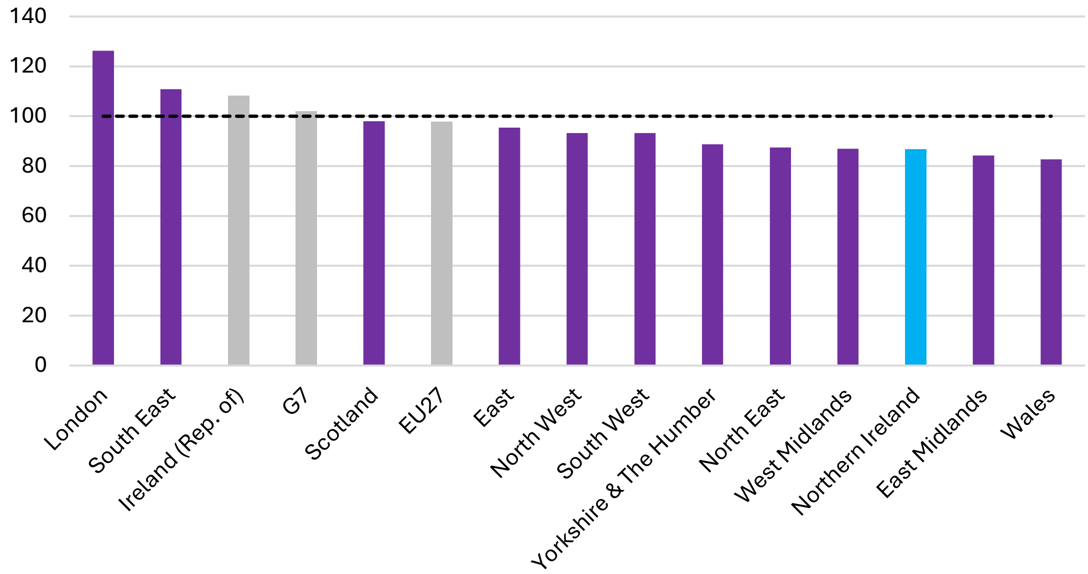
[1] Agarwala *et al.*, 2020, p.7
[2] The Executive Office, 2023, p.12
[3] Jordan and Turner, 2021
[4] Nelles, Brown and Vorley, 2020; Pivotal, 2020
[5] The Productivity Institute, 2024, p. 1

National Statistics (ONS). In 2022, Northern Ireland's productivity was 13.2 per cent below the UK average, when measured as Gross Valued Added (GVA) per hour worked. This placed Northern Ireland in 10th place out of the UK's twelve regions, ahead of only the East Midlands and Wales. Northern Ireland's productivity is also 19.8%below the Republic of Ireland,[6] 15.0%below the G7 average, and 11.3% below the EU27 average.

Figure 1.1: Value of output per hour worked in 2022 (UK=100)



Notes: UK regional comparison uses GVA. Comparison with G7 and EU27 uses GDP; comparison with Republic of Ireland uses modified GNI relative to UK GNI; all hours worked for international comparisons sourced from OECD, and all calculations in USD using current PPPs and current prices.
Sources: ONS, 2024a; OECD, 2024a; CSO, 2024; ONS, 2024b

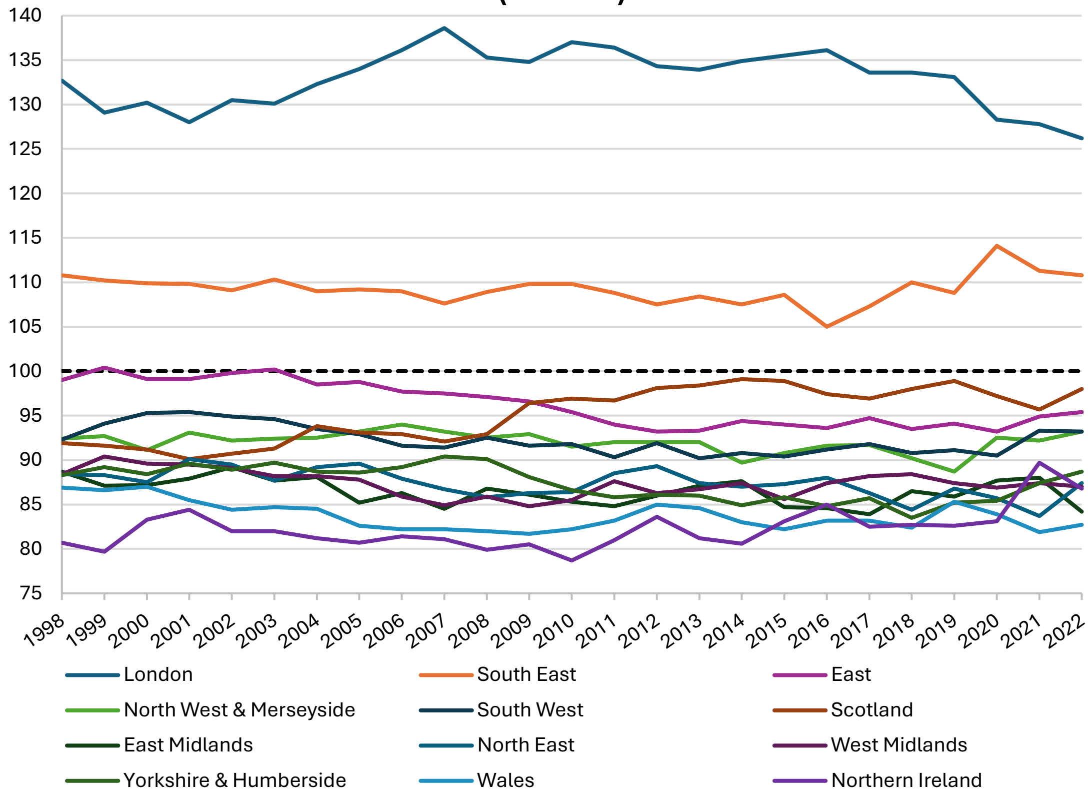
1.4 Northern Ireland's productivity gap to the UK level is long standing: it existed before the Great Financial Crisis of 2008, the Troubles, and partition.[7] Figure 1.2 shows how this productivity gap has varied over the past 25years. Between 1998 and 2022, Northern Ireland's productivity gap averaged 17.7% when measured per hour worked, and it has remained between 15% and 20% below the UK average for most of that time.

1.5 Northern Ireland experienced an improvement during the COVID-19 pandemic, but this has already fallen back.[8] In 2021, Northern Ireland saw its largest recorded improvement in productivity, with its productivity gap shrinking from 16.9% to 10.3%. This improved performance was the result of Northern Ireland experiencing the largest reduction in hours worked of any UK region between 2019 and 2021.[9] The most recently published ONS data for 2022 suggests this was a temporary effect of the COVID-19 pandemic, with Northern

[6] This comparison uses modified GNI for the Republic of Ireland to reduce the effect of multinational enterprises on productivity. See Donaldson, Jordan and Turner, 2024.
[7] Jordan and Turner, 2021
[8] Donaldson, Jordan and Turner, 2024
[9] Donaldson, Jordan and Turner, 2023

Ireland's productivity gap widening again in 2022.[10] Recent revisions to ONS data from the Labour Force Survey suggest that UK productivity was not as high as previously thought during the pandemic.[11] As Northern Ireland has been affected more by the revisions to the Labour Force Survey than other parts of the UK,[12] it is likely that Northern Ireland's productivity will be revised downwards when regional figures are published, and closer to its pre-COVID-19 performance.

Figure 1.2: GVA per hour worked in the UK regions, 1998-2022 (UK=100)



Notes: Values not smoothed.
Source: ONS, 2024d

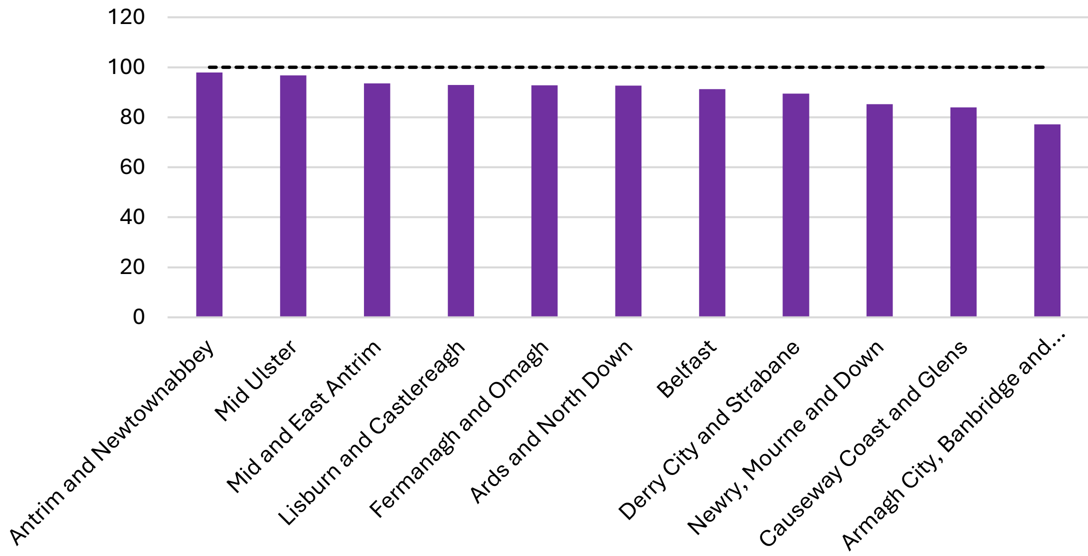
1.6 Part of the reason for Northern Ireland's slow productivity growth over the past 25 years reflects a different economic success story. Since 1998, and the signing of the Good Friday Agreement, Northern Ireland has seen some of the strongest growth in employment of any UK region.[13] This means it no longer suffers from the severe problem of high unemployment that plagued the region's economy during much of the twentieth century. Today, Northern Ireland has much lower unemployment than the UK level.[14] Given this tight labour market, alongside high levels of economic inactivity, government attention needs to

[10] Donaldson, Jordan and Turner, 2024
[11] See ONS, 2024c
[12] NISRA, 2024a
[13] Jordan, 2022
[14] UUEPC, 2024a

shift towards solving the problem of low productivity if Northern Ireland is to improve its economic prosperity.

1.7 The imperative to address low productivity is reinforced when the productivity performance of Northern Ireland's local government districts (LGDs) is examined. The productivity gap is not evenly spread across Northern Ireland. Figure 1.3 shows that the highest productivity LGD, when measured per hour worked, is Antrim and Newtownabbey, which is 2.1% below the UK average; while Armagh City, Banbridge and Craigavon is lowest, 22.8% below the UK average.[15]

Figure 1.3: Value of output per hour worked by LGD in 2022 (UK = 100)



Source: ONS, 2024d

1.8 Northern Ireland's economic structure has often been suggested as being responsible for its low productivity. Policy has tended to view the problem of low productivity primarily through this structural lens. While Northern Ireland does have a greater concentration of employment in sectors that have relatively lower productivity, the structure of the economy is not the main reason for the productivity gap.[16] The most recent evidence – comparing the performance of sectors in Northern Ireland to those in Great Britain and the Republic of Ireland – shows that productivity in Northern Ireland lags behind in almost all sectors.[17]

[15] The performance of individual LGDs, and their relative ranking, can vary substantially depending on the year and measure of productivity used. When productivity is alternatively measured per job, Belfast is the best performing LGD, 0.3 per cent above the UK average, while Ards and North Down is the worst performer, 24.9 per cent below the UK average. These differences will partly reflect the differences in economic structure of each LGD, with different industries being associated with relatively higher or lower numbers of hours worked.

[16] Jordan and Turner, 2021

[17] Mac Flynn, 2024

1.9 Addressing Northern Ireland's problem of low productivity takes place within the context of two other major challenges: an ageing population and climate change. Many countries are having to deal with an ageing population. Currently, Northern Ireland has the second lowest old age dependency ratio of the UK's regions.[18] However, Northern Ireland is set to see the proportion of those over the age of 85 double by 2043.[19] A relatively smaller number of working-age adults will therefore be supporting a larger retired and increasingly elderly population. Raising productivity will therefore be critical so that living standards can simply stand still.

1.10 Climate change is an issue all countries are having to address. The Northern Ireland Executive has committed to transitioning to net zero by 2050.[20] In order to achieve this the Assembly has agreed to a 77% reduction by 2040. However, this requires substantial investment, and Northern Ireland's economic structure – with a large agricultural sector – may make this harder than for other regions. Net zero, and the legislation around this, must be considered when policies intended to improve productivity are being designed, to ensure they are consistent with meeting environmental and emissions targets.

1.11 To meet Northern Ireland's productivity challenge by 2040, within the context of these wider societal challenges, will require government to implement productivity enhancing policies that are tailored to their context. In this report, we look at the policy challenges faced by the NI Executive and how these relate to each other. Only by recognising the interdependence of different policy areas, and how these are linked across different areas of government, can effective policy be designed and implemented.

1.12 To map these policy connections, we first use The Productivity Institute's capitals framework to identify the key productivity drivers where Northern Ireland lags behind other parts of the UK.[21] This is informed by the explanations for Northern Ireland's low productivity identified in *Northern Ireland's Productivity Challenge: Exploring the* issues.[22] These productivity drivers are then mapped to the categories of the *Northern Ireland Productivity Dashboard*, as shown in Table 1.1 below.[23]

1.13 The report examines each of the dashboard categories in turn. Once individual policy challenges are identified within each category, the objectives for policy are outlined, and the key policy stakeholders identified. These include the NI Executive departments that are primarily responsible, and relevant public bodies that partner with them for the delivery of policy interventions. This list of delivery partners is not intended to be comprehensive, but rather gives an indication of who key partners are for each policy challenge.

[18] The old age dependency ratio measures the proportion of pension-age adults compared to working-age adults.
[19] Northern Ireland Executive, 2024, p.51
[20] Rankl, 2024
[21] For capitals framework, see The Productivity Institute, 2024, p.13, and Agarwala *et al.*, 2020.
[22] Jordan and Turner, 2021
[23] Donaldson, Jordan and Turner, 2024

<table>
<tr><th colspan="5">Table 1.1: Policy framework</th></tr>
<tr><th>Dashboard category</th><th colspan="4">Policy analysis</th></tr>
<tr><td>Business performance & characteristics</td><td rowspan="5">Policy challenges</td><td rowspan="5">Policy objectives</td><td rowspan="5">Policy stakeholders
• NI Executive departments
• Delivery partners</td><td rowspan="5">Policy interactions
• Preconditions
• Facilitates
• Synergy</td></tr>
<tr><td>Skills & training</td></tr>
<tr><td>Policy & institutions</td></tr>
<tr><td>Health & wellbeing</td></tr>
<tr><td>Investment, infrastructure & connectivity</td></tr>
</table>

Note: See Appendix Table A9.2 for full framework including primary stakeholders and TPI capitals.

1.14 Finally, how each policy challenge interacts with all other policy challenges is specified. This allows the policy challenges that have the most interdependence with others to be identified and provides a roadmap for the sequencing of policy interventions across government departments to improve productivity. This includes which policies are preconditions for successful implementation of other policies; which policies facilitate successful implementation of other policies; and which combinations of policies are synergistic, with simultaneous implementation maximising their effect. A full description of the methodology is provided in the Appendix.

2. Business performance and characteristics

2.0.1 This section focuses on individual businesses and what makes them more productive. International evidence shows a positive relationship between a country's productivity, and the characteristics and performance of its businesses.[24]

2.0.2 We have identified four main areas where improvements are needed to boost the productivity of Northern Ireland's businesses:

- Export intensity
- Innovation and R&D
- Access to external finance
- Entrepreneurship

2.1 Export intensity

2.1.1 Firms that export have higher productivity.[25] This can be due to higher productivity firms being more able to export, but it can also be due to firms learning from exporting and becoming more innovative.[26] Increasing the export intensity of firms in Northern Ireland has been identified as important given the strong, positive link between exporting, innovation, and productivity.[27]

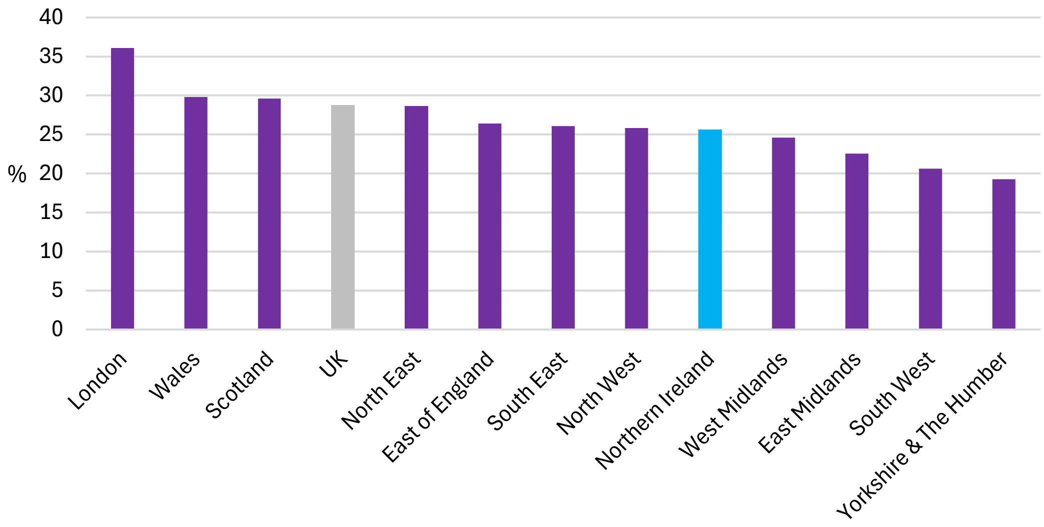
2.1.2 Figure 2.1 shows the export intensity of each UK region, measured as the total value of exports as a percentage of GDP. At 26% , Northern Ireland lags behind the UK average of 29% , placing it eighth out of the UK's twelve regions. Despite being below the UK median, Northern Ireland's export intensity has increased over the long term.[28] A potential reason for lower export intensity in Northern Ireland is the concentration of exporting: the majority of firms sell less than 30% of their sales in export markets.[29]

2.1.3 Following the UK's exit from the EU, Northern Ireland has retained access to the EU's single market for goods. While this provides an advantage for manufacturing firms in Northern Ireland relative to their peers in GB when exporting to the EU, firms in Northern Ireland remain in the same competitive position relative to their EU peers as they were before Brexit, albeit with increased costs when importing goods from GB.[30] Internationally, recent evidence suggests a shift away from manufacturing export-led growth, towards an increasing importance of exporting high productivity services,

[24] Baily and Solow, 2001; Syverson, 2011; Roper, 2023
[25] Dalgıç Fazlıoğlu and Gasiorek. 2021; Baldwin and Yan, 2012; Ruane and Siedschlag, 2011
[26] Jibril and Roper, 2022
[27] Skilling, 2023
[28] Donaldson, Jordan and Turner, 2024
[29] Bonner, Magennis and Booth, 2023
[30] See Fraser of Allander Institute, 2019 and Duparc-Portier and Figus, 2022 for further discussion.

requiring investment in the fundamentals of digital infrastructure, governance and education.[31] This poses a challenge for Northern Ireland, given its export intensity of manufactured goods.

Figure 2.1: Exports as percentage of GDP, 2021



Source: ONS, 2023a; ONS, 2023b; ONS, 2024e

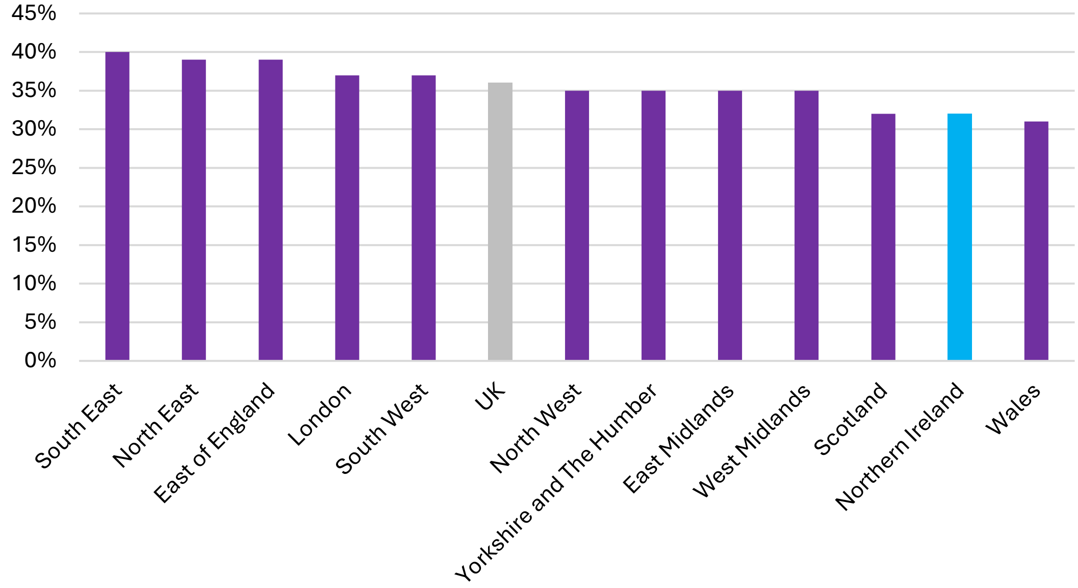
2.2 Innovation and R&D

2.2.1 Innovation is the creation of new ideas, methods and products. It is not just about creating something new, but also includes implementing continuous improvements to pre-existing practices within businesses. Innovation is important within the economy as it supports creative destruction, where old, low productivity firms are replaced by new firms with improved practices.[32] This leads to a more dynamic economy, with businesses forced to either keep pace or be replaced.

2.2.2 Northern Ireland has a poor track record for innovation. The rate of innovation-active businesses in Northern Ireland has decreased from 38% in 2018-20, to 32% in 2020-22, as shown in Figure 2.2. The main reason why businesses stated that they do not innovate is due to 'other' reasons (45%), followed by 'no need due to market conditions' (30%).[33] This suggests that firms are content with merely getting by, and that there is a lack of business dynamism which would push out low productivity firms.[34]

[31] European Bank for Reconstruction and Development, 2024
[32] Greenhalgh and Rogers, 2007
[33] No further details are provided on what the 'other' reasons are within the survey.
[34] Bonner, Martin and Donaldson, 2023, p.6

Figure 2.2: Rate of innovation active businesses, 2020-2022



Notes: Businesses with ten or more employees.
Source: Department for Business and Trade, 2024

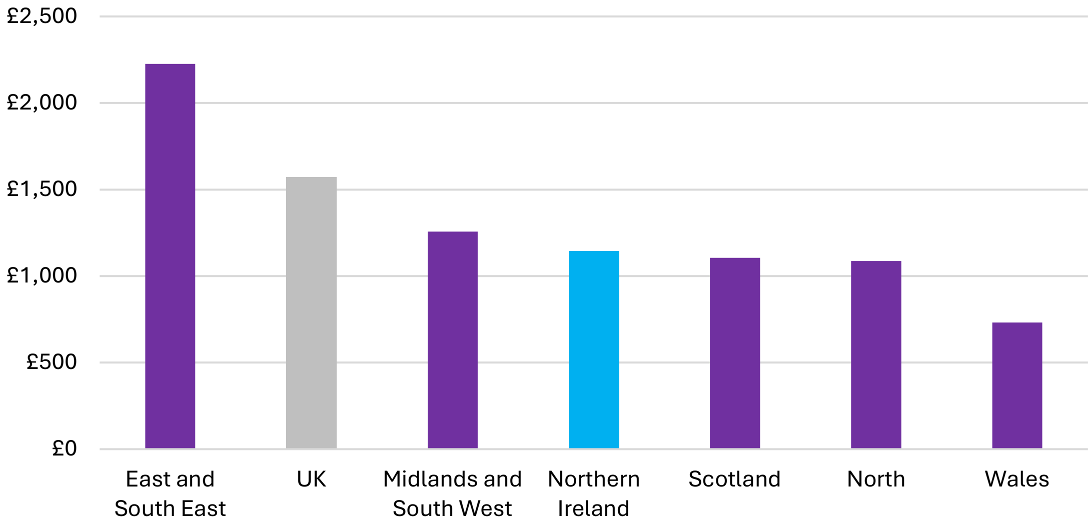
2.2.3 Research and Development (R&D) is a specific type of innovation activity, undertaken to create new products and services. New ideas and innovations directly lead to economic growth, but there has been a recent decline in research productivity, despite research effort rising. It is therefore important for R&D expenditure to continue to rise to maintain the same level of returns.[35]

2.2.4 Expenditure on R&D has steadily risen in Northern Ireland, increasing by 38% since 2018, the largest regional increase in the UK. In 2022, £912 million was spent on R&D in Northern Ireland. When measured per job in the economy, Northern Ireland is ahead of Scotland, Wales and the North of England, as shown in Figure 2.3.

2.2.5 The extent of new knowledge being created in Northern Ireland can be measured using the number of new patents granted. In total, only 53 patents were granted in Northern Ireland in 2023. When measured per 100,000 businesses, Northern Ireland is second last of the UK's regions, above the East Midlands, but still significantly below the UK rate (Figure 2.4). Northern Ireland's patent acceptance rate of 39.6% is higher than the UK average of 36.2%. This means Northern Ireland's low number of granted applications is not the result of a lower acceptance rate, but rather due to a lack of applications. This is consistent with the lower rate of innovation across businesses in Northern Ireland, suggesting that barriers exist to more widespread innovation amongst firms.

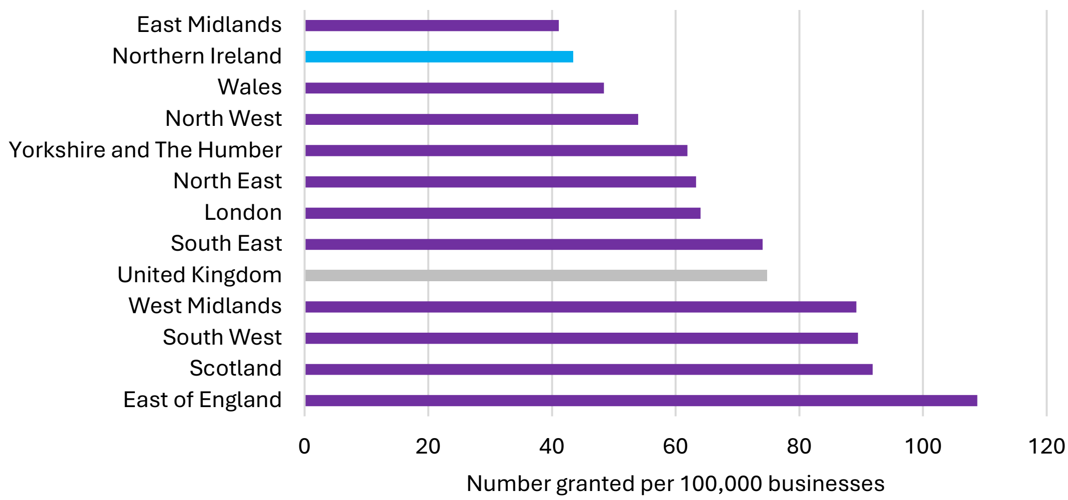
[35] Bloom, *et al.*, 2020

Figure 2.3: Expenditure on R&D per job in the economy, 2022



Notes: Figures in 2023 prices. Measured relative to the total number of jobs in the economy. East and South East includes East of England, London and South East. Midlands and South West includes East Midlands, West Midlands and South West. North includes North East, North West, and Yorkshire and The Humber.
Source: ONS, 2024f; ONS, 2024a; HM Treasury, 2024

Figure 2.4: Patents granted per 100,000 businesses, 2023



Sources: Intellectual Property Office, 2024; Department for Business and Trade, 2023

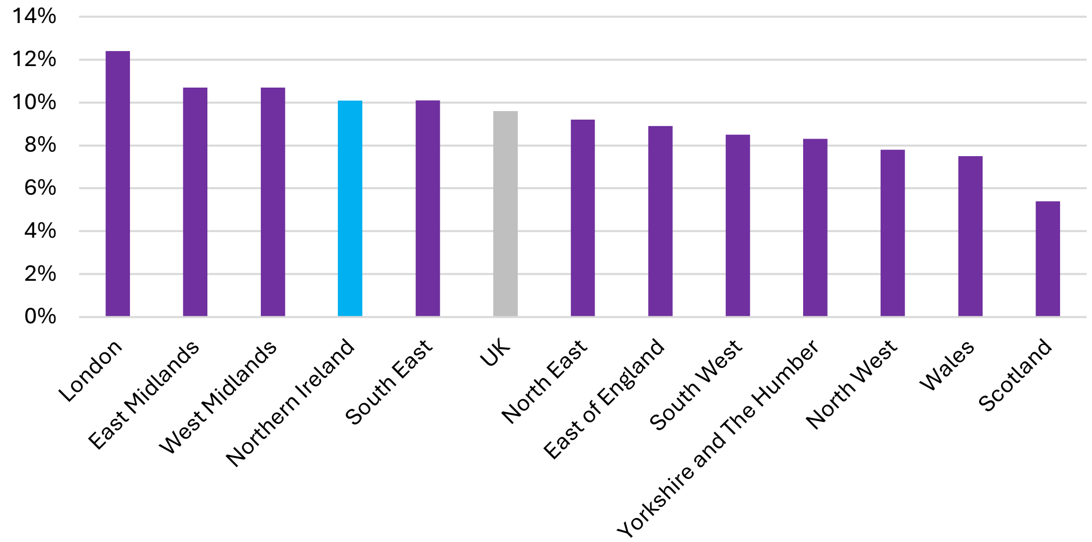
2.2.6 Digitalisation is a form of innovation and includes the adoption and integration of digital technologies into business processes. Digitalisation has a positive effect on firm-level productivity.[36] However, digital adoption and diffusion has recently slowed, due to its increasingly complicated nature.[37] An examination of management practices in Northern

[36] Anghel *et al.*, 2024, p. 8-14
[37] Coyle, 2024

Ireland found a positive correlation between firms with good management practices and greater digitalisation of business processes.[38]

2.2.7 Limited evidence is available to examine the specific uptake of artificial intelligence (AI).[39] The ONS Innovation Survey reviews how many businesses use any production enhancing technologies. Uptake of AI, robotics or automation amongst firms that used any production enhancing technologies in Northern Ireland is above the UK average, with 10.1% claiming to use it, placing it fourth amongst the UK's regions (Figure 2.5). Despite this, there remains hesitancy in its adoption, with 67% of businesses in Northern Ireland lacking confidence in adopting new AI technologies.[40]

Figure 2.5: Use of AI, robotics or automation by businesses that used any production enhancing technologies, 2022



Note: Defined as AI, robotics or automation use by any business that used any production enhancing technologies.
Source: Department for Business and Trade, 2024

2.2.8 Innovation is not simply limited to the private sector. It is also important for the public sector to engage in innovation. A report examining innovation in Northern Ireland's public sector found that good ideas "stay small", while old practices remain in place regardless of their effectiveness.[41] One of the biggest issues is not that innovative ideas are not being implemented within the public sector, but rather they are not being adopted widely enough.[42]

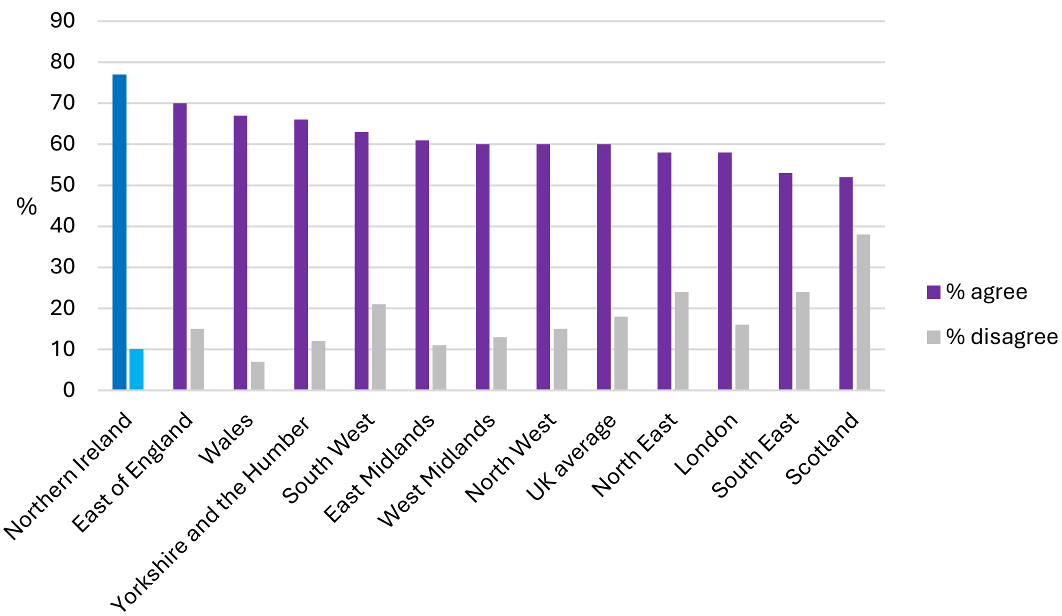
[38] Jordan, Pramanick, and Turner, 2023
[39] ONS, 2024g
[40] The Open University, 2024
[41] Hewitt *et al.*, 2019, p.10-11
[42] Hewitt *et al.*, 2019 p. 10-11

2.3 Access to external finance

2.3.1 Access to external finance supports a firm's ability to invest in productivity improving practices, such as innovating and adopting new technologies, creating a positive spillover effect on productivity.[43] Peripheral regions may face greater barriers accessing finance, being less likely to have finance applications accepted due to a "liability of distance", where providers may be less inclined to provide funding to SMEs in rural regions.[44]

2.3.2 In 2023, Northern Ireland had the highest rate of SMEs aware of where to obtain finance (77%), shown in Figure 2.6. This figure is substantially above the UK average of 60%, with Northern Ireland seeing a 10-percentage point increase since 2022. Despite this high awareness, Northern Ireland has the highest rate of businesses that found access to external finance to be an obstacle in the last 12 months (11%), shown in Figure 2.7.

Figure 2.6: SMEs awareness of where to obtain information on the types of finance & specific providers, 2023



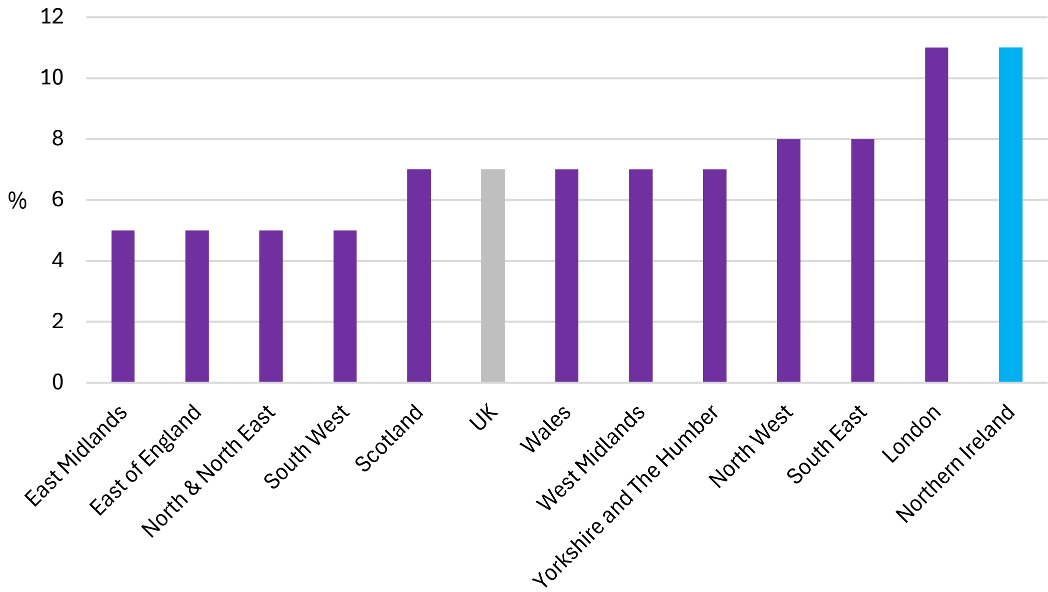
Source: British Business Bank, 2024a

2.3.3 That SMEs have high awareness but low access to external finance is reflected in their strong links with banks, but perceived or actual difficulty accessing finance. Northern Ireland has the highest rate of SMEs happy to use finance to grow their business, at 47%, above the UK average of 33%.[45] Northern Ireland also has the highest rate of SMEs confident their bank would lend to them if they applied for finance (56%), above the UK

[43] Conlon *et al.*, 2012
[44] Lee and Brown, 2016
[45] BVA BDRC, 2024, p.114

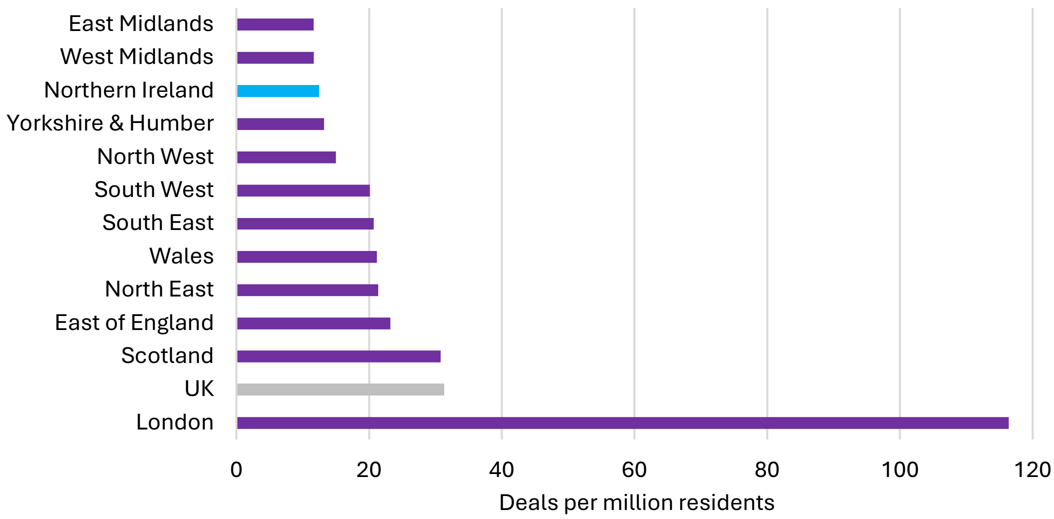
average (48%).[46] However, it also has the highest rate of those that thought it would be difficult for their business to get external finance (42%).[47]

Figure 2.7: Access to external finance as an obstacle to running a business for all SMEs, 2023



Source: BVA BDRC, 2024, p.145

Figure 2.8: Equity deals per million residents, 2023



Note: Population statistics are mid-2023 estimates.
Sources: British Business Bank, 2024b; ONS, 2024h

[46] BVA BDRC, 2024, p.162
[47] BVA BDRC, 2024, p.114

2.3.4 Northern Ireland sees relatively low levels of investment from other sources of external finance. Finance through equity deals is relatively uncommon in Northern Ireland, with only 12.5 deals per million people in 2023, above only the West Midlands (11.6) and East Midlands (11.7) (Figure 2.8). Venture capital investment has tripled in Northern Ireland over the last 3 years, with £139 million invested over 89 projects in 2022, up from 68 deals in the previous year, with most (71%) coming from outside Northern Ireland.[48] This rise is due to a cluster of high-growth companies in Northern Ireland.[49] Despite the increase, Northern Ireland's venture capital investment makes up only 0.9% of the total UK deals (3,213) and 0.6% of the total invested (£22.7 billion),[50] well below its 2.5% share of UK total employment.

2.4 Entrepreneurship

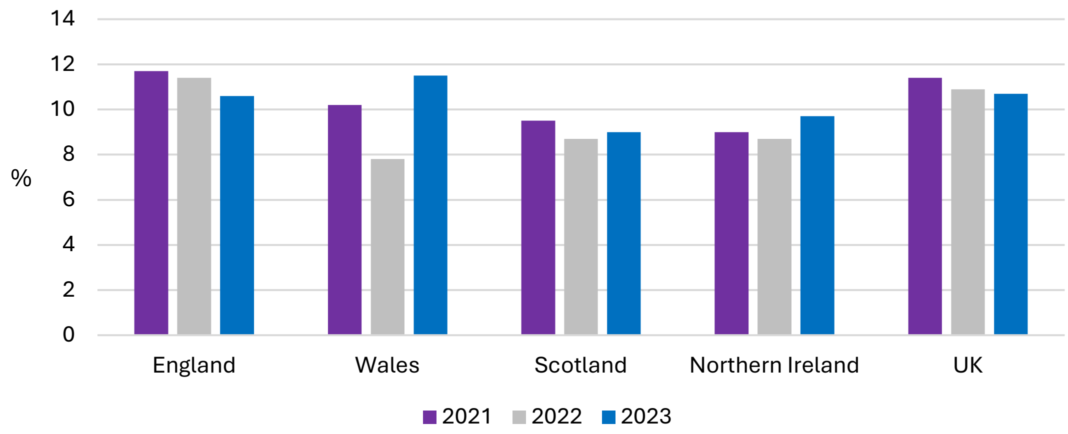
2.4.1 Entrepreneurship is a key driver of productivity.[51] However, Northern Ireland consistently lags behind the rest of the UK in measures of entrepreneurial activity.[52] The rate of Total Early-stage Entrepreneurial Activity (TEA) in Northern Ireland was 9.7% in 2023, below the UK average of 10.7%, shown in Figure 2.9.

2.4.2 The Global Enterprise Monitor (GEM) has identified eight areas needing considerable attention to improve levels of entrepreneurship in Northern Ireland.[53] These include: entrepreneurial education at school, cultural and social norms, government policies and support, ease of getting finance, sufficiency of financing, entrepreneurial education at post-school age, internal market burdens or entry regulations, and R&D transfer. Within culture and social norms, Northern Ireland performs below the UK average across all types, in particular the areas of entrepreneurial risk-taking and innovativeness.[54] While the perception of start-up opportunities has increased in the last year in Northern Ireland to 32.4%, it remains significantly below the UK average of 37.1%.[55]

2.4.3 Business density, which is the number of businesses relative to population, has a positive spillover effect within the economy.[56] Northern Ireland's low level of entrepreneurship is reflected in its low business density. As shown in Figure 2.10, Northern Ireland has the third lowest business density in the UK, with 875 businesses per 10,000 people.

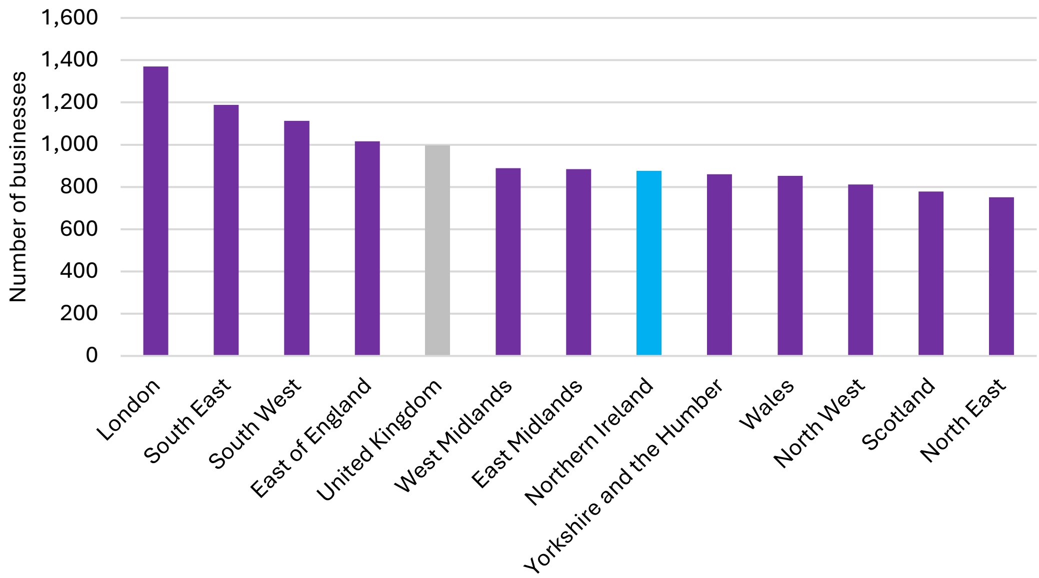
[48] Belfast City Council, 2023
[49] Belfast City Council, 2023
[50] KPMG, 2024
[51] Erken, Donselaar and Thurik, 2018
[52] Luong *et al.*, 2024
[53] Luong *et al.*, 2024, p.33
[54] Luong *et al.*, 2024, p.52
[55] Luong *et al.*, 2024, p.22
[56] Lowrey, 2004

Figure 2.9: Total Early-stage Entrepreneurial Activity (TEA), 2021-2023



Source: Enterprise Research Centre, 2024

Figure 2.10: Number of businesses in the private sector per 10,000 residents, start of 2024



Note: Residents measured as adults aged 16+. To calculate the number of unregistered businesses at the start of the year data is combined from quarter 4 2023 and quarter 1 2024.
Source: Department for Business & Trade, 2024

2.5 Policy

2.5.1 To raise productivity, policy must focus on providing businesses with the foundations needed to improve across the four main policy challenges identified in this section.

B1. **Export intensity:** Northern Ireland has relatively low export intensity compared to other UK regions. Increasing the export intensity of existing exporters, and increasing the number of firms that export, should continue to be priorities for policy.

B2. **Innovation and R&D:** To make Northern Ireland more innovative, there needs to be a shift in attitudes towards taking risks, as well as learning from other firms and institutions to see what can be done differently. Innovation is particularly important if firms are to meet the challenges of increased digitalisation and new technology. While Northern Ireland performs relatively well for R&D, there is a need to ensure this spreads to businesses that are not at the forefront of new breakthroughs but can benefit from this work.

B3. **Access to external finance:** Firms in Northern Ireland appear well integrated into financial networks, but face barriers to accessing external finance, which is crucial for enabling investment to raise productivity. It is unclear from the existing evidence to what extent these barriers originate from characteristics of lenders, or from the characteristics of the businesses applying. That barriers exist provides a clear justification for policy to facilitate their removal where possible, or support firms to overcome these barriers. Although, this must be weighed against the risk of firms becoming reliant on financial support from government, or low productivity firms being supported.

B4. **Entrepreneurship**: The creation of new businesses is the driving force behind a more competitive and resilient business ecosystem. Raising entrepreneurship has been a focus for policymakers over the past two decades, but Northern Ireland is still a laggard. Support for entrepreneurship therefore needs to also consider the indirect ways that policy can provide the best possible business environment, such as providing access to funding, and investing in education.

2.5.2 Table 2.1 below summarises the policy challenges relating to business performance and characteristics.

<table>
<tr><th colspan="7">Table 2.1: Business performance and characteristics policy framework</th></tr>
<tr><th rowspan="2">Policy challenges</th><th rowspan="2">Policy objectives</th><th colspan="2">Policy stakeholders</th><th colspan="2">Policy interactions</th></tr>
<tr><th>NI Executive departments</th><th>Delivery partners</th><th>Preconditions</th><th>Facilitates</th></tr>
<tr><td>B1. Export intensity: NI has low export intensity</td><td>• Increase export intensity of existing exporters
• Increase number of firms exporting</td><td>• Department for the Economy</td><td>• Invest NI
• Intertrade Ireland
• Innovate UK
• Catalyst</td><td>B2. Innovation and R&D
B3. Access to external finance
B4. Entrepreneurship
S2. Retaining & attracting talent
S3. Skills deficit
S4. Lifelong learning
P1. Devolved policy
P2. Public finances
P3. Data gaps and limitations
I1. Investment
I3. Connectivity</td><td>B2. Innovation and R&D
B3. Access to external finance
I1. Investment</td></tr>
<tr><td>B2. Innovation and R&D: NI has a very low rate of innovation active businesses, and a poor track record for R&D</td><td>• Increase innovation activity
• Support R&D capacity
• Support digitalisation & adoption of new technology</td><td>• Department for the Economy</td><td>• Invest NI
• Intertrade Ireland
• Innovate UK
• Catalyst</td><td>B1. Export intensity
B3. Access to external finance
B4. Entrepreneurship
S1. Qualifications gap
S2. Retaining & attracting talent
S3. Skills deficit
S4. Lifelong learning
P1. Devolved policy
P2. Public finances
P3. Data gaps and limitations
H3. Social issues
I3. Connectivity</td><td>B1. Export intensity
B3. Access to external finance
I2. Infrastructure
I3. Connectivity</td></tr>
<tr><td>B3. Access to external finance: NI businesses find access to finance to be an obstacle</td><td>• Support firms to overcome financial barriers</td><td>• Department for the Economy</td><td>• Invest NI
• British Business Bank
• UK Government</td><td>B1. Export intensity
B2. Innovation and R&D
P1. Devolved policy
P2. Public finances
P3. Data gaps and limitations</td><td>B1. Export intensity
B2. Innovation and R&D
B4. Entrepreneurship
S3. Skills deficit
I1. Investment</td></tr>
<tr><td>B4. Entrepreneurship: NI has a low rate of entrepreneurial activity</td><td>• Increase rate of entrepreneurial activity</td><td>• Department for the Economy</td><td>• Invest NI
• Enterprise NI</td><td>B3. Access to external finance
S1. Qualifications gap
S2. Retaining and attracting talent
S4. Lifelong learning
P1. Devolved policy
P2. Public finances
P3. Data gaps and limitations
H3. Social issues
I3. Connectivity</td><td>B1. Export intensity
B2. Innovation and R&D</td></tr>
</table>

Notes: Synergies in policy interactions identified by italics. See Appendix tables A9.4 and A9.5 for relations between all policy challenges.

3 Skills and training

3.0.1 This section focuses on human capital, that is, the knowledge and skills possessed by individuals in the workforce, and how these are developed during their working lives. International evidence shows that a highly skilled workforce is crucial for achieving higher productivity.[57] Research from The Productivity Institute has identified skills as a key area where the UK must improve if it is to see higher productivity growth,[58] with a low level of human capital being identified as a major reason for Northern Ireland's persistent productivity gap.[59]

3.0.2 We have identified four key areas within skills and training where policy interventions can be made to improve productivity:

- Qualifications gap
- Retaining and attracting talent
- Skills deficit
- Lifelong learning

3.1 Qualifications gap

3.1.1 Qualifications provide the foundation for a skilled workforce, but this is an area where Northern Ireland performs poorly in at least two regards: it has both an attainment gap and a brain drain.[60] Although the qualification level of Northern Ireland's workforce is rising over time, due to young people with more qualifications entering the workforce, the evidence shows that Northern Ireland still underperforms relative to its peers.[61]

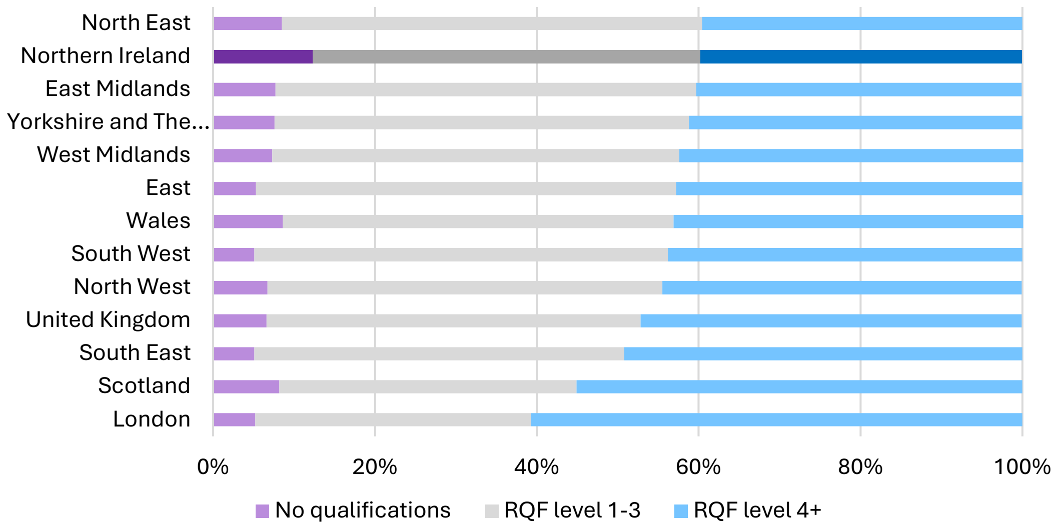
3.1.2 The attainment gap relates to the proportion of individuals with no or only lower-level qualifications when they leave school. Figure 3.1 shows that Northern Ireland has the highest rate of working aged adults with no qualifications of any UK region, at 12.3% . This is almost double the UK average of 6.6%. Northern Ireland has improved over time, but so have the UK's other regions, meaning Northern Ireland remains in last place.[62]

3.1.3 Differences in attainment also exist across age bands. Northern Ireland has a higher percentage of those aged 16 to 19 years who are educated to RQF 3 (two or more A levels) than the UK average (27.1%); but also has the highest rate with no qualifications (20.4%),

[57] Criscuolo *et al.*, 2021
[58] Grimshaw, O'Mahony and Westwood, 2023
[59] FitzGerald and Morgenroth, 2020; Jordan and Turner, 2021
[60] Jordan and Turner, 2021
[61] OECD, 2020
[62] Donaldson, Jordan and Turner, 2023, p.4

almost double the rate in Scotland (10.3%).[63] This suggests that inequalities in achievement are emerging at an early stage of individuals' working lives.

Figure 3.1: Qualification level of working aged adults, 2023

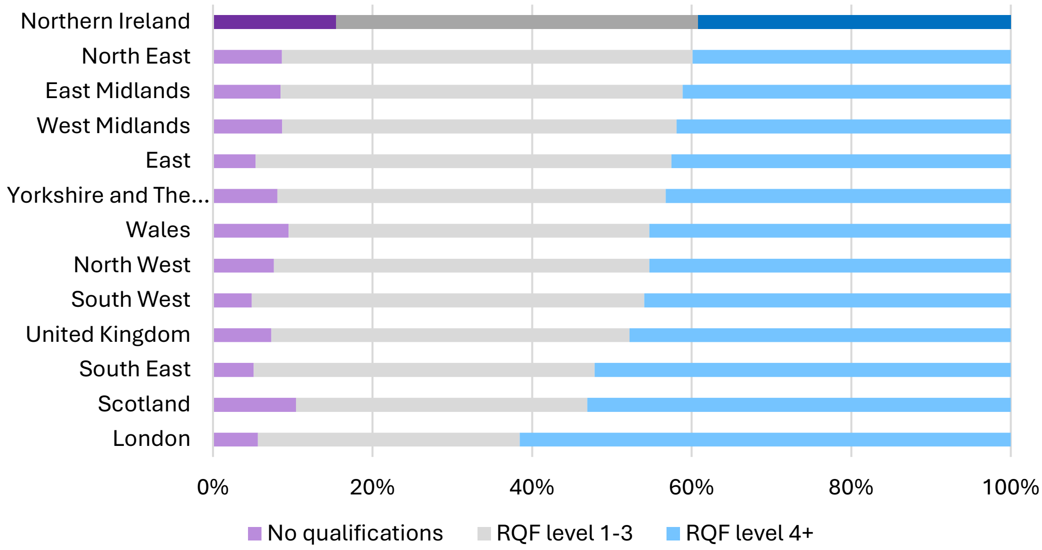


Notes: Working aged adults are those aged 16-64.
Source: Nomis, 2024

3.1.4 For older workers in the 40 to 64 age group, 15% have no qualifications in Northern Ireland, shown in Figure 3.2. This proportion with no or low formal qualifications is declining in Northern Ireland as older individuals with fewer qualifications retire.[64] This means that this measure will automatically improve over the long term without any policy intervention. However, if productivity is to improve over the short-to-medium term, improving the qualification profile of those already in the workforce in older age groups will be important.

[63] Nomis, 2024
[64] UUEPC, 2024b, p.4

Figure 3.2: Qualification level of adults aged 40-64, 2023



Source: Nomis, 2024

3.1.5 Historically, Northern Ireland has performed poorly in terms of higher education, having a lower proportion of its workforce with higher level qualifications. Northern Ireland has the second lowest rate of adults qualified to RQF 4+, at 39.7%, shown in Figure 3.1.[65] This is not a new issue for Northern Ireland.[66] While it has seen improvements over time, it remains one of the poorest performing regions in the UK: in 2023, it was placed 11th of the UK's twelve regions in 2023. This links to Northern Ireland's brain drain.

3.2 Retaining and attracting talent

3.2.1 The brain drain is usually thought of as a situation where too many school leavers leave Northern Ireland to study elsewhere. This outflow is particularly important as it has reduced Northern Ireland's attractiveness to foreign direct investment.[67] While this can be clearly seen in the qualification levels of older workers, today's problem is a net graduate outflow. Northern Ireland has the second highest UCAS entry rate, behind only London.[68] Instead, its key weakness is a failure to attract young people to Northern Ireland, rather than too many leaving to study elsewhere.

3.2.2 The 'drain' for school leavers is no longer evident when compared to other UK regions. Evidence shows that around three quarters of students remain in Northern Ireland to study: this placed Northern Ireland second amongst the UK's regions, behind only

[65] Equivalent to a Higher National Certificate or above.
[66] Birnie and Hitchens, 1999
[67] Siedschlag and Koecklin, 2019
[68] UCAS, 2023

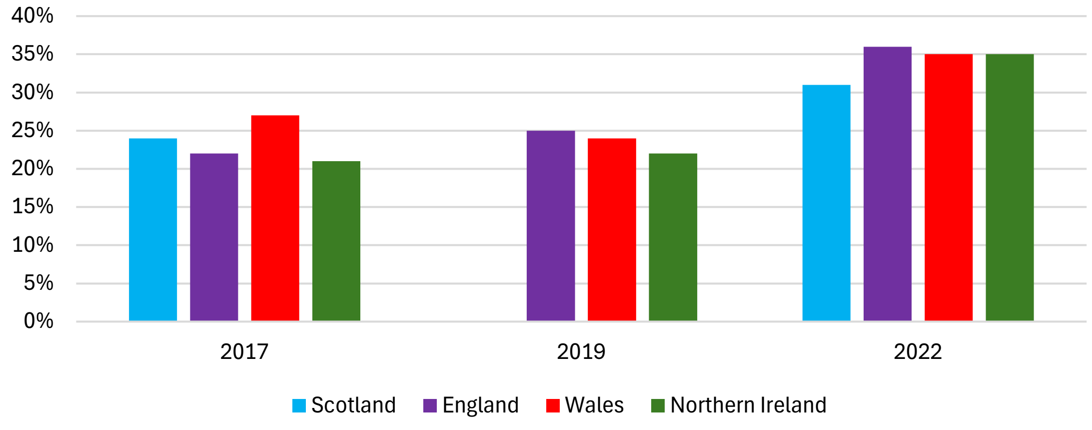
Scotland (around 90%).[69] Instead, Northern Ireland's challenge today is its ability to attract students to study here: Northern Ireland has the lowest higher education inflow from other UK regions, at only 6%.[70] This is also relevant for Northern Ireland school leavers who do go to study elsewhere, and the ability to attract back this talent. One of the biggest reasons for students leaving to study outside of Northern Ireland is graduate opportunities, with around two-thirds not returning after graduation.[71]

3.3 Skills deficit

3.3.1 The skills of employees are critical for the ability of businesses to raise their productivity. Northern Ireland has been identified as suffering from a 'low skills equilibrium', where there is both a lack of supply and demand for skills.[72] This is a challenge for the NI Executive, education sector, and business, and is reflected across four main areas.

3.3.2 The first issue is a skill shortage, where businesses in Northern Ireland face difficulties recruiting employees with the right skills.[73] The most recent UK-wide Employer Skills Survey shows that skill-shortage vacancies have increased as a proportion of total vacancies, shown in Figure 3.3. In 2022, 35% of all vacancies in Northern Ireland were due to skill shortages. The number of establishments in Northern Ireland with at least one skill-shortage vacancy has doubled between 2019 and 2022.[74]

Figure 3.3: Skill shortage vacancies as proportion of total vacancies, 2017-2022



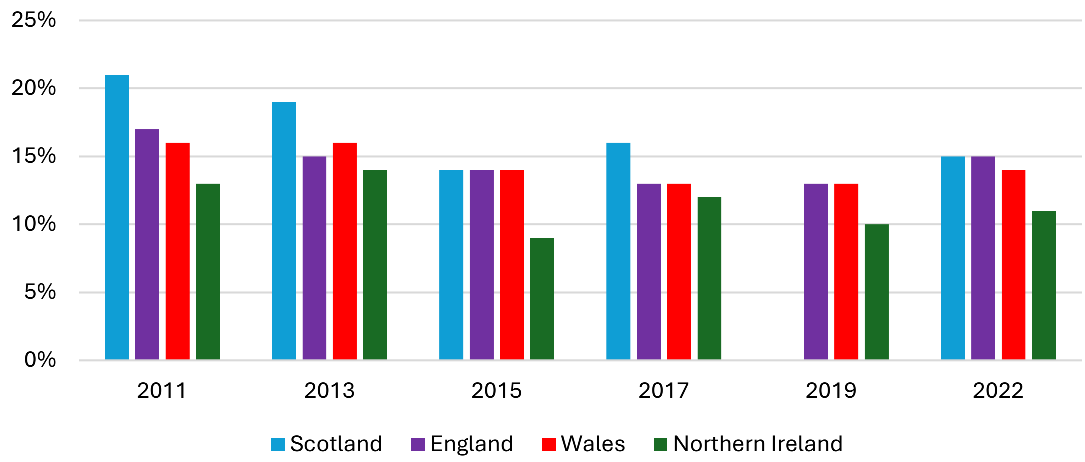
Source: Department for Education, 2023

[69] UUEPC, 2022
[70] UUEPC, 2022
[71] Pivotal, 2021, p.2-4
[72] Mac Flynn, 2017
[73] NI Chamber of Commerce & BDO NI, 2024, p.6
[74] Department for Education, 2023

3.3.3 The second issue is the skills of existing employees, and whether these match the needs of their employer. In 2022, 11% of employers in Northern Ireland reported a skills gap within their workforce, shown in Figure 3.4, where at least one employee is judged as being not fully proficient.

3.3.4 The third skill issue faced by Northern Ireland is the extent of training provided to the workforce by employers. During 2022, 58% of Northern Ireland employers provided training to their staff, shown in Figure 3.5. This was lower than the 60% UK average, and the lowest of the UK's nations.[75] Northern Ireland's poor performance is repeated for other aspects of training. It has the lowest average number of training and development days per trainee, at 5.8 in 2022, compared to the UK average of 6.0, and the lowest of the UK's nations; as well as the lowest investment in training per trainee, at £2,633 per trainee over the previous 12 months, below the UK average of £2,952 per trainee, and the lowest amongst the UK's nations.[76] Use of online training has become more popular, with 60% of establishments in Northern Ireland offering online training or e-learning, but Northern Ireland has consistently lagged behind in this adoption, which is 67% for the UK.[77]

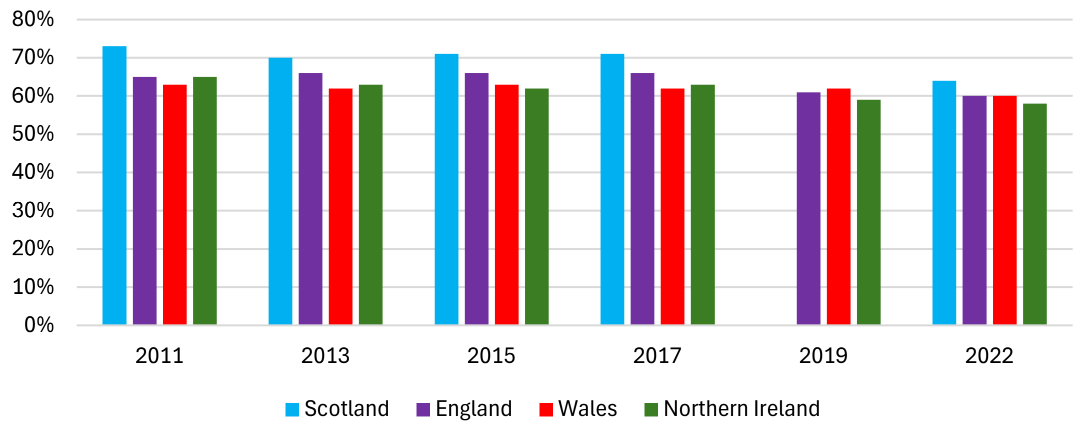
Figure 3.4: Percentage of establishments with at least one skills gap, 2011-2022



Note: Skills gap defined as where at least one employee is judged as not being fully proficient.
Source: Department for Education, 2023

[75] Department for the Economy, 2023a, p.6; Department for Education, 2023
[76] Department for Education, 2023
[77] Department for Education, 2023

Figure 3.5: Proportion of establishments training by nation, 2011-2022



Source: Department for Education, 2023

3.3.5 The fourth skill issue relates to the management practices of firms. The implementation of structured management practices – which cover continuous improvement processes, key performance indicators, use of targets, and employment practices – has been shown to be a key driver of productivity.[78] The most recent evidence shows that Northern Ireland has the worst management practices of the UK's twelve regions, scoring 0.52 out of 1.0 in 2023, equal to Scotland, but below the UK average of 0.55.[79] Northern Ireland has a long tail of firms further from best management practice, with these firms being smaller, domestically orientated, and not providing regular leadership training.[80] While some firms do not engage in formal external management and leadership training, they still undertake some form of training or upskilling.[81] However, barriers to engagement exist, including finance, time, lack of awareness, and culture.[82]

3.4 Lifelong learning

3.4.1 Lifelong learning, which goes beyond direct training associated with the workplace, has been identified as a key aspect of improving the skills of Northern Ireland's workforce.[83] Lifelong learning is associated with higher productivity, higher wages, and higher levels of social trust.[84] Under half of adults (46%) in Northern Ireland participated in learning in the last three years, placing it seventh out of the UK's twelve regions.[85] Those who do not

[78] Bloom and Van Reenen, 2007
[79] ONS, 2024i
[80] Jordan, Pramanick, and Turner, 2023
[81] Bonner, Martin and Arique, 2024, p.4
[82] Bonner, McCausland and Donaldson, 2022
[83] OECD, 2020
[84] OECD, 2020, p.96
[85] Wood, Nermond and Jones, 2024

participate in lifelong learning are mostly likely to be in older and less educated demographics.[86] Within the workforce, only 10.9% participated in education and training in the four weeks prior to being surveyed, lower than levels in the UK (14.8%), Republic of Ireland (12.6%) and EU (11.3%).

3.4.2 Adult learners may face different barriers to participating in lifelong learning. Of those who had not engaged in learning in the past three years in Northern Ireland, 78% faced at least one barrier to learning, compared to 68% in the UK.[87] Of those surveyed, illness and disability was a greater barrier in Northern Ireland (14%) than for the UK (10%), while 7% faced barriers due to a lack of digital skills, with this mainly affecting older workers. Technology plays an important role in facilitating lifelong learning, with 95% of UK respondents stating they use technology to help with training, such as online videos, online assessments and emails.

3.5 Policy

3.5.1 A key theme is that policy should focus on removing barriers to people reaching their full potential. Although policy has recognised the importance of skills and training for Northern Ireland's economy, its persistent underperformance in this area emphasises that policy solutions are not straightforward. Within this section we have identified four main objectives for policy:

S1. Qualifications gap: Reducing the qualifications gap, to bring qualification levels in Northern Ireland up to the UK level, will require a long-term approach across several NI Executive terms. If productivity is to improve across the whole economy, a particular focus should be placed on reducing the number of those with no or low qualifications. This will also provide the foundation for individuals moving towards higher-level qualifications.

S2. Retaining and attracting talent: Northern Ireland must retain and attract talent, through increasing its attractiveness for incoming students, returning graduates, and wider diaspora who have gained knowledge and skills elsewhere. This will raise the qualification level of the workforce, and help meet current and future skill needs, including the growth of high-productivity, knowledge intensive sectors. This requires making Northern Ireland a more attractive destination to study, work, and live.

S3. Skills deficit: Given Northern Ireland suffers from both a low supply and low demand for skills, it means that policy interventions are required to break out of this low skills equilibrium. This could include incentives to support employer training, while ensuring that businesses do not become over reliant on public support for their training needs. Examples might include waiving or reducing student fees to encourage students to

[86] Wood, Nermond and Jones, 2024
[87] Wood, Nermond and Jones, 2024

choose courses that are in demand to meet the current and future needs of Northern Ireland's economy. Current underperformance for management practices reinforces the need for policy to support the development of managers, to equip leaders with the tools needed to drive productivity and adopt best practice.

S4. **Lifelong learning:** Focusing only on tomorrow's workforce is not a sustainable strategy to improve Northern Ireland's productivity. The diffusion of new technologies means there is a need to create a more resilient workforce that can adapt to change. This means that the expansion of lifelong learning is required to support those in or able to work today. There needs to be a cultural shift, starting with policy change to make learning a process throughout life. This is particularly important as we move to increased use of digital technology, where some skills are becoming redundant, and new skills are required to participate in a shifting job market.

3.5.2 Table 3.1 below summarises the policy challenges relating to skills and training.

Table 3.1: Skills and training policy framework					
Policy challenges	Policy objectives	Policy stakeholders		Policy interactions	
		NI Executive departments	Delivery partners	Preconditions	Facilitates
S1. Qualifications gap: NI has the highest rate of individuals with no qualifications	• Reduce attainment gap • Improve qualifications of older workers • Increase proportion with higher qualifications	• Department of Education • Department for the Economy	• Education Authority • FE colleges • Universities	P1. Devolved policy P2. Public finances P3. Data gaps and limitations H3. Social issues I3. Connectivity	B2. Innovation and R&D B4. Entrepreneurship S2. Retaining and attracting talent S3. Skills deficit S4. Lifelong learning H1. Economic inactivity
S2. Retaining and attracting talent: Graduate outflow, with graduates not returning to NI	• Graduate retention • Increase attractiveness for incoming students • Increase attractiveness for returning graduates	• Department for the Economy	• FE colleges • Local councils • Universities	S1. Qualifications gap P1. Devolved policy P2. Public finances P3. Data gaps and limitations *I1. Investment* I2. Infrastructure	B1. Export intensity B2. Innovation and R&D B4. Entrepreneurship *I1. Investment*
S3. Skills deficit: Low skills equilibrium	• Support employer training • Support individuals gaining skills for employment • Improve management practices	• Department for the Economy • Department of Agriculture, Environment and Rural Affairs	• FE colleges • Universities	B3. Access to external finance S1. Qualifications gap S4. Lifelong learning P1. Devolved policy P2. Public finances P3. Data gaps and limitations *H3. Social issues*	B1. Export intensity B2. Innovation and R&D *H3. Social issues* I1. Investment
S4. Lifelong learning: Low rate of lifelong learning	• Increase rates of lifelong learning	• Department for the Economy • Department for Communities • Department of Agriculture, Environment and Rural Affairs	• FE colleges • Universities • Libraries NI	S1. Qualifications gap P1. Devolved policy P2. Public finances P3. Data gaps and limitations H2. Health care H3. Social issues I3. Connectivity	B1. Export intensity B2. Innovation and R&D B4. Entrepreneurship S3. Skills deficit H1. Economic inactivity

Notes: Synergies in policy interactions identified by italics. See Appendix tables A9.4 and A9.5 for relations between all policy challenges.

4 Policy and institutions

4.0.1 Policy and institutions have been identified as central to explaining Northern Ireland's long-term economic underperformance and the failure of policy to close the productivity gap.[88] This section focuses on how policy can create a better environment for productivity improvements, and how institutions can support this objective.

4.0.2 From our analysis in this section, we have identified four key areas where policy and institutions affect productivity in Northern Ireland:

- Devolved policy
- Public finance
- Data gaps and limitations
- Trust and accountability

4.1 Devolved policy

4.1.1 Devolution is the decentralisation of policy-making powers from national to subnational government. Today's devolution settlement in Northern Ireland follows from the Belfast/Good Friday Agreement of 1998, which established the Northern Ireland Assembly and the Northern Ireland Executive. Decentralising economic policy-making powers is intended to create better economic outcomes, as local policymakers have better information than centralised government, enabling a more efficient allocation of resources through public goods and services.[89] However, economic theory acknowledges that these apparent benefits may fail to be realised, due to the incentives faced by the subnational government.[90]

4.1.2 Table 4.1 shows the policy and revenue raising powers that are devolved to Northern Ireland, compared to Scotland and Wales. Northern Ireland has the greatest extent of devolved policy powers, but the least extent of powers around tax. Some powers are also only partially devolved, such as transport, with national and devolved governments both retaining responsibility for certain aspects. While the UK Government has responsibility for macroeconomic policy, the NI Executive has key policy levers that enables it to address both the microeconomic and regional drivers of productivity growth.

[88] Brownlow, 2013; Jordan and Turner, 2021
[89] Oates, 2005
[90] Weingast, 2009, 2014

Table 4.1: Devolved powers

		Scotland	Wales	Northern Ireland
Policy areas	Education			
	Health & Social care			
	Housing			
	Environmental issues			
	Culture & Sport			
	Justice & Policing			
	Social security & Employment			
	Local government			
	Agriculture			
	Pensions & Child support			
	Transport			
	Business			
	Energy			
Taxes	Council tax			
	Business tax			
	Property tax			
	Landfill tax			
	Stamp tax			
	Income tax			
	Air passenger duty			
	VAT			
	Aggregates levy			
	Corporation tax			

Notes: Shaded box indicates power is devolved. Lighter shading indicates power is partially devolved. Boxes not shaded indicates power is not devolved.
Sources: Institute for Government, 2019; UK Government, 2019

4.1.3 Despite the apparent advantage of economic policymaking powers available to the NI Executive, policy interventions have failed to close Northern Ireland's productivity gap.[91] There have been five main problems with policy that explain this failure.

4.1.4 First, the problems faced by Northern Ireland's economy have previously been misdiagnosed.[92] For example, during the 1960s and 1970s it was thought that greater capital investment, specifically machinery, was the key to raising productivity in local manufacturing. Yet even once this 'capital gap' was closed by the 1980s, firms in Northern Ireland continued to lag their peers elsewhere, as other shortcomings, such as skills and training, had received less attention. This focus on a single policy issue meant other key

[91] Birnie and Hitchens, 2001; Jordan and Turner, 2021
[92] Brownlow, 2020

drivers of productivity were neglected, demonstrating that raising productivity cannot be achieved through solving individual policy problems in isolation.

4.1.5 More recently, policy has continued to prioritise the creation of new jobs. The independent review of Invest NI found that the objective of job creation received the highest share of assistance (29%) during 2017-2021 and was prioritised ahead of productivity.[93] This is despite unemployment no longer being the primary problem faced by Northern Ireland's economy. Instead, weak productivity growth is the reason for Northern Ireland's slow growth in GDP per capita since 2000,[94] emphasising why it should be the central focus of policymakers.

4.1.6 Second, policy churn – which is the rapid turnover of policies – has been identified as a key reason why policy has failed to reduce UK regional inequalities.[95] Northern Ireland's unique political context within the UK has exacerbated this problem. Over the past 25 years, the devolved administration has collapsed 6 times and been in abeyance approximately 40% of the time.[96] This political instability has led to policy delays and a lack of long-term planning,[97] and can be linked to the exacerbation of current economic problems, as well as delayed reform of public service delivery, such as the health care system.

4.1.7 For example, in 2017 a new draft economic strategy was published, 'Economy 2030', but was not implemented due to the absence of the NI Executive.[98] This was followed by the announcement of a new economic strategy for Northern Ireland in 2021, '10x Economy - an economic vision for a decade of innovation',[99] which was again not implemented due to the absence of the NI Executive. This has been superseded by a new Economic Vision announced in 2024, which is currently being implemented, and prioritises improving Northern Ireland's productivity as one of its four key pillars.[100]

4.1.8 The lack of a clear, long-term strategy creates uncertainty for businesses. Northern Ireland consistently has the highest rate of SMEs who perceive political and government policy uncertainty as an obstacle to running their business. This has more than doubled since 2016, from 10% to 29% in 2023. The same study also found that Northern Ireland has the joint highest rate of SMEs that found legislation, regulations and red tape to be an obstacle, at 29%, alongside Wales.[101]

4.1.9 Third, productivity is a complex issue, that spans many policy areas. Productivity growth is driven by a diverse range of policy areas, from investment in infrastructure, to the health

[93] Independent Review of Invest Northern Ireland, 2023
[94] FitzGerald and Morgenroth, 2020, p.9
[95] Diamond *et al.*, 2024
[96] Pivotal, 2023
[97] Pivotal, 2020
[98] Department for the Economy, 2017
[99] Department for the Economy, 2023b
[100] Department for the Economy, 2024a
[101] BVA BDRC, 2024, p.145-150

of the workforce. Yet policy interventions have been designed in isolation, without coordination across different areas of policy. This institutional bias towards thinking in terms of policy silos – with a lack of policy coordination across NI Executive departments – has been identified as a barrier to implementing policies to improve productivity.[102]

4.1.10 Fourth, productivity has rarely been used as a measurable outcome to evaluate the success of policies. Instead, improving productivity has often been included as an aspiration within economic strategies, but not used in the evaluation of performance.[103] Notably, the most recent NI Executive draft Programme for Government recognises the importance of productivity.[104] This is the first time since the 2008-2011 Programme for Government that productivity has featured as a central objective for policy.[105] The 2011-15 Programme for Government made only one reference to the issue of productivity, and the 2016-21 draft Programme for Government Framework only included higher productivity as an aspiration.[106]

4.1.11 Fifth, devolved policy interventions have a mixed track record for successful implementation. Notable examples include the shortcomings of the Non-Domestic Renewable Heat Incentive Scheme (RHI scheme),[107] alongside current delays in the revised planning system.[108] Improving productivity is a challenge faced not only by Northern Ireland, but by regions and countries across the globe. Therefore, what will set Northern Ireland apart is not the recognition that improving productivity is important, but the successful implementation of pro-productivity policies.

4.1.12 Northern Ireland lags the other UK devolved nations in this regard. Improving productivity has been put at the heart of Scotland's economic strategy,[109] and it is one of ten economic indicators used to measure progress towards the 11 national outcomes targeted by the Scottish government.[110] The Welsh government has similarly included productivity within its economic strategy, the Well-being of Future Generations Act 2015,[111] although it receives relatively less emphasis.[112]

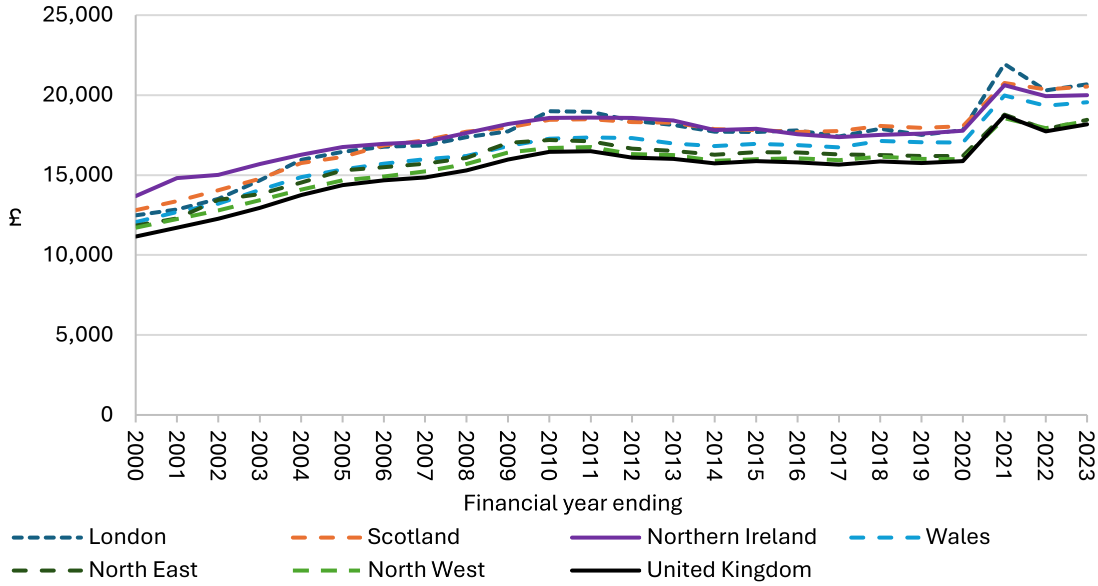
4.2 Public finance

4.2.1 Northern Ireland's public finances determine the amount of money available to spend on public services. Figure 4.1 shows the UK regions where real public expenditure per head

[102] Nelles, Brown, and Vorley, 2020; Pivotal, 2024a
[103] Jordan and Turner, 2021
[104] Northern Ireland Executive, 2024
[105] Northern Ireland Executive, 2008
[106] Northern Ireland Executive, 2012, 2016
[107] Northern Ireland Audit Office, 2024a
[108] Northern Ireland Audit Office, 2022
[109] Tsoukalas, 2021
[110] Scottish Government, 2024
[111] Welsh Government, 2024
[112] Henley, 2021

of population is higher than the UK average. After 1998, Northern Ireland had the highest level of public expenditure. By 2007, public expenditure in London and Scotland had caught up, and by 2023 Northern Ireland was third, just ahead of Wales.

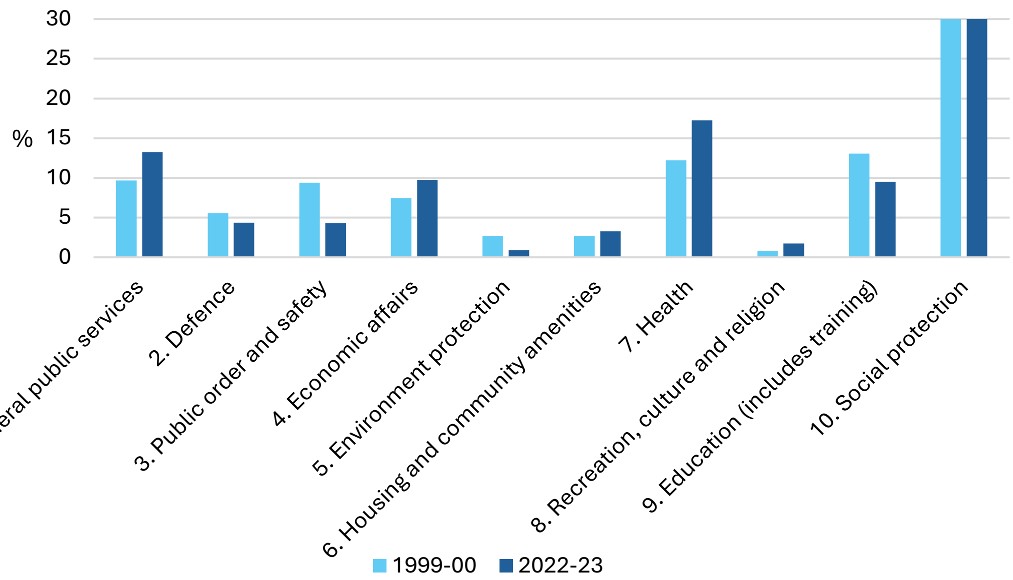
Figure 4.1: Real public expenditure per head, 2000-2023



Notes: Years are financial years. Included regions are those with public expenditure per head above the UK average in 2023. Prices are for 2023-24 financial year using GDP deflator.
Sources: ONS, 2024b; HM Treasury, 2024

4.2.2 There has been a shift towards health and away from education in public spending priorities in Northern Ireland since the return of devolution. Figure 4.2 shows how the allocation of public expenditure has changed between 1999-00 and 2022-23. Health was the third largest area of expenditure in 1999-00, at 12%, but it is now the second largest area, with its share increasing to 17%. Education previously had the second largest expenditure, but its share has fallen from 13% to just under 10%, and is now fifth.

Figure 4.2: Total managed public expenditure by category in NI, 1999-00 and 2022-23



Source: ONS, 2024b

4.2.3 A key requirement for implementing long-term pro-productivity policies is that they are funded over a long timeframe. Since devolution restarted in 2007, ten of the 17 financial years have been covered by single-year budgets.[113] The only multi-year budgets took place for the consecutive periods of 2008-09 to 2010-11 and 2011-12 to 2014-15. These multi-year budgets were facilitated by both UK Spending Reviews (SR), and periods of political stability for the NI Executive.

Table 4.2: Northern Ireland budgets since 2007

Budget period	2008-09 to 2010-11	2011-12 to 2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
UK Spending Review period	UK SR 2007	UK SR 2010	UK SR 2013	UK SR 2015				UK SR 2019	UK SR 2020	UK SR 2021		

Notes: Dark blue indicates multi-year budget by NI Executive; light blue indicates single-year budget by NI Executive; grey indicates budget set by UK Government.
Source: Northern Ireland Fiscal Council, 2024

4.2.4 The NI Executive has continued to face budget pressures over recent financial years. Around 90% of the NI Executive budget comes from the UK Treasury via the block grant, calculated using the Barnett Formula.[114] For the 2024-25 financial year, day-to-day funding requests were three times higher than the budget available.[115] This reflects the budget pressures faced by public services in Northern Ireland, including recent overspends. The

[113] Northern Ireland Fiscal Council, 2024, p.1
[114] Cheung, 2020
[115] Department of Finance, 2024a, p.2

UK Government has sought to stabilise the NI Executive's financial situation, with three years of short-term financial support. However, the future financial relationship between the NI Executive and UK Government remains uncertain. That Northern Ireland's public expenditure per head is amongst the highest of any UK region, suggests the financial resources available should be sufficient to provide public services at levels experienced in other regions. This means Northern Ireland's financial resources need to be better utilised.

4.3 Data gaps and limitations

4.3.1 A key requirement for being able to design, implement and evaluate policy interventions is timely, high-quality data. The publication of economic statistics for Northern Ireland is shared between the Office for National Statistics (ONS) and the Northern Ireland Statistics and Research Agency (NISRA).

4.3.2 Table 4.3 below outlines five areas where there are gaps or limitations with the current availability of data needed to measure Northern Ireland's productivity and its related drivers. While ONS have been improving their subnational data coverage,[116] there are still areas where improvements could be made at the interface between statistics for Northern Ireland produced by NISRA, and ONS-produced subnational statistics where Northern Ireland is included.

[116] Hickman, 2024

Table 4.3: Areas for improvement within government statistics	
Timeliness	Some data for NI is published with a substantial time lag. For example, the ONS's headline measures for productivity are two years out-of-date when they are published for NI.[117] This is particularly relevant where ONS is publishing statistics for the devolved nations alongside regions in England, as it means devolved government lacks the timely evidence it needs to design and evaluate policy. Other data is intermittently updated, such as for Gross Fixed Capital Formation (GFCF), meaning that every other year there will not be the most recent data for policy evaluation.[118]
Missing measures	There are some productivity related measures that we do not have for NI's economy. For example, there is no measure of capital stock NI, which means it is not currently possible to calculate total factor productivity (TFP). There are experimental ONS statistics available for GFCF for NI, but these are currently limited in their measurement.[119]
Disaggregation	There is data that would benefit from greater disaggregation. For example, the publication of business data to the two-digit sector level, and including this at LGD level and by business size, would allow better measurement and evaluation of policy interventions.[120] There are also opportunities to increase the level of detail of NI data provided by ONS. For example, data for FDI is available at the ITL2 level for the UK, but there is no regional disaggregation within NI.[121] In some cases NI is not included in ONS produced data, such as for construction output, retail sales, and the Opinions and Lifestyle survey.[122]
Linking, integration and comparability	Linking NI data with GB data is not always straightforward, as many databases are separate depending on whether data was collected by NISRA or ONS. Therefore, better signposting of linkages and greater integration could be provided for data held by NISRA and ONS so that data is more easily compared. Greater opportunities for comparability with government statistics for the Republic of Ireland should also be explored, but this should not be at the expense of compatibility of NISRA produced data with ONS data.
Public sector	The public sector is a very significant part of NI's economy, but no separate estimates are produced for public sector productivity. ONS have produced this for the UK, and it could potentially be replicated by NISRA to provide public sector productivity at the NI level.[123]

4.3.3 Recent improvements have been made to regional productivity estimates for Northern Ireland. For example, productivity per hour worked is now available at a local government district level. However, it is clear from Table 4.3 that there are areas where improvements are needed if policy interventions are to be effectively designed, implemented and evaluated. A key barrier to making these improvements is resourcing. In 2023, NISRA's

[117] ONS, 2024a
[118] ONS, 2023c
[119] ONS, 2023d
[120] NISRA, 2024b
[121] ONS, 2023e
[122] ONS, 2023f
[123] ONS, 2023g

budget was cut by 20%, leading to a reduction in the statistics produced.[124] Without sufficient financial resources, there will not be enough capacity to provide the data needed.

4.4 Trust and accountability

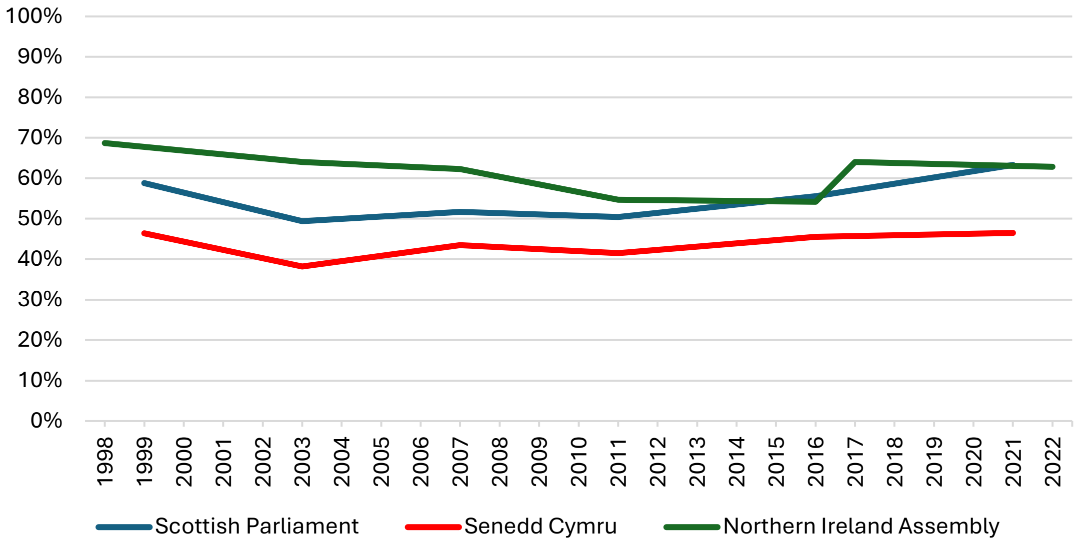
4.4.1 Social capital has been shown to be important in explaining differences in economic growth across regions.[125] Within social capital, trust in the political system has been shown to have a positive effect on economic development.[126] Shortcomings in the transparency and accountability of the Northern Ireland Executive have been identified.[127] A survey of trust in government found there are lower levels of trust in the NI Executive than the UK Government, at 3.2 compared to 3.8 out of 10 respectively.[128] As this survey took place during a period when the Northern Ireland Executive was suspended, this likely had a negative effect on the results.

4.4.2 The general public have three main frustrations with the current political framework in Northern Ireland.[129] The first is the instability of the NI Executive, particularly the speed at which it can collapse. The second is the absence of cooperation and cohesion within the NI Executive, with a lack of cross-party partnerships and real power-sharing. The third is the perceived dominance of communal identities and associated disputes. When the participants were asked of their view of the current government structure, the overwhelming consensus was that the current structure remains the best option, but that changes are needed (70%).

4.4.3 The need for a feedback loop from the electorate to politicians is particularly important in the context of devolution, to promote economic growth through ensuring good policies are rewarded.[130] Engagement of the electorate can be measured by participation in elections. In devolved elections between 1998 and 2022, participation in Northern Ireland (68.7% to 54.2%) has consistently been above Scotland (58.8% to 49.4%) and Wales (46.4% to 38.2%), shown in Figure 4.3. In UK elections, Northern Ireland had the highest voter turnout of the four UK nations in 2001, nine percentage points above the UK average: but by the 2024 General Election, turnout had fallen to a low of 57.2%.[131]

[124] Department of Finance, 2024b
[125] Muringani, Fitjar and Rodríguez-Pose, 2021
[126] Muringani, Fitjar and Rodríguez-Pose, 2024
[127] Pivotal, 2020
[128] ONS, 2024j
[129] Haughey and Pow, 2022
[130] Weingast, 2014, p.17
[131] Sturge, 2024

Figure 4.3: Devolved elections voter turnout, 1998-2022



Source: Uberoi, 2023

4.5 Policy

4.5.1 Raising productivity will require the right policies to be introduced, supported by institutions that prioritise productivity as a central outcome, alongside sustainable public finances, high quality data coverage, and political trust and accountability.

P1. Devolved policy: The NI Executive possesses the policy levers it needs to address Northern Ireland's relatively poor productivity performance. Rather than gaining new policy powers, the focus should be on improving the quality of policy interventions. This requires past policy failings to be recognised. More importantly, there needs to be acknowledgement that addressing the productivity challenge is complex and requires improvements across all areas of policy and public expenditure. Productivity should therefore be included as a key target for outcomes of policy. Productivity is also a long-term challenge and therefore requires institutional stability to allow long-term policies to be designed, implemented, and evaluated.

P2. Public finances: Public expenditure per head in Northern Ireland is the third highest of the UK's regions, only below London and Scotland. While public expenditure priorities have changed since 1998, the relative proportions spent on each category are similar to the UK. Therefore, the most important priority for Northern Ireland's public finances is to reform public service delivery to improve the effectiveness of public expenditure. This would allow better outcomes to be achieved with the financial resources available. Multi-year budgets should also be consistently implemented, as these are vital for supporting long-term policy interventions to tackle low productivity.

P3. **Data gaps and limitations:** Good policy design, implementation, and evaluation requires good data. While improvements have been made to the data available for Northern Ireland, there are still areas where coverage could be improved further. This includes the timeliness of data, which is necessary for the evaluation of policy interventions. Improving these aspects would facilitate the greater use of productivity as a measure of outcomes from policy. Ultimately, this requires greater resourcing of NISRA, alongside continued partnership with ONS.

P4. **Trust and accountability:** Voting provides an important feedback loop for policy. Northern Ireland possesses a unique political landscape within the UK, particularly given the requirement for mandatory coalition in the NI Executive. The instability of the political institutions in Northern Ireland hampers long-term policymaking and thus attempts to address low productivity. Increasing the engagement of the electorate with policy is needed to strengthen the feedback loop between productivity, policies, people, and politicians, to ensure good policies are rewarded.

4.5.2 Table 4.4 below summarises the policy challenges relating to policy and institutions.

Table 4.4: Policy and institutions policy framework					
Policy challenges	Policy objectives	Policy stakeholders		Policy interactions	
		NI Executive departments	Delivery partners	Preconditions	Facilitates
P1. Devolved policy: Policy has suffered from problems that have reduced its effectiveness	• Joined-up policymaking • Long-term policymaking • Improved public service delivery	• The Executive Office • Department of Finance • All other departments: DAERA, DE, DfC, DfE, DoH, DfI, DoJ	• NI Audit Office • All other delivery partners	*P2. Public finances* *P3. Data gaps and limitations* *P4. Trust and accountability*	All policy areas: B1, B2, B3, B4, S1, S2, S3, S4, *P2, P3, P4,* H1, H2, H3, I1, I2, I3
P2. Public finances: Short-termism in public financing	• Multi-year budgets • Reform public service delivery	• Department of Finance • The Executive Office • All other departments: DAERA, DE, DfC, DfE, DoH, DfI, DoJ	• UK Government • NI Fiscal Council	*P1. Devolved policy* *P3. Data gaps and limitations*	All policy areas: B1, B2, B3, B4, S1, S2, S3, S4, *P1, P3,* P4, H1, H2, H3, I1, I2, I3
P3. Data gaps and limitations: Data coverage, detail, and timeliness could be improved	• Increased data coverage • Increased use of data for policy targets & evaluation • Increase resourcing	• Department of Finance • All other departments: DAERA, DE, DfC, DfE, DoH, DfI, DoJ, TEO	• NISRA • ONS	*P1. Devolved policy* *P2. Public finances*	All policy areas: B1, B2, B3, B4, S1, S2, S3, S4, *P1, P2,* P4, H1, H2, H3, I1, I2, I3
P4. Trust and accountability: Need for greater electoral engagement and transparency	• Increase electoral engagement • Increase transparency of policymaking process	• The Executive Office • All other departments: DAERA, DE, DfC, DfE, DoF, DoH, DfI, DoJ	• Electoral Office • NI Audit Office	*P1. Devolved policy* P2. Public finances P3. Data gaps and limitations	*P1. Devolved policy*

Notes: Synergies in policy interactions identified by italics. See Appendix tables A9.4 and A9.5 for relations between all policy challenges.

5 Health and wellbeing

5.0.1 This section focuses on the health and wellbeing of individuals within society. This is an important driver of productivity and includes how health and social issues create barriers to participation in the workforce or can affect someone's performance when in work. These barriers create inequality of opportunity, leading to an inefficient allocation of talent across the economy, as people's full potential is not being realised, resulting in slower productivity growth.[132]

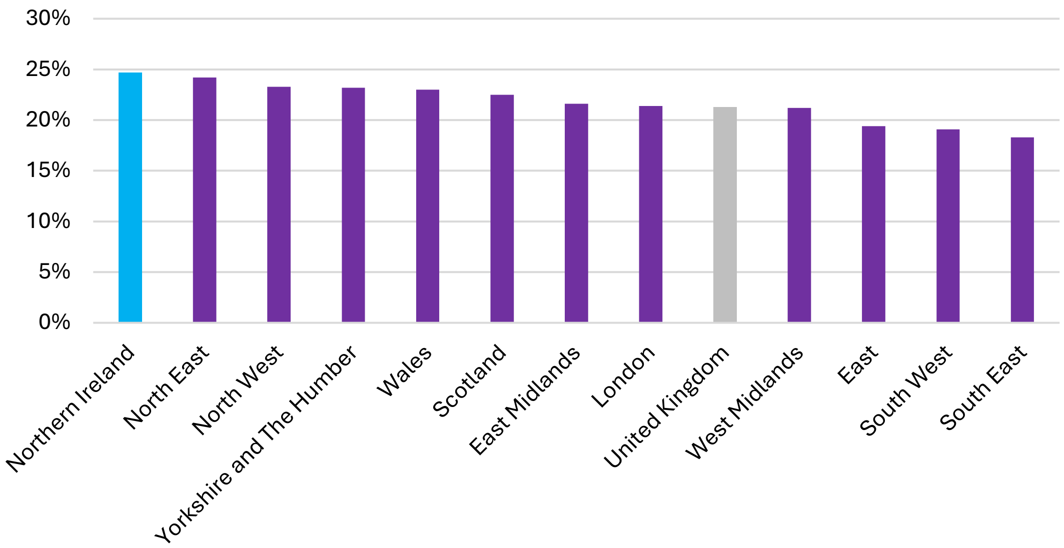
5.0.2 We have identified three main areas where barriers prevent individuals from maximising their productivity and full potential within Northern Ireland's workforce:

- Economic inactivity
- Health care
- Social issues

5.1 Economic inactivity

5.1.1 Economic inactivity measures the number of people not in employment or actively searching for work. Figure 5.1 shows that Northern Ireland has the highest rate of economic inactivity in the UK, with almost 290,000 working-age adults inactive.[133] This means that 24.7% of those aged 16 to 64 are economically inactive.

Figure 5.1: Economic inactivity rate, aged 16-64, 2023



Source: Nomis, 2024

[132] OECD, 2024b
[133] Working-age includes those aged 16 to 64.

5.1.2 Breaking inactivity down by reason, Northern Ireland has the highest proportion of those inactive due to long-term sickness at 37.8 %, well above the UK average of 27.5% (Table 5.1). If the rate of long-term sickness in Northern Ireland fell to the UK average, there would be almost 30,000 more people in the labour market, and the overall rate of economically inactive would fall below Wales and the North East. This potential to support people into work is reflected in 15.8% of those currently economically inactive (51,100 people) wanting to work.[134]

Table 5.1: Economic inactivity rate (%) by reason, 2023

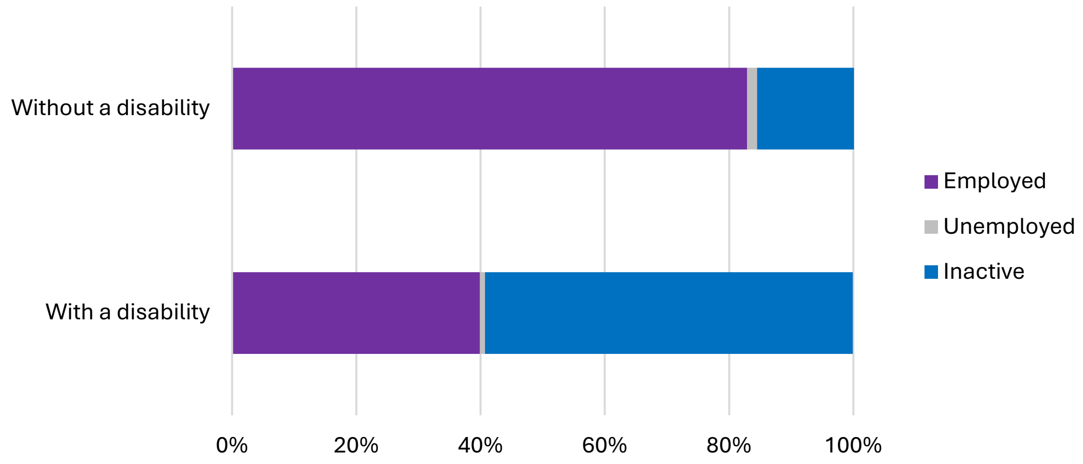
	Overall economic inactivity	Long-term sick	Looking after the family home	Temporary sick	Retirement	Students	Discouraged	Other
Northern Ireland	24.7	37.8	16.8	2.2	11.9	25.9	0.2	5.1
North East	24.2	33.0	18.5	2.3	15.3	29.4	0.4	10.1
North West	23.3	30.0	17.5	2.1	13.1	27.2	0.1	10.0
Yorkshire & The Humber	23.2	29.3	18.1	1.8	14.0	25.2	0.2	11.4
Wales	23.0	33.4	18.0	1.8	14.0	22.7	0.3	9.8
Scotland	22.5	31.6	16.8	2.5	14.1	25.3	0.4	9.4
East Midlands	21.6	26.8	20.4	2.3	14.4	26.7	0.0	9.2
London	21.4	19.6	23.8	2.2	7.3	34.6	0.0	12.5
UK	*21.3*	*27.5*	*19.2*	*1.9*	*13.4*	*26.8*	*0.2*	*10.9*
West Midlands	21.2	29.3	21.8	1.5	10.9	25.1	0.0	11.2
East	19.4	25.9	19.4	1.9	17.1	23.7	0.5	11.6
South West	19.1	26.2	15.7	2.0	16.8	25.6	0.2	13.5
South East	18.3	24.3	18.8	1.0	16.4	27.3	0.3	11.8

Notes: Green indicates lowest value and red indicates highest value for each column.
Source: Nomis, 2024

5.1.3 Northern Ireland has the highest rate of economic inactivity for those with a disability in the UK.[135] Over half (59.2%) of those with a disability are economically inactive in Northern Ireland, compared to 15.6% of those without a disability, shown in Figure 5.2. This gap can in part be explained by the type of disability, with some unable to work, or others facing barriers to employment, such as being unable to access public transport, being unable to work consistent hours, or having a lower qualification profile. Of those economically inactive, over one quarter stated they would like to return to work in the future, which has the potential to add 34,000 people to the Northern Ireland labour market.

[134] Pivotal, 2024b
[135] The ONS LFS defines a person with a disability as having physical or mental health condition or illness that has lasted or is expected to last 12 months or more. The condition reduces their ability to carry out day-to-day activities.

Figure 5.2: Labour market status, with vs without a disability, aged 16-64, NI, April-June 2024



Source: NISRA, 2024c

5.2 Health care

5.2.1 Health care is a prominent issue for Northern Ireland due to the constant and increasing pressure faced by the health service. This is reflected in high rates of long-term sickness amongst the working age population and increasing waiting times for treatment. For those in employment, poor health is linked to a decline in personal productivity due to absenteeism and presenteeism, where people are working despite not being fully fit due to illness or injury.[136]

5.2.2 Currently, 52% of the NI Executive's budget is allocated to the Department of Health,[137] with health having experienced the largest increase in public expenditure since 1999-2000.[138] Despite this, the health care system remains under severe pressure. Over the past decade, waiting lists have increased dramatically, by 216% for outpatient elective care, 147% for inpatient elective care, and 151% for elective care diagnostic testing.[139]

5.2.3 The Department of Health's draft 2023/24 target for outpatient waiting list times aimed to have more than half of patients waiting less than 9 weeks for a first outpatient appointment, and no one waiting over a year by March 2024.[140] On the 31 March 2024, 82.7% of patients were waiting more than 9 weeks for a first outpatient appointment, with a median wait of 51.3 weeks.[141] Similarly, the inpatient and day case target was to have 55%

[136] OECD, 2022
[137] Northern Ireland Executive, 2024
[138] See Figure 4.2
[139] Northern Ireland Audit Office, 2023, p.12
[140] Department of Health, 2024a
[141] Department of Health, 2024a

of patients waiting no longer than 13 weeks, and none waiting over a year. At the end of March 2024, 78% were waiting more than the 13 weeks and 52% were waiting over a year.[142] In comparison, only 14% of those waiting for an appointment in England are waiting over a year.[143] Indeed, it has been noted that England and Wales have significantly outperformed Northern Ireland for waiting times.[144]

5.2.4 Primary health care is similarly under severe strain in Northern Ireland. The number of GP practices in Northern Ireland has declined, from 350 in 2014, to 312 in 2024, leading to the number of patients per practice increasing.[145] While the number of GP practices in Northern Ireland is much higher than England and Wales, and just above Scotland, they are not evenly distributed geographically: Belfast has 17.0 practices per 100,000 people, while the Western Trust has 14.2 practices per 100,000 people. Ensuring prompt access and making effective use of primary care to address health issues is crucial to preventing more costly interventions being needed later.

5.2.5 Despite the pressures faced by Northern Ireland's health service, public expenditure on health in 2023-24 was £3,449 per capita, which is above the UK average of £3,288, and placing Northern Ireland at a similar level to Wales (£3,555) and Scotland (£3,305).[146] One reason for this is the higher cost of patient care in Northern Ireland: elective inpatient care costs 25% more than in England, and long-stay emergency patients care costs 33% more.[147] This is partly due to patients in Northern Ireland spending on average longer in hospital than for the equivalent treatment in England.

5.2.6 This above average expenditure emphasises the need to improve the effectiveness of health care expenditure in Northern Ireland. There have been a series of reports into how to achieve this. In 2016, a panel of experts led by Professor Rafael Bengoa published a report with 14 recommendations to improve Northern Ireland's health care system over the next 10 years.[148] This report emphasised the need to focus on care at the community level, and prevention rather than treatment of illnesses. It recommended the use of targets and timescales to enact policy changes. This was the fourth major health review in Northern Ireland, following the 2001 Maurice Hayes Review, the 2011 Compton Report, and the 2014 Donaldson Review. Following the Bengoa report, the Department of Health launched the *Health and Wellbeing 2026: Delivering Together* strategy. A 2024 review of the strategy recognised that while there had been successes, there remains much work to be done.[149]

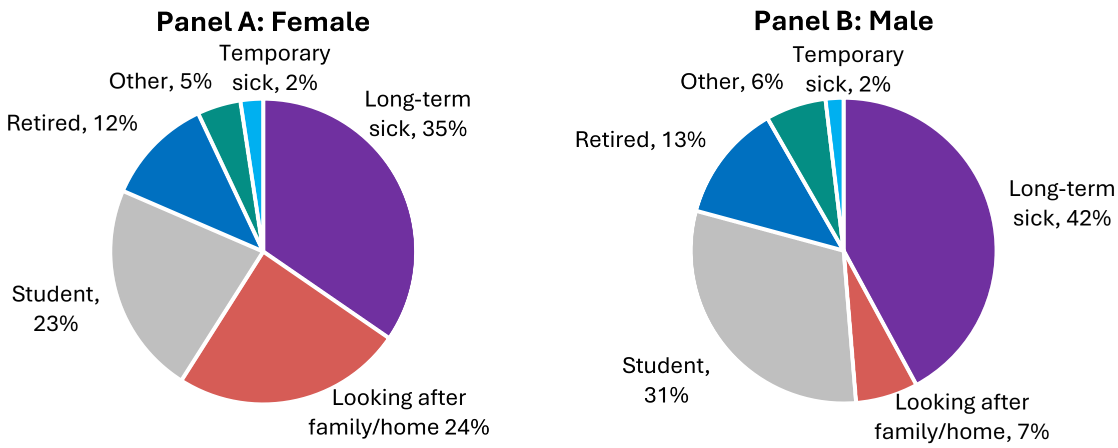
[142] Department of Health, 2024a
[143] It is difficult to fully compare waiting list times in Northern Ireland with the other UK regions due to differences in how they are measured. See ONS, 2024k
[144] Northern Ireland Audit Office, 2023
[145] Northern Ireland Audit Office, 2024b
[146] Calculated using ONS, 2024k and HM Treasury, 2024. Years are financial years, and figures converted to 2023-24 prices.
[147] Appleby, Dayan and Gainsbury, 2022, p.2-4
[148] Bengoa *et al.*, 2016
[149] Department of Health, 2024b

5.3 Social issues

5.3.1 Specific groups within Northern Ireland are more likely to face barriers to employment. This includes women, single parents, and those from deprived areas. International evidence shows that greater diversity amongst the workforce is positively related to firm productivity.[150] To boost Northern Ireland's productivity, it is important to reduce or remove these barriers to ensure those who would like to work can do so, and that they can progress their careers when in work to realise their full potential.

5.3.2 More women entering the workforce has increased Northern Ireland's labour supply, accounting for 80% of the employment increase over the last decade.[151] However, only 67.0% of women are in employment, compared to 74.7% of men in 2023.[152] Women in Northern Ireland are more likely to be economically inactive than men, at 28.2% and 21.2 % respectively. This is the highest prevalence of economic inactivity for women of the UK's twelve regions, well above the UK average of 25.2%. In terms of economic inactivity, women make up a far larger proportion of those looking after family and the home, with 24% (40,700) inactive for this reason, compared to 7% (8,100) of men, shown in Figure 5.3.[153]

Figure 5.3: Economic inactivity by type in NI, 2023



Source: Nomis, 2024

[150] Criscuolo *et al.*, 2021
[151] Department for the Economy, 2022
[152] UUEPC, 2024c
[153] While not counted statistically as work, caring for a family member or friend can be described as an informal type of work that adds value.

5.3.3 Supporting women who are currently economically inactive but want to enter the workforce should be a priority for policy, to ensure their potential is maximised. This unrealised potential is reflected in qualification levels versus employment outcomes. For educational outcomes, girls surpass boys – where 63% of girls achieve 3 A levels A*-C, compared to only 43% of boys – and 56% of those in higher education in Northern Ireland being female.[154] Despite this, inequalities in the workplace still exist, particularly within senior positions in companies, with men making up 63% of managers, directors and senior officials.[155]

5.3.4 A particular issue that affects the ability of individuals to participate in the labour force is access to childcare. This is particularly important for single parent households: in Northern Ireland, one quarter of households with children are single parent households, with women accounting for 88% of these.[156] The gap in workforce participation for single mothers is much wider for Northern Ireland (63%), compared to both the UK (6%) and Republic of Ireland (71%).[157]

5.3.5 Financial constraints are an important consideration for the parental decision to re-enter the workforce, particularly the cost of childcare.[158] A survey of childcare in Northern Ireland found that, on average, a full-time childcare place costs £10,036 annually.[159] Although this is below the UK average of £11,237, in England, Scotland and Wales, there is 30 hours of free childcare provided to working parents of 3-to-4 year olds.[160] Internationally, the UK has a large financial disincentive to enter employment, with 57% of earnings in 2022 lost to either higher taxes or lower benefits when a parent of two children takes up full-time employment and uses centre-based childcare, compared to the OECD average of 47%.[161] While those in Northern Ireland spend less on childcare than other parts of the UK, lower earnings mean that Northern Ireland has higher childcare costs relative to average income than the UK and many international peers.[162]

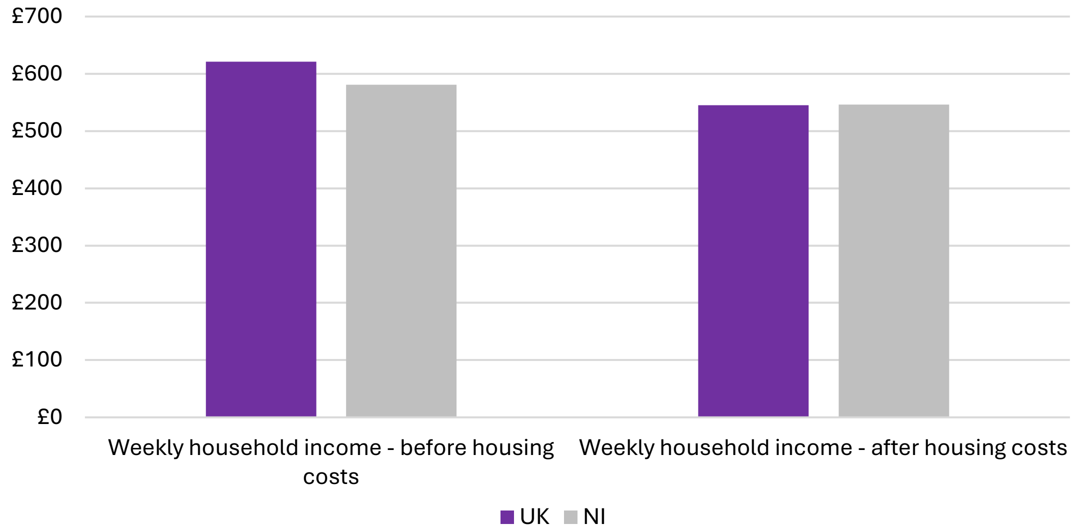
5.3.6 Socially deprived areas, with lower educational attainment and welfare dependency, typically have lower productivity levels.[163] These low-income areas can be described as "left behind places", overlooked due to their poor economic outcomes, which leads to further deprivation.[164] Historically, Northern Ireland has had a lower income per head than the rest of the UK, contributing to a higher rate of deprivation.[165] This income gap has been closing, but in 2022-23 weekly household income remained lower in Northern

[154] Department for the Economy, 2022
[155] Department for the Economy, 2022
[156] NISRA, 2023
[157] Hingre *et al.,* 2024; ONS, 2022
[158] NI Assembly Research Team, 2024
[159] Employers for Childcare, 2023
[160] Northern Ireland Audit Office, 2024c
[161] OECD, 2025
[162] DfE, 2024
[163] The Centre for Social Justice, 2018
[164] HM Government, 2022
[165] Harris,1990

Ireland, shown in Figure 5.4. However, due to lower housing costs, Northern Ireland's weekly household income is equal to the UK average. This is reflected in the different measures of poverty: in 2022-23, 19% of households were in relative poverty in Northern Ireland, below the UK average of 21%;[166] and 14% of households were in absolute poverty after housing costs in Northern Ireland, below the UK average of 18%.[167]

5.3.7 Despite this relatively better performance, addressing areas where poverty is concentrated is crucial for improving individuals' later life chances. Early years intervention is particularly important to improve outcomes, with evidence showing that social deprivation is strongly linked to poorer life outcomes, including educational underachievement, poorer health, and long-term economic and social disadvantage.[168]

Figure 5.4: Weekly household income, 2022-23



Source: Department for Communities, 2024

[166] Relative poverty measured as the rate of household income below 60 per cent of the UK median income.
[167] Department for Communities, 2024
[168] Northern Ireland Audit Office, 2021; Purdy *et al.*, 2021; Pivotal, 2022; Northern Ireland Audit Office, 2024c

5.4 Policy

5.4.1 A key theme for policy should be to reduce the barriers to employment within Northern Ireland, so that the regional economy can maximise the potential of its people, which has yet to be fully realised. Improving health services and focusing on social issues will help to lower the economic inactivity rate, increasing the labour market supply. In turn, this will increase the region's productivity, through a better allocation of individuals across the economy to jobs where they can contribute the most. Legislation on worker well-being has the potential to support this objective, supporting participation, ensuring equal opportunity, and improving job quality for those in work.[169]

5.4.2 Across this section, we have identified three main objectives for policy in Northern Ireland:

H1. **Economic inactivity:** Lower the rate of economic inactivity by reducing the barriers to employment for those that are inactive but would like to work. To do this will require more flexible work options, such as working from home and flexible hours. This can be supported through improving educational outcomes, reducing long-term sickness rates, and providing better access to employment, particularly for those with a disability.

H2. **Health care:** Improve the health care system in Northern Ireland through policies focusing on implementing the health reform recommendations, such as those set out within the Bengoa report. This will require particular focus on the identified areas of greatest need, such as reducing waiting list times, reforming service delivery, and setting achievable targets.

H3. **Social issues:** Tackle social issues that create barriers to workforce participation and career progression. This includes providing greater support to those from deprived backgrounds, so that they have more educational and employment opportunities. Similarly, improving job opportunities for women, and providing affordable childcare, are important for ensuring that those who would like to work can do so.

5.4.3 Table 5.2 below summarises the policy challenges relating to health and wellbeing.

[169] Wilson, 2024

Table 5.2: Health and wellbeing policy framework					
Policy challenges	Policy objectives	Policy stakeholders		Policy interactions	
		NI Executive departments	Delivery partners	Preconditions	Facilitates
H1. Economic inactivity: NI has high economic inactivity due to long-term sickness, and the lowest disabled employment rate	• More flexible work options, including for those returning to work • Reduce long-term sickness rates • Support the private sector to improve the disabled employment rate	• Department for Communities • Department for the Economy • Department of Health	• Health and Social Care Trusts	S1. Qualifications gap S4. Lifelong learning P1. Devolved policy P2. Public finances P3. Data gaps and limitations H2. Health care *H3. Social issues* I3. Connectivity	*H3. Social issues*
H2. Health care: The health system is facing increasing pressure from temporary and long-term sickness	• Implement existing health reform policies	• Department of Health	• Health and Social Care Trusts	P1. Devolved policy P2. Public finances P3. Data gaps and limitations	S4. Lifelong learning H1. Economic inactivity
H3. Social issues: Concentrated areas of low income and deprivation; barriers to labour market participation for women and single parents	• Support targeted at issues and areas of greatest need • Greater childcare provision • Improve job opportunities for women	• Department for Communities • Department for the Economy • Department of Justice	• Equality Commission for Northern Ireland	*S3. Skills deficit* P1. Devolved policy P2. Public finances P3. Data gaps and limitations *H1. Economic inactivity* I2. Infrastructure I3. Connectivity	B2. Innovation and R&D B4. Entrepreneurship S1. Qualifications gap *S3. Skills deficit* S4. Lifelong learning *H1. Economic inactivity*

Notes: Synergies in policy interactions identified by italics. See Appendix tables A9.4 and A9.5 for relations between all policy challenges.

6 Investment, infrastructure and connectivity

6.0.1 This section focuses on the foundations and structures in place in Northern Ireland to support productivity growth, which provides the wider business ecosystem within which firms operate. This looks specifically at the level of investment, and where the need is greatest to improve productivity in Northern Ireland. International evidence finds that increasing the level of infrastructure is a major determinant of productivity growth.[170]

6.0.2 From our analysis in this section, we have identified three key areas that need attention if Northern Ireland's productivity is to be boosted:

- Investment
- Infrastructure
- Connectivity

6.1 Investment

6.1.1 Investment is a key driver of productivity, by creating the foundations needed for growth.[171] The UK has underinvested in many physical assets across both the public and private sectors due to "short-termism", with long-term investment neglected, and the overall level being relatively low compared to other industrial economies.[172]

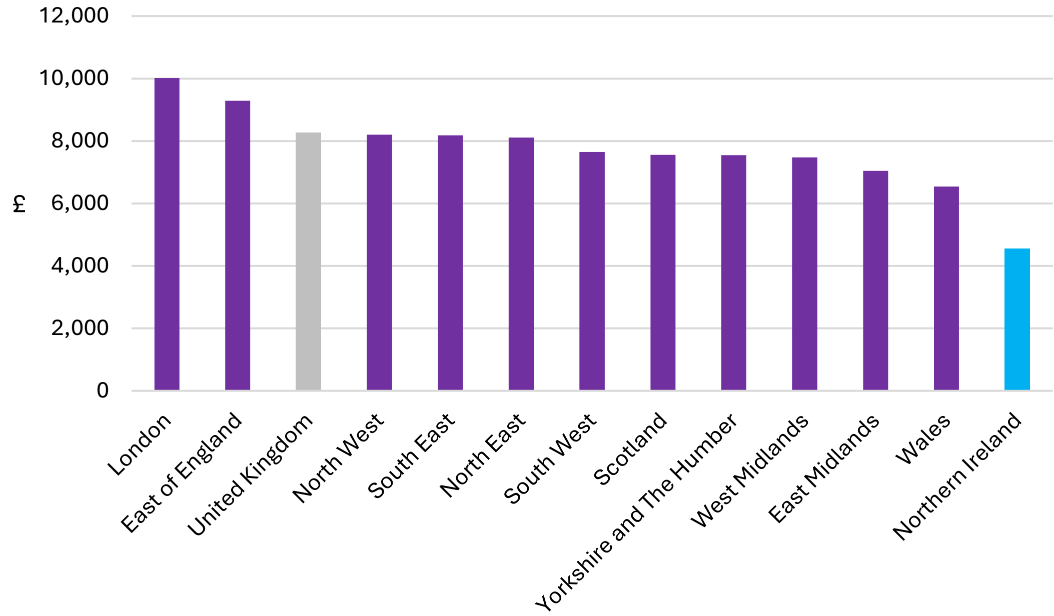
6.1.2 Gross Fixed Capital Formation (GFCF) is a measure of the total investment in tangible and intangible assets. Due to limitations with the available data, the most recent 2022 figures only include the categories of dwellings and other buildings and structures.[173] In 2022, Northern Ireland had the lowest GFCF per job of any UK region, at £4,560 in 2023 prices, shown in Figure 6.1.

6.1.3 Foreign direct investment (FDI) can improve productivity through the arrival of new, higher productivity firms, and the indirect, or spillover, effect on the wider economy.[174] Attracting FDI has been a key element of policy to improve Northern Ireland's economic performance.[175] Yet Northern Ireland has the second lowest level of total inward FDI amongst the UK's twelve regions, at £26,084 per job in the overall economy in 2021, shown in Figure 6.2.[176] This is less than half of the average UK figure of £67,483 per job. Since 2015, FDI per job in Northern Ireland has declined from fifth in the UK to twelfth in 2018,

[170] Duggal, Saltzman and Klein, 1999, p.72
[171] Chadha and Venables, 2024
[172] The Productivity Institute, 2023, p.21
[173] The 2023 publication of the experimental regional GFCF does not include industry breakdowns due to it not fully reflecting the industrial differences between regions.
[174] Driffield, Yuan and Barragan, 2022
[175] Brownlow, 2020
[176] Calculated as total inward FDI position divided by the total number of jobs in the economy, in 2023 prices.

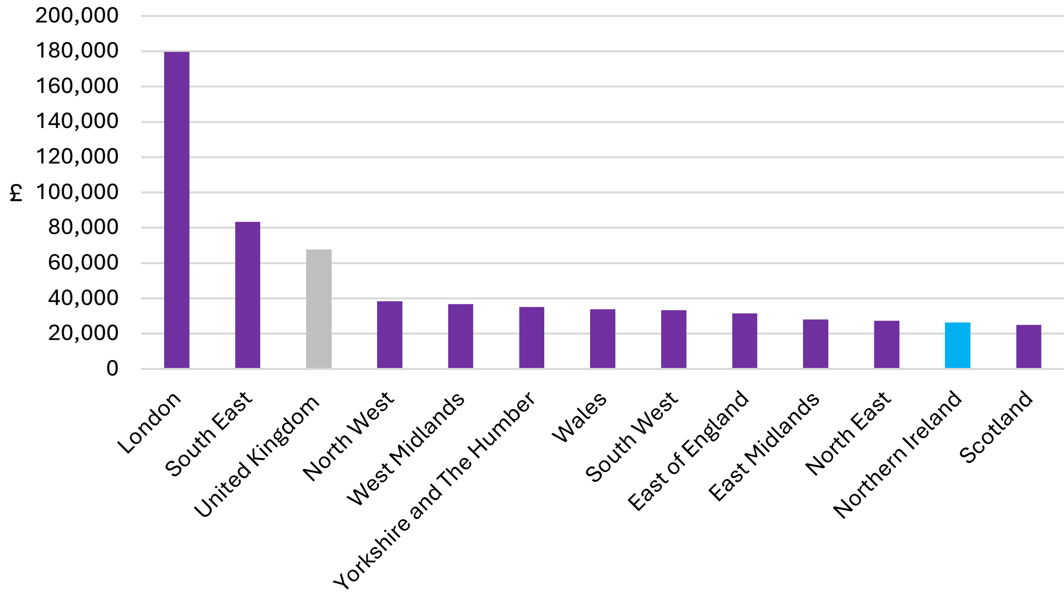
before improving slightly in 2021 to eleventh. However, the 2021 figure is still below the level of FDI seen in 2015, of £29,131 per job.

Figure 6.1: Real GFCF per job by UK region, 2022



Note: In 2023 prices. Measured relative to the total number of jobs in the economy.
Sources: ONS, 2023d; HM Treasury, 2024

Figure 6.2: Real FDI per job, 2021



Note: In 2023 prices. Measured relative to the total number of jobs in the economy.
Sources: ONS, 2023e; ONS, 2024a; HM Treasury, 2024

6.2 Infrastructure

6.2.1 Infrastructure can improve productivity growth by facilitating the attraction of investment and talent.[177] Previous research has found that Northern Ireland's wider infrastructure gap is part of the explanation for its low productivity.[178] In comparison to Great Britain, most of Northern Ireland's utility infrastructure is publicly owned, such as water and sewerage. This means there are opportunities for government policy to directly improve these areas.

6.2.2 A key gap in Northern Ireland's utility infrastructure is within the water and sewerage network, where there is insufficient capacity. There are over 100 towns and cities where the wastewater and sewerage infrastructure is nearing or at capacity, with some areas working above their intended capacity.[179] The primary reason for this is long-term underinvestment. NI Water has stated that it will need an annual investment of £350 million until 2039-40 to fully meet future demand; this is a significant increase on the current £680 million annual cost.[180] Water infrastructure capacity issues in Northern Ireland mean new houses and businesses are unable to be connected to the water and sewerage system. This will impede the delivery of current and future Northern Ireland Executive strategies for areas including housing, investment, and climate change.[181]

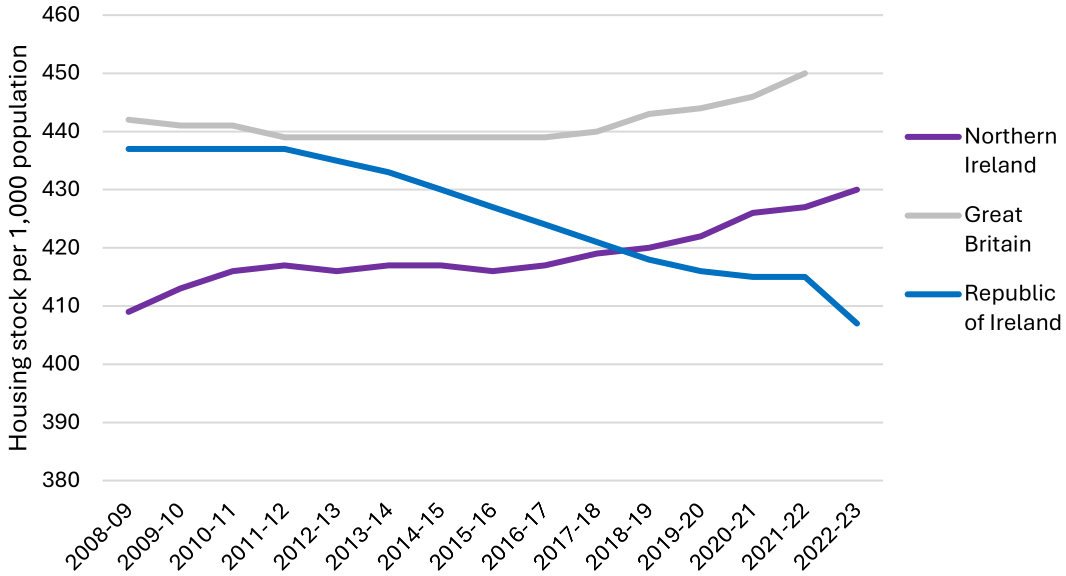
6.2.3 Attracting investment and individuals to work in or return to Northern Ireland requires an adequate housing stock. Northern Ireland has a total housing stock of 822,100 houses, with this total increasing relative to the population, from 409 per 1,000 people in 2008-09 to 430 in 2022-23, shown in Figure 6.3. Great Britain has consistently had a higher housing stock per 1,000 people, but Northern Ireland's gap has gradually declined. In contrast, Northern Ireland now outperforms the Republic of Ireland, where population growth means there are now only 407 houses per 1,000 people.

6.2.4 Despite the increase in housing stock in Northern Ireland, the rate of new houses being built has declined. The growth of housing stock has been limited due to the limited availability of water infrastructure, with a survey by the Construction Employers Federation (CEF) suggesting that it has delayed the construction of approximately 8,450 homes, equating to nearly £1 billion of stalled investment.[182] Over more than 10 years, Northern Ireland has built around 50%-60% of its new housing need, with housing completions the lowest they have been in 60 years. This constraint on housing supply may limit labour mobility, when it is reflected in higher purchase and rental prices of houses.[183] However, Northern Ireland is still relatively good value, with the second lowest average house price (£191,000) in the UK, only more expensive than the North East (£171,000), as shown in Figure 6.4. While house prices in Northern Ireland have risen by 179% in real

[177] OECD, 2022, p.78-84
[178] Jordan and Turner, 2021
[179] Norther Ireland Water, 2024, p.48
[180] Northern Ireland Audit Office, 2024d, p.21
[181] Northern Ireland Audit Office, 2024d, p.34
[182] Spence, 2024
[183] Wilson and Barton, 2023 p.5-6

terms since 1998, this is well below the 224% UK average.[184] Northern Ireland's average rental price is also relatively low, being 7th in the UK, as shown in Figure 6.5.

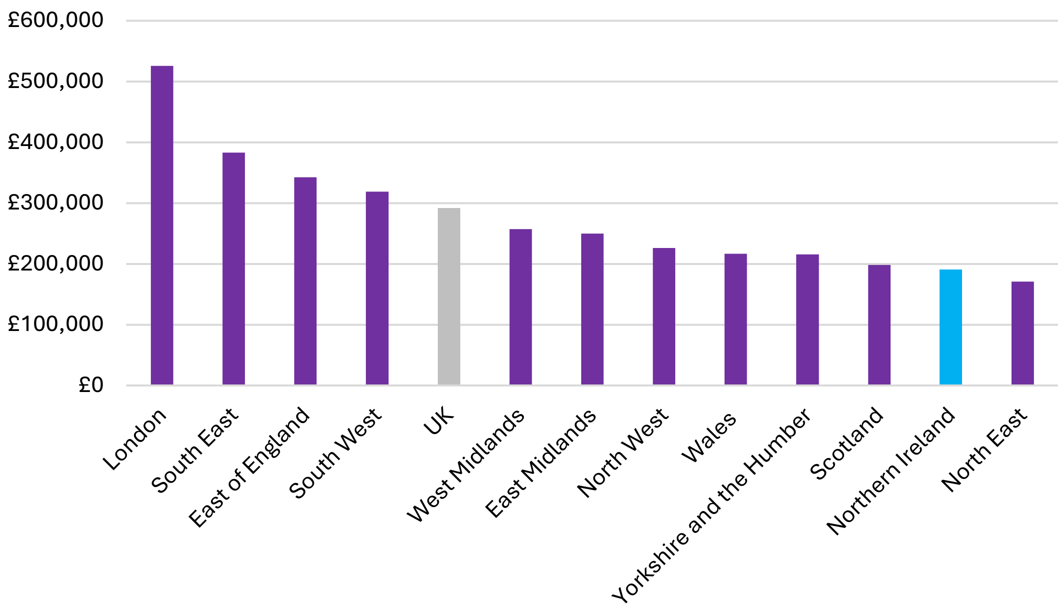
Figure 6.3: Total housing stock per 1,000 people, 2008-09 to 2022-23



Note: Data for the Republic of Ireland is an estimate and should be treated with caution. The 2022-23 figure for Great Britain is unavailable.

Source: Department of Communities, 2024

Figure 6.4: Average house price, September 2024

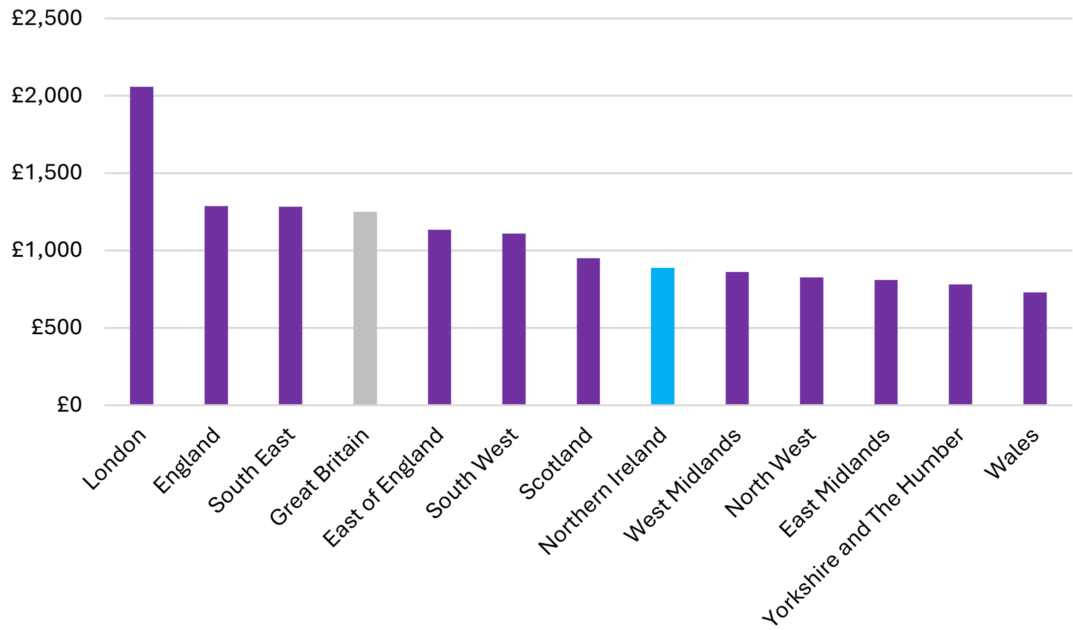


Note: The house price figure for Northern Ireland is from October 2024.

184 HM Land Registry, 2024a; HM Treasury, 2024

Source: HM Land Registry, 2024b

Figure 6.5: Average rental prices, Jan-Jun, 2024



Note: The ONS currently does not provide rental statistics for Northern Ireland, which instead are provided by the Northern Ireland Housing Executive.

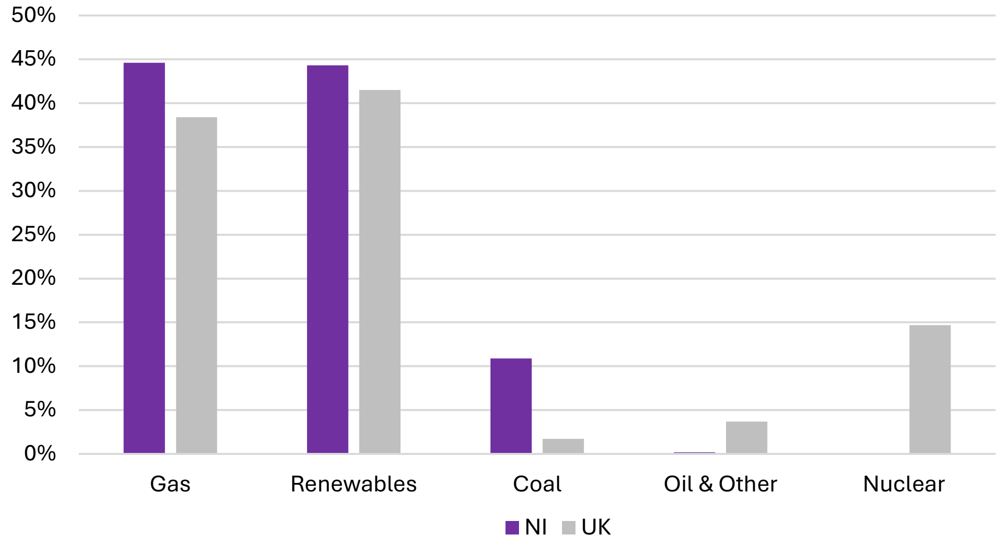
Sources: ONS, 2024l; Northern Ireland Housing Executive, 2024

6.2.5 Energy is another important utility, as the price businesses pay for their energy can determine their total costs and thus their productivity. Most of Northern Ireland's energy comes from gas and renewables, shown in Figure 6.6. Northern Ireland generates more than five times the proportion of electricity from coal compared to the UK average but does not have any nuclear generation. Northern Ireland has the lowest domestic unit energy cost at 30.6 pence per kWh, but the highest weekly household energy expenditure, shown in Figure 6.7.[185] This is due to the type of heating: gas expenditure is only around two-fifths the UK average, while the use of other fuels, such as home heating fuels, is seven times higher.[186]

[185] Total weekly expenditure on energy includes electricity, gas and other fuels.

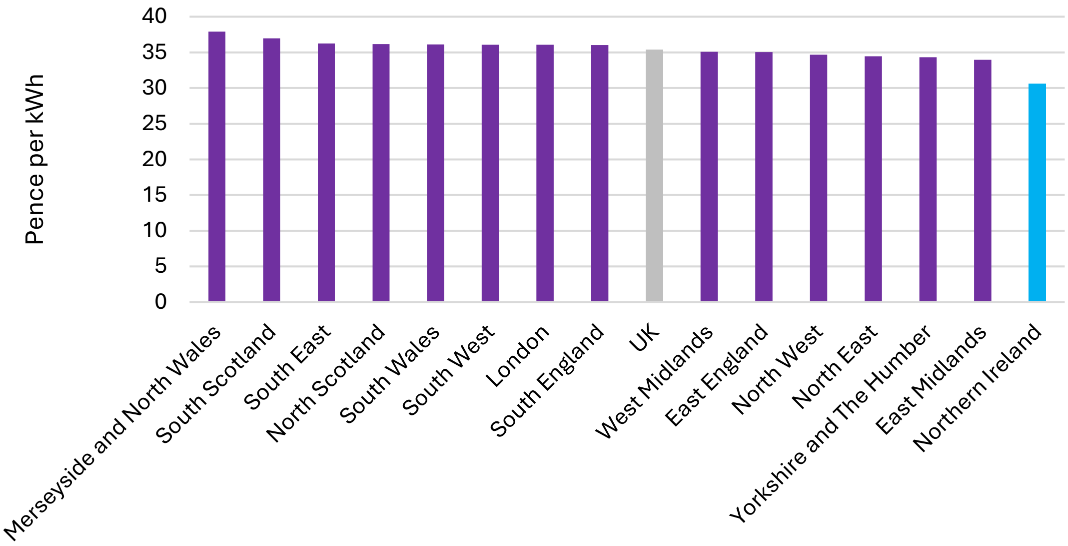
[186] Department for Energy Security and Net Zero, 2024

Figure 6.6: Electricity Generation by Fuel, 2022



Source: Department for the Economy, 2024b

Figure 6.7: Average Annual Domestic Electricity Unit Costs (pence per kWh), 2023



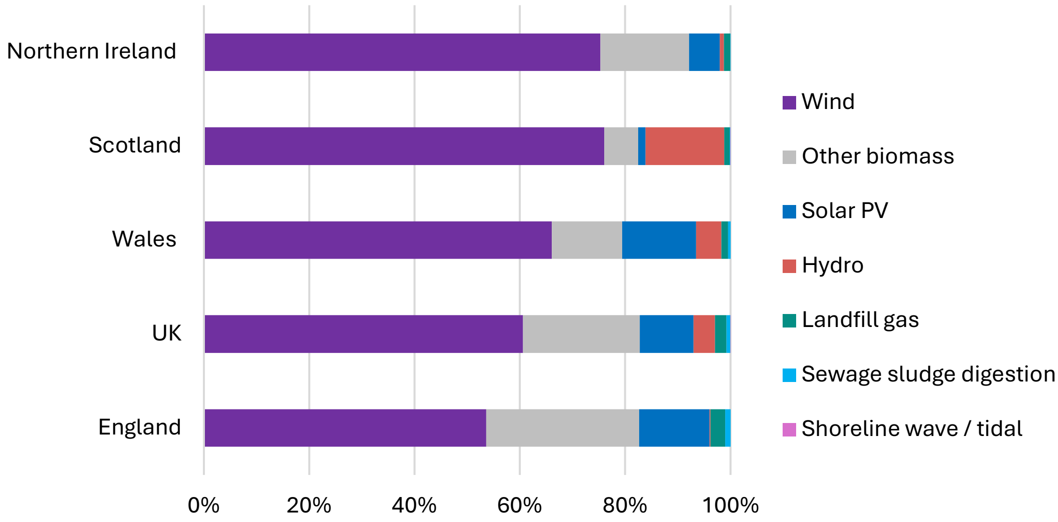
Source: Department for the Economy, 2024b

6.2.6 Producing more of Northern Ireland's power from renewable sources is an important objective for policy if it is to meet its climate targets. Almost half of Northern Ireland's electricity is generated by renewable energy sources (46%), a substantial improvement since 2013, when only 17% was renewably generated.[187] Three quarters of this is wind generated, close to Scotland's 76%, and well above the UK average of 61%, shown in Figure

[187] Department for the Economy, 2024b

6.8. The current net zero strategy has a target of 80% of electricity consumption from renewable sources by 2030.[188] This is a challenging goal to meet because it will require the proportion of renewable energy generated to almost double within this decade, compared to the previous goal, which took 15 years to go from almost zero to 40 per cent. Over the last 10 years, the proportion of renewable energy has increased by 2.9 percentage points annually. If this trend continues, Northern Ireland will not reach the target until 2035, due to barriers, such as limited grid capacity and energy storage, and insufficient investment incentives.[189]

Figure 6.8: Electricity generation by renewable type, 2023



Source: Department for Energy Security and Net Zero, 2024

6.3 Connectivity

6.3.1 Northern Ireland is a geographically peripheral region, which can have a negative effect on its productivity.[190] This can be due to hard peripherality, given Northern Ireland's physical distance from markets; and soft peripherality, where it is more distant from networks relating to new knowledge.[191] Improving connectivity is therefore important, as it allows Northern Ireland to have better access to external markets, makes it an attractive place to invest, and allows it to access new knowledge more readily.

[188] Department for the Economy, 2024b
[189] UK Parliament, 2023
[190] Jordan and Turner, 2021
[191] Brownlow, 2013; Jordan and Turner, 2021

6.3.2 Digital connectivity is facilitated by digital infrastructure, with Northern Ireland ahead of other UK regions: it is ranked first of the UK's twelve regions for gigabit-capable internet services.[192] Across internet speed measures, Northern Ireland performs better than the other UK nations, shown in Table 6.1. Almost all premises (98%) in Northern Ireland have superfast broadband coverage, with 92% having faster gigabit-capable services. Northern Ireland's residential, SME gigabit-capable, and full fibre coverage are also the highest in the UK, at 92%, 86%, and 91% respectively, ahead of the UK average in all cases.[193] This is an example of where policy – through Project Stratum – has been a success. One area of communications connectivity where Northern Ireland falls behind is 5G coverage. Northern Ireland has the lowest outdoor 5G coverage of any part of the UK, with only 72%-79%.

Table 6.1: Broadband coverage (% of premises), January 2024

	>=30Mbit/s (Superfast)	Full fibre	Gigabit-capable	5G outdoor premises coverage
Northern Ireland	98%	91%	92%	72%-79%
UK	97%	61%	78%	85%-92%
England	97%	61%	79%	87%-93%
Wales	96%	59%	67%	74%-82%
Scotland	95%	57%	73%	79%-82%

Source: Ofcom, 2024

6.3.3 An important element of physical connectivity is transport infrastructure. A transport infrastructure gap has been identified as a key part of the explanation for Northern Ireland's poor productivity performance.[194] A lack of transport infrastructure can make it more expensive to transport raw materials, which can also have the knock-on effect of limiting the industries that can establish.[195] This harms Northern Ireland's competitiveness, as better infrastructure is associated with increased inward investment and exports.[196]

6.3.4 Northern Ireland has one of the most extensive road networks in the UK when adjusted for population size, but due to its rurality, it is one of the least extensive when adjusted by area, shown in Table 6.2. Northern Ireland had a total road length of 420,279 km in 2021. Broken down by type, this is 8.0km per 1000km^2 of motorway, only half the UK average of

[192] Donaldson, Jordan and Turner, 2024
[193] Ofcom, 2023, p.9-10
[194] Jordan and Turner, 2021
[195] Jordan and Turner, 2021
[196] Oxford Economics, 2019, p.8

15.5km. However, despite its limited motorway network, Northern Ireland performs well when adjusted for population, with it only behind Scotland.

6.3.5 Northern Ireland performs more poorly for railway infrastructure. It has the lowest total railway network in the UK, with 340 km of railway lines, and when this is adjusted for both population and area, Northern Ireland is behind the other parts of the UK. Northern Ireland has 23.7km of rail per 1000km^2, almost a third of the UK average. When adjusted for population, Northern Ireland still performs worse relative to the rest of the UK, at 17.8km per 100,000 residents, below the 24.1km UK average.

6.3.6 Air connectivity is an important route to connect Northern Ireland with both the rest of the UK and internationally. In 2023, Northern Ireland had a total of 8,226,694 passengers travel through its three airports. When adjusted per airport, Northern Ireland has higher air connection intensity than both Scotland and Wales, as shown in Table 6.2. Northern Ireland also has the second highest rate of flight passengers when measured per 100,000 residents at 430,595, above the 407,910 UK average. However, Northern Ireland performs modestly compared to Republic of Ireland, with almost three times as many passengers coming through the Republic of Ireland's five international airports.[197]

Table 6.2: Motorway and railway networks

	Motorway		Rail Networks		Flight passengers	
	length per 1000km^2 (2021)	length per 100,000 residents (2021)	length per 1000km^2 (2021)	length per 100,000 residents (2021)	per Airport (2023)	per 100,000 residents (2023)
UK	15.5	5.7	65.4	24.1	5,744,411	407,910
England	23.4	5.6	88.0	21.1	7,947,322	430,709
Scotland	5.9	8.7	33.7	49.6	1,816,637	466,856
Wales	6.7	4.5	72.2	48.7	838,574	26,777
Northern Ireland	8.0	6.0	23.7	17.8	2,742,231	430,595

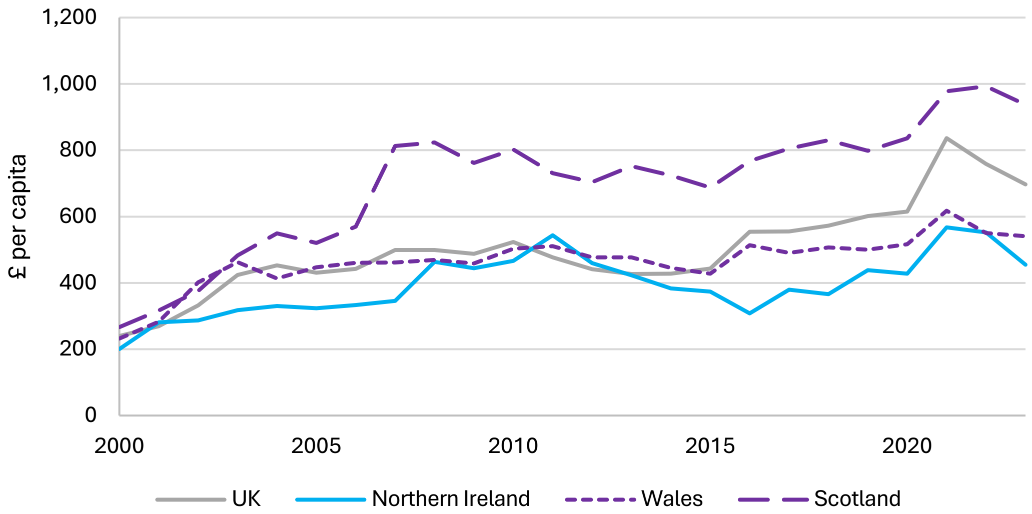
Sources: Department for Infrastructure 2022; Department for Transport, 2022; Office of Road and Rail, 2024; ONS, 2024i; Civil Aviation Authority, 2024

6.3.7 A lack of public investment in infrastructure has been linked to Northern Ireland's low productivity.[198] Public expenditure on transport in Northern Ireland has been steadily rising per capita in real terms, from £200 in 1999-00, to £454 in 2022-23, shown in Figure 6.9. The gap with the UK has widened in recent years, and Northern Ireland spends less than either Scotland or Wales. Northern Ireland's lagging behind can be seen in specific areas of infrastructure, where it has been slow to adopt new technology. For example,

[197] Civil Aviation Authority, 2024
[198] FitzGerald and Morgenroth, 2020

Northern Ireland has the lowest number of public charging devices for electric vehicles, at 32.3 per 100,000 people, almost one third of the 95.6 UK average.[199]

Figure 6.9: Real public expenditure per capita on transport, 1999-00 to 2022-23



Notes: Years are financial years. Figures converted to 2023-24 prices.
Source: ONS, 2024b; HM Treasury, 2024

6.4 Policy

6.4.1 A key aim for policy should be to increase investment in the economy, and improve infrastructure and connectivity, with a focus on targeting public investment and development where it is most needed, whilst recognising public finance constraints.

I1. **Investment**: There is a need to increase economy-wide investment to support long-term productivity growth, with policy looking at ways to support investment from the private sector. Attracting FDI has been a consistent focus for policy, yet Northern Ireland's FDI intensity has declined over time, indicating that this remains a challenge for policy to see sustained improvement. To attract FDI, Northern Ireland must focus on reducing the skills deficit, retaining and attracting talent, and prioritising political stability.

I2. **Infrastructure**: Within infrastructure, there needs to be long-term planning, with a multi-year approach to meet Northern Ireland's future needs and address persistent underinvestment. Improving water and sewerage infrastructure will have a positive effect on other areas of infrastructure, such as attracting new business investment and

[199] Department for Transport, 2024

providing housing. To transition to renewable energy sources, Northern Ireland must invest in new grid infrastructure to store energy, as renewable sources can be less consistent and more reliant on weather conditions.

13. Connectivity: Innovation and investment attractiveness is driven by connectivity, which is particularly important for geographically peripheral regions. Northern Ireland has seen policy successes, including the implementation of Project Stratum, and it must look to replicate these successes across other areas of connectivity. To improve transport connectivity, Northern Ireland must look to expand its transport infrastructure, including the public transport network, which will provide greater access to labour markets and support attracting inward investment.[200] This will require greater public investment, which will be difficult due to Northern Ireland's public finance constraints, meaning that prioritisation will be required.

6.4.2 Table 6.3 below summarises the policy challenges relating to investment, infrastructure, and connectivity.

[200] Oxford Economics, 2019, p.8

Table 6.3: Investment, infrastructure and connectivity policy framework					
Policy challenges	Policy objectives	Policy stakeholders		Policy interactions	
		NI Executive departments	Delivery partners	Preconditions	Facilitates
I1. **Investment**: Northern Ireland's rate of investment – both economy-wide and from FDI – is low relative to the UK, despite being an area of focus for policy	• Increase levels of economy-wide investment • Attract greater FDI	• Department for the Economy	• Invest NI • Intertrade Ireland • Local Councils	*B1. Export intensity* B3. Access to external finance *S2. Retaining and attracting talent* S3. Skills deficit P1. Devolved policy P2. Public finances P3. Data gaps and limitations *I2. Infrastructure* *I3. Connectivity*	*B1. Export intensity* *S2. Retaining and attracting talent* *I2. Infrastructure* *I3. Connectivity*
I2. **Infrastructure**: Under-investment in water and sewerage infrastructure has led to many areas at capacity or worse; and investment in renewable energy infrastructure is required to meet the net zero target	• Long-term programme of targeted investment in water & sewerage infrastructure where capacity is most restricted • Continue to expand new infrastructure, such as renewable energy	• Department for Infrastructure • Department for the Economy • Department for Communities	• NI Water • Strategic Investment Board • NI Housing Executive • Local Councils	B2. Innovation and R&D P1. Devolved policy P2. Public finances P3. Data gaps and limitations *I1. Investment*	S2. Retaining and attracting talent H3. Social issues *I1. Investment* I3. Connectivity
I3. **Connectivity**: Under-investment in transport infrastructure for connectivity, and slow to adopt new technology	• Development of the public transport network • Faster adoption of new technology	• Department for Infrastructure • Department for the Economy	• Translink • Strategic Investment Board	*B2. Innovation and R&D* P1. Devolved policy P2. Public finances P3. Data gaps and limitations *I1. Investment* I2. Infrastructure	B1. Export intensity *B2. Innovation and R&D* B4. Entrepreneurship S1. Qualifications gap S4. Lifelong learning H1. Economic inactivity H3. Social issues *I1. Investment*

Notes: Synergies in policy interactions identified by italics. See Appendix tables A9.4 and A9.5 for relations between all policy challenges.

7 Conclusions and recommendations

7.0.1 Low productivity is deeply embedded in Northern Ireland's economy. Because there is no single reason for Northern Ireland's productivity gap, there will be no single policy solution: instead, it will require NI Executive departments, delivery partners, and businesses to work together to tackle low productivity. Other countries and regions around the globe also face the challenge of improving their productivity. Therefore, Northern Ireland's success will be determined by how effectively pro-productivity policies are implemented.

7.0.2 Northern Ireland's productivity gap is a long-standing problem. This means it will take time to improve productivity: it will not be the work of a single Executive term. It will require policy interventions to be implemented and funded over several political mandates, with policies sequenced to maximise their effectiveness as discussed below.

7.0.3 On a more hopeful note, Northern Ireland's productivity gap is not inevitable. Ultimately, improving productivity is about our economy, and realising the full potential of the people who live and work here. That requires a commitment to removing the barriers to productivity growth, and increasing the productivity potential of the economy, which includes recognising the importance of input from different stakeholders to meet Northern Ireland's productivity challenge by 2040.

7.1 Preconditions, facilitations and synergies

7.1.1 It is important to consider how potential priorities will interact with each other to decide how best to sequence policy. A successful policy mix requires certain policy tools to be deployed only after others have been put into place.[201] We have summarised our findings from each of the five categories in Table 7.1. We have identified 18 key policy challenges to improving productivity in Northern Ireland. Each policy challenge has policies which are preconditions, policies which they facilitate, and policies they work in synergy with.[202]

7.1.2 From Table 7.1 we can see there are 10 policy challenges which possess five or more preconditions. The two challenges with the most preconditions are Innovation and R&D, and Entrepreneurship, closely followed by Export intensity with eight. This indicates that these will benefit from other policy challenges being addressed first, as they require the right foundations to be put in place before they can be tackled effectively. That these policy areas have consistently been priorities for devolved policy, but Northern Ireland still lags behind in these areas, suggesting that unlocking improved performance is tied to addressing their preconditions.

[201] Howlett, 2019, p.35
[202] See Appendix Table A9.5 for a full overview of all relations between individual policies.

7.1.3 In contrast, there are four policy challenges with two or fewer preconditions, all within policy and institutions: Trust and accountability (2), Devolved policy (0), Public finances (0), and Data gaps and limitations (0). Addressing these policy challenges requires less groundwork, meaning policy interventions in these areas can be prioritised for immediate implementation.

7.1.4 There are six policy challenges that facilitate addressing five or more other policies. The highest number is scored by three policy challenges within policy and institutions: Public finances (15), Data gaps and limitations (15), and Devolved policy (14). This means that these three areas act as facilitators, and are key to achieving improvements elsewhere, due to their positive spillover effects. These are followed by Qualifications gap (6), Connectivity (6), and Lifelong learning (5), reflecting their importance for the wider economy and society.

7.1.5 Tackling some of the identified policy challenges will have synergies. For example, both Export intensity and Innovation and R&D have positive effects on each other, meaning that policies to improve these two areas work best together. There are four policy challenges with four or more synergies: Investment (4), Export intensity (3), Innovation and R&D (3), and Devolved policy (3). Policy interventions in these areas will therefore require the greatest planning, to ensure they are mutually reinforcing with the other policy challenges they are linked to.

Table 7.1: Relationships between the policy challenges

	Policy challenges	Preconditions	Facilitates	Synergy	Total
Business performance and characteristics	B1. Export intensity	8	0	3	11
	B2. Innovation and R&D	9	1	3	13
	B3. Access to external finance	3	3	2	8
	B4. Entrepreneurship	9	2	0	11
Skills and training	S1. Qualifications gap	5	6	0	11
	S2. Retaining and attracting talent	5	3	1	9
	S3. Skills deficit	6	3	1	10
	S4. Lifelong learning	7	5	0	12
Policy and institutions	P1. Devolved policy	0	14	3	17
	P2. Public finances	0	15	2	17
	P3. Data gaps and limitations	0	15	2	17
	P4. Trust and accountability	2	0	1	3
Health and wellbeing	H1. Economic inactivity	7	0	1	8
	H2. Health care	3	2	0	5
	H3. Social issues	5	4	2	11
Investment, infrastructure and connectivity	I1. Investment	5	0	4	9
	I2. Infrastructure	4	3	1	8
	I3. Connectivity	4	6	2	12

Notes: Pairs of policies that are preconditions and facilitate each other are included only in the synergy column. Darker shading indicates greater number of policy connections. See Appendix Table A9.4 and Table A9.5 for a full breakdown of the relationships across each dashboard category, including preconditions, facilitations, and synergies.

7.1.6 To address the failure of past policy to reduce Northern Ireland's productivity gap will require a joined-up approach. In each section of the report, we have identified the primary departments and delivery partners that are central to addressing each policy challenge. For policy interventions to be effective, they will require good communication and coordination between departments and their associated delivery partners, with a collaborative approach to policy design, implementation, and evaluation.

7.1.7 Table 7.2 shows the connections between the government departments and each of the five categories. The number of policy challenges each department and delivery partner is linked to within each category is shown in brackets. This demonstrates the need to involve delivery partners in implementing solutions to these policy challenges. From this, it is evident that the Department for the Economy has a central role in addressing the productivity challenge, being directly linked to 14 of the 18 policy challenges. However, all government departments have an important part to play, with the effectiveness of policies introduced by one part of government reliant on the interactions with those implementing policies elsewhere.

Table 7.2: Key departments and delivery partners		
	NI Executive departments	Delivery partners
Business performance and characteristics	DfE (4)	Invest NI (4) Catalyst (2) Innovate UK (2) Intertrade Ireland (2) British Business Bank (1) UK Government (1) Enterprise NI (1)
Skills and training	DfE (4) DAERA (2) DE (1) DfC (1)	FE Colleges (4) Universities (4) Local Councils (1) Education Authority (1) Libraries NI (1)
Policy and institutions	TEO (3) DoF (3) *All Depts. (4)*	NI Audit Office (2) Electoral Office (1) NI Fiscal Council (1) NISRA (1) ONS (1) UK Government (1) *All delivery partners (1)*
Health and wellbeing	DfE (2) DfC (2) DoH (2) DoJ (1)	Health & Social Care Trusts (2) Equality Commission for NI (1)
Investment, infrastructure and connectivity	DfE (3) DfI (2) DfC (1)	Local Councils (2) Strategic Investment Board (2) Intertrade Ireland (1) Invest NI (1) NI Housing Executive (1) NI Water (1) Translink (1)

Notes: Numbers in brackets represent the number of policy connections for each primary department and delivery partner within each category.

7.2 A Productivity and Growth Board for Northern Ireland

7.2.1 Based on the analysis in this report, if Northern Ireland is to achieve a major improvement in its productivity over the long term, it will require a cross-departmental approach to be embedded in the policymaking process. This can be achieved through the NI Executive supporting the creation of a pro-productivity institution, such as the Republic of Ireland's National Competitiveness and Productivity Council or the Australia Productivity Commission.[203] Pro-productivity institutions are so important to the delivery of productivity and economic growth that back in 2016, the European Council recommended that all Eurozone countries create their own productivity boards.[204] There are currently 18 productivity boards in Europe.[205]

7.2.2 The chief reason for the adoption of productivity boards across the world is that governments are increasingly finding it difficult to think about the long-term structural changes needed to improve economic growth and living standards. This difficulty arises from the election cycle generating short-termism, as well as pressing short-term policy challenges.

7.2.3 Productivity boards play three important functions. First, they help governments design policy which will improve long-term economic growth. Second, they monitor and report on a country's performance in terms of productivity and its drivers. Third, they play a role in helping governments commit to long-term policies that promote economic growth.

7.2.4 Public buy-in and the legitimacy of a Productivity and Growth Board (PGB) will depend upon having a narrative that keeps the importance of productivity in the public eye. To this end, the mission of such a board will need to put its focus on well-being, shared prosperity, and sustainable economic growth.

7.2.5 Table 7.3 outlines what a productivity board for Northern Ireland might look like. This table draws from the best practice of existing and successful pro-growth institutions in Europe and elsewhere.

7.2.6 In terms of responsibilities and functions, the PGB should focus on analysis of the drivers of productivity outlined in this report. The centrepiece of the PGB each year would be its annual report on the state of productivity in Northern Ireland. This report would contain recommendations to the NI Executive in terms of short- and long-term policies that should be pursued.

7.2.7 The PGB would have to work closely with the NI Executive so that pro-growth policies can be implemented and evaluated. Political commitment is one of the key attributes of

[203] See https://www.competitiveness.ie/ and https://www.pc.gov.au/. For further details on productivity boards, see Valero and van Ark, 2023.
[204] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016H0924%2801%29; for further details on the productivity boards of Eurozone members, see European Commission, 2024)
[205] Further details on the productivity boards of EU members can be found at European Commission, 2024

successful productivity boards.[206] To ensure that the NI Executive engages meaningfully with the PGB, the good practice of the Irish government in responding to the annual report of the National Competitiveness and Productivity Council should be emulated. To help the public understand the importance of productivity for wellbeing, sustainability and inclusive growth, the PGB should actively engage with the public and disseminate its work through a wide variety of channels.

7.2.8 This report has highlighted that there are many stakeholders when it comes to improving Northern Ireland's productivity. This means that the PGB will need to work with stakeholders from business, education, further education colleges, universities, trade unions, and the healthcare sector to formulate policy recommendations.

Table 7.3: An outline for a Productivity and Growth Board

Responsibilities and functions	Stakeholder engagement, dissemination & policymaking	Institutional set-up
• Produce high-quality analysis on productivity and its drivers, and make policy recommendations to improve productivity at NI and local council levels • Evaluate the government's pro-growth policies • Produce an annual productivity report for NI which makes a series of short- and long-term pro-growth recommendations	• Work closely with government and policymakers to give effective policy advice • The government, as the chief stakeholder, has to respond publicly to the recommendations made by the PGB in its annual report • Continuous engagement with skills providers, academia, businesses through their representative bodies, and trade unions • Conduct a range of outreach and press activities to raise public awareness regarding the importance of productivity	• Independence and autonomy from government • Resources to attract high-quality members and staff

Source: Based on Cavassini *et al.*, 2022.

7.2.9 The key determinant of the success of a PGB will crucially depend on its structure, independence, and funding. The lessons from seven years of productivity boards in the EU is that their effectiveness is principally determined by their independence from government and the resources at their disposal.[207]

[206] Renda and Dougherty, 2017
[207] García, Leodolter and Turrini, 2024

7.2.10 The autonomy and independence of a PGB in Northern Ireland would be key to its success. How can autonomy and independence be guaranteed? First, its independence can be enshrined in law. Second, a PGB should have complete freedom to decide on the scope of their analysis and the content of their annual report. Third, to limit the PGB from short-term interference, there should be a multi-year budget. Fourth, those holding political or public posts should not be members of the PGB's board, and any board member who enters public or political office during their tenure can no longer serve on the board.

7.2.11 The composition of the PGB's board should reflect the drivers of productivity, the need to improve regional productivity, and the key stakeholders of the PGB. It also should reflect Northern Ireland's unique political context by having members based in both Great Britain and the Republic of Ireland.

7.2.12 The typical productivity board in Europe has 12 members, who are usually all part-time, non-salaried employees. In Table 7.4, we suggest what the membership of a PGB might look like based upon best practice and given Northern's Ireland history and context. The important role of human capital, health, and innovation in driving productivity means that we recommend having academic experts from these fields. We also think that having academic economists from the Republic of Ireland and Great Britain will help bring in wider perspectives, as well as ensuring that the work of the PGB is aligned with what is happening elsewhere on these islands.

7.2.13 Based on the experience of other productivity boards, the best type of chairperson will have a strong background and standing in the field of economics. In other words, one of the economists on the board would be its chairperson. The board members, including the chairperson, would be appointees of the Economy Minister given the central importance of the Department for the Economy for productivity policymaking.

Table 7.4: Suggested membership of the NI Productivity and Growth Board

Academics	Stakeholders
• Economist based at a NI university • Economist based at a GB university • Economist based at a Republic of Ireland university • Expert in education and skills • Expert in health care • Expert in innovation	• Representative from trade unions • Representative from Department for Economy • Representative from FE college • Representative of Belfast businesses • Representative of businesses outside Belfast • Representative of a local council

7.2.14 The best productivity boards have the resources to attract high-quality staff to do the research, draft reports and engage in dissemination. For a Northern Ireland PGB, there could be a secretariat based within the Department for the Economy. The advantage of this is that it would keep the PGB close to the policymaking process, but the downside is the threat to its independence.

7.2.15 The key takeaway of this report is that productivity is an issue that cuts right across government departments. Given that every facet of the NI Executive has a role to play in driving productivity, the PGB should report directly to the Office of the First and Deputy First Minister.

7.2.16 A productivity board for Northern Ireland is not a panacea for the region's long-standing productivity problems. Instead, it should be seen as a wider package of good governance measures that improves the wellbeing and prosperity of everyone in Northern Ireland.

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9 Appendix

9.1 Methodology

9.1.1 Our method is based on bringing together two approaches to understanding Northern Ireland's productivity performance: (i) The Productivity Institute's seven capitals framework; and (ii) The Northern Ireland Productivity Dashboard.

9.1.2 The Productivity Institute sets out the seven capitals framework, where each capital provides an underlying resource to support productivity growth.[208] A similar capitals approach was used in the UK Government's 2022 Levelling Up White Paper,[209] and originates from work by the Bennett Institute.[210] This approach recognises not just the importance of identifying barriers to productivity growth, but also "the need to co-ordinate policies and decisions by business and individuals", where investment is needed across all components to maximise returns.[211]

9.1.3 Table A9.1 provides the definition for each of the seven capitals. We use the seven capitals to identify areas where Northern Ireland faces specific challenges, whether these be in absolute terms or relative to the UK level, including relative to the performance of other UK regions. This process is informed by our 2021 insights paper, '*Northern Ireland's Productivity Challenge: Exploring the issues*', which identified the key explanations for Northern Ireland's poor productivity performance.[212]

9.1.4 To translate the capitals into actionable policy, we use the framework from the Northern Ireland Productivity Dashboard.[213] The dashboard measures how Northern Ireland performs across key drivers of productivity, relative to the UK average and other regions, and over time. It highlights where barriers to productivity growth exist, their severity, and whether progress is being made to address them.

9.1.5 The dashboard contains five categories of productivity drivers, with each relating to a different stakeholder that is primarily affected by, or interacts with, policy within each category. These stakeholders include firms, individuals in the workforce, government, individuals in society, and the wider business environment. These inform the assignment of individual policy issues within each capital to one of the dashboard's five categories, as shown in Table A9.2. Each capital can relate to multiple categories: for example, part of human capital relates to Skills and training, but part also relates to Health and wellbeing.

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[208] The Productivity Institute, 2024, p.13
[209] Department for Levelling Up, Housing and Communities, 2022
[210] Agarwala *et al.*, 2020
[211] Agarwala *et al.*, 2020, p.7
[212] See Jordan and Turner, 2021
[213] Jordan and Turner, 2022; Donaldson, Jordan and Turner, 2023; Donaldson, Jordan and Turner, 2024.

Table: A9.1 Definitions of capitals	
Capital	**Definition**
Physical	Physical capital is the stock of tangible assets, such as buildings and infrastructure. These assets are the tangible inputs to productivity that are essential for economic growth, particularly in sectors that are more reliant on physical resources, such as manufacturing.
Human	Human capital is a measure of individuals' skills, knowledge, and health attributes. These are built up over the course of life of an individual, and combine both formal and informal learning, in social, educational, and workplace settings.
Intangible	Intangible capital is knowledge-based assets, which makes them harder to define. It can include ideas and intellectual property. Being more intangible capital intensive is positively correlated with productivity growth,[214] and can account for almost a quarter of labour productivity growth.[215]
Social	Social capital is the glue within society,[216] and "is a product of networks, shared norms and trust that shape social interactions".[217] The effect of social capital on productivity is indirect through interactions between people, making it harder to measure. There are four main ways social capital can positively affect productivity: finding information, transferring knowledge and innovation, problem solving and combined knowledge, and brokerage.[218]
Financial	Financial capital provides the resources to finance a business and acquire assets. This contributes to the wealth of the individuals or the firms.
Institutional	Institutional capital covers the interactions between individuals, businesses, politicians, and policymakers, and the structure within these institutions.
Natural	Natural capital is the stock of naturally occurring assets and resources in the environment. This sees productivity interact with sustainability and the net zero challenge.

Notes: Capitals and definitions informed by The Productivity Institute, 2024; Agarwala et al., 2020; DLUHC, 2022.

[214] van Ark *et al.*, 2024, p.41
[215] Borgo *et al.*, 2012
[216] Murphy, 2010
[217] Muir, 2011
[218] Greve, Benassi and Sti, 2004

<table>
<tr><th colspan="7">Table A9.2: Policy framework</th></tr>
<tr><th>Dashboard category</th><th>Primary stakeholder</th><th>TPI capitals</th><th colspan="4">Policy analysis</th></tr>
<tr><td>Business performance & characteristics</td><td>Firms</td><td>• Intangible
• Financial
• Social</td><td rowspan="5">Policy challenges</td><td rowspan="5">Policy objectives</td><td rowspan="5">Policy stakeholders
• NI Executive Departments
• Delivery partners</td><td rowspan="5">Policy interactions
• Preconditions
• Facilitates
• Synergy</td></tr>
<tr><td>Skills & training</td><td>Individuals in the workforce</td><td>• Human</td></tr>
<tr><td>Policy & institutions</td><td>Government</td><td>• Institutional
• Social</td></tr>
<tr><td>Health & wellbeing</td><td>Individuals in society</td><td>• Human
• Social</td></tr>
<tr><td>Investment, infrastructure & connectivity</td><td>Business environment</td><td>• Physical
• Natural</td></tr>
</table>

9.1.6 Following the assignment of each policy issue to a category, we then identify the specific policy challenge Northern Ireland faces relating to each policy issue. This focuses on the way in which Northern Ireland underperforms, and from this we identify the policy objective needed to address each challenge.

9.1.7 Policy stakeholders are identified for each policy, with these divided between the primary NI Executive departments and the primary government delivery partners. This allows the links between government departments to be clearly shown, so that lead departments responsible for each policy challenge are identified, and which government partners are involved. This list of delivery partners is not intended to be comprehensive, but rather gives an indication of who key partners are for each policy challenge.

9.1.8 Our final step within the policy analysis is to map out the interactions between policies. This follows an adaption of the method presented by Taeihagh *et al.*.[219] This method defines the relations between the different policy issues, based on Table A9.3. This outlines six types of relations between policy tools, with these relations important for the successful sequencing of policy implementation.

9.1.9 If a policy has preconditions, it means that its successful implementation will be affected by the prior or concurrent implementation of other policies. Similarly, if a policy facilitates other policies, it means it is important for this policy to be implemented either earlier or concurrently to support other policy interventions. If a pair of policies fall into the category of synergy, then their success is mutually reliant on the implementation of the other. We find no relationships which are potential contradictions in our analysis, due to policies all being centred on improving productivity.

9.1.10 The relationships between different policy issues can therefore be compared, allowing policies to be prioritised that facilitate others. Understanding the interactions between

[219] Taeihagh *et al.*, 2013

policies, both over time and in specific contexts, is crucial for ensuring their effectiveness. Detail of this analysis is presented in Table A9.4 and A9.5.

Table A9.3: Types of relations between policy interventions	
Relation	Description
• Precondition (P)	A fully successful implementation of Policy A can only be achieved if Policy B is implemented beforehand.
• Facilitation (F)	Policy B works better after Policy A has been implemented, but Policy B can still be implemented independent of Policy A.
• Synergy (S)	Both Policy A and Policy B work better when the other policy is also implemented.
• Potential Contradiction (C)	Under certain circumstances, Policy A and Policy B produce conflicting outcomes or incentives with respect to a policy goal.
• No relation (NR)	The successful implementation of either policy does not affect the implementation or success of the other.

Source: Adapted from Taeihagh *et al.*, 2013

9.2 List of abbreviations

AI	Artificial Intelligence
CAFRE	College of Agriculture, Food and Rural Enterprise
CEF	Construction Employers Federation
CSO	Central Statistics Office
DAERA	Department of Agriculture, Environment and Rural Affairs (NI)
DE	Department of Education
DfC	Department for Communities (NI)
DfE	Department for the Economy (NI)
DLUHC	Department for Levelling Up, Housing and Communities (UK)
DoF	Department of Finance (NI)
DoH	Department of Health (NI)
DoI	Department of Infrastructure (NI)
DoJ	Department of Justice (NI)
EU	European Union
EV	Electrical Vehicle
FDI	Foreign Direct Investment
FE	Further Education
GB	Great Britain
GDP	Gross Domestic Product
GEM	Global Enterprise Monitor
GFCF	Gross Fixed Capital Formation
GNI	Gross National Income
GP	General Practitioner

GVA	Gross Value Added
G7	The Group of Seven
ITL	International Territorial Level
LFS	Labour Force Survey
LGD	Local Government District
NI	Northern Ireland
NIAO	Northern Ireland Audit Office
NISRA	Northern Ireland Statistics and Research Agency
OECD	Organisation for Economic Co-operation and Development
Ofcom	Office of Communications
ONS	Office for National Statistics
PGB	Productivity and Growth Board
PPP	Purchasing Power Parity
R&D	Research & Development
RHI	Renewable Heat Incentive
RQF	Regulated Qualifications Framework
SME	Small and medium-sized enterprise
SR	Spending Review
TEA	Total Early-stage Entrepreneurial Activity
TEO	The Executive Office
TFP	Total Factor Productivity
TPI	The Productivity Institute
UCAS	Universities and Colleges Admissions Service
UK	United Kingdom
USD	US Dollars
UUEPC	Ulster University Economic Policy Centre

9.3 List of policy challenges

Category		Policy challenge
Business performance and characteristics	B1	Export intensity
	B2	Innovation and R&D
	B3	Access to external finance
	B4	Entrepreneurship
Skills and training	S1	Qualifications gap
	S2	Retaining and attracting talent
	S3	Skills deficit
	S4	Lifelong learning
Policy and institutions	P1	Devolved policy
	P2	Public finances
	P3	Data gaps and limitations
	P4	Trust and accountability
Health and wellbeing	H1	Economic inactivity
	H2	Health care
	H3	Social issues
Investment, infrastructure and connectivity	I1	Investment
	I2	Infrastructure
	I3	Connectivity

Table A9.4: Full breakdown of relationships between policy challenges																	
Category	Policy challenges	Preconditions					Facilitates					Synergy					
		B	S	P	H	I	B	S	P	H	I	B	S	P	H	I	Total
Business performance and characteristics	B1. Export intensity	1	3	3	0	1	0	0	0	0	0	2	0	0	0	1	11
	B2. Innovation and R&D	1	4	3	1	0	0	0	0	0	1	2	0	0	0	1	13
	B3. Access to external finance	0	0	3	0	0	1	1	0	0	1	2	0	0	0	0	8
	B4. Entrepreneurship	1	3	3	1	1	2	0	0	0	0	0	0	0	0	0	11
Skills and training	S1. Qualifications gap	0	0	3	1	1	2	3	0	1	0	0	0	0	0	0	11
	S2. Retaining and attracting talent	0	1	3	0	1	3	0	0	0	0	0	0	0	0	1	9
	S3. Skills deficit	1	2	3	0	0	2	0	0	0	1	0	0	0	1	0	10
	S4. Lifelong learning	0	1	3	2	1	3	1	0	1	0	0	0	0	0	0	12
Policy and institutions	P1. Devolved policy	0	0	0	0	0	4	4	0	3	3	0	0	3	0	0	17
	P2. Public finances	0	0	0	0	0	4	4	1	3	3	0	0	2	0	0	17
	P3. Data gaps and limitations	0	0	0	0	0	4	4	1	3	3	0	0	2	0	0	17
	P4. Trust and accountability	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	3
Health and wellbeing	H1. Economic inactivity	0	2	3	1	1	0	0	0	0	0	0	0	0	1	0	8
	H2. Health care	0	0	3	0	0	0	1	0	1	0	0	0	0	0	0	5
	H3. Social issues	0	0	3	0	2	2	2	0	0	0	0	1	0	1	0	11
Investment, infrastructure and connectivity	I1. Investment	1	1	3	0	0	0	0	0	0	0	1	1	0	0	2	9
	I2. Infrastructure	1	0	3	0	0	0	1	0	1	1	0	0	0	0	1	8
	I3. Connectivity	0	0	3	0	1	2	2	0	2	0	1	0	0	0	1	12

Notes: For each policy challenge, numbers indicate the number of policies that are preconditions, the number of policies they facilitate, and the number of policies they share synergies with. Darker shading indicates greater number of policy connections.

Table A9.5: Policy relationships matrix

Key	
Precondition	🟪
Facilitates	🟦
Synergy	🟩
No relation	

			Business performance & characteristics				Skills & training				Policy & institutions				Health & wellbeing			Investment, infrastructure & connectivity		
			B1	B2	B3	B4	S1	S2	S3	S4	P1	P2	P3	P4	H1	H2	H3	I1	I2	I3
			Export intensity	Innovation and R&D	Access to external finance	Entrepreneurship	Qualifications gap	Retaining and attracting talent	Skills deficit	Lifelong learning	Devolved policy	Public finances	Data gaps and limitations	Trust and accountability	Economic inactivity	Health care	Social issues	Investment	Infrastructure	Connectivity
Business performance & characteristics	B1	Export intensity	▨	🟩	🟩	🟪		🟪	🟪	🟪	🟪	🟪	🟪					🟩		🟪
	B2	Innovation and R&D	🟩	▨	🟩	🟪	🟪	🟪	🟪	🟪	🟪	🟪	🟪				🟪		🟦	🟩
	B3	Access to external finance	🟩	🟩	▨	🟦			🟦		🟪	🟪	🟪					🟦		
	B4	Entrepreneurship	🟦	🟦	🟪	▨	🟪	🟪		🟪	🟪	🟪	🟪				🟪			🟪
Skills & training	S1	Qualifications gap		🟦		🟦	▨	🟦	🟦	🟦	🟪	🟪	🟪		🟦		🟪			🟪
	S2	Retaining and attracting talent	🟦	🟦		🟦	🟪	▨			🟪	🟪	🟪					🟩	🟪	
	S3	Skills deficit	🟦	🟦	🟪		🟪		▨	🟪	🟪	🟪	🟪				🟩	🟦		
	S4	Lifelong learning	🟦	🟦		🟦	🟪		🟦	▨	🟪	🟪	🟪		🟦	🟪	🟪			🟪
Policy & institutions	P1	Devolved policy	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟦	▨	🟩	🟩	🟩	🟦	🟦	🟦	🟦	🟦	🟦
	P2	Public finances	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟩	▨	🟩	🟦	🟦	🟦	🟦	🟦	🟦	🟦
	P3	Data gaps and limitations	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟦	🟩	🟩	▨	🟦	🟦	🟦	🟦	🟦	🟦	🟦
	P4	Trust and accountability									🟩	🟪	🟪	▨						
Health & wellbeing	H1	Economic inactivity					🟪			🟪	🟪	🟪	🟪		▨	🟪	🟩			🟪
	H2	Health care								🟦	🟪	🟪	🟪		🟦	▨				
	H3	Social issues		🟦		🟦	🟦		🟩	🟦	🟪	🟪	🟪		🟩		▨		🟪	🟪
Investment, infrastructure & connectivity	I1	Investment	🟩		🟪			🟩	🟪		🟪	🟪	🟪					▨	🟩	🟩
	I2	Infrastructure		🟪				🟦			🟪	🟪	🟪				🟦	🟩	▨	🟦
	I3	Connectivity	🟦	🟩		🟦	🟦			🟦	🟪	🟪	🟪		🟦		🟦	🟩	🟪	▨

Interpretation: The table should be read from the left to right (across rows), with the colours denoting the relationship between the policy challenges on the vertical axis with those on the horizontal axis. See Table A9.3 for the definitions of relations.

For example: for B1 Export intensity (vertical axis), it has a precondition of B4 Entrepreneurship (horizontal axis).