Shared Island: Projects, Progress & Policy
The Island Economy

SECRETARIAT PAPER

No.25 May 2021

NESC
An Chomhairle Náisiúnta Eacnamaíoch agus Shóisialta
National Economic & Social Council

An Oifig Náisiúnta um Fhorbairt Eacnamaíoch agus Shóisialta
National Economic & Social Development Office NESDO

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Executive Summary

This paper traces the evolution of the two economies, north and south, on the island of Ireland. It describes similarities and differences in the structure of the economies and the connections between them.

Evolution of the economies on the island: similarities and differences between Ireland and Northern Ireland

The experience of strong economic growth in Ireland has led to differences between north and south. Macroeconomic measures of income or output per head are now considerably higher in Ireland compared to Northern Ireland. From the late 1960s, productivity growth in Ireland was growing faster than the EU average, but Ireland's income per head was held back on account of limited growth of employment. This changed from the late 1980s when Ireland's share of the population in employment began to increase and, combined with continuing strong productivity growth, Ireland caught up with the EU average level of income.

The Northern Ireland economy has not experienced a comparable catching-up with the EU or UK level of output or income per head. Its GDP per head in 2018 was around 82 per cent of the EU (28) average. There is little difference today between the two economies on the island in terms of the share of the population in employment. However, there is scope in both parts of the island to increase this share.

The level of productivity in Ireland is now appreciably higher than Northern Ireland and this is the reason for higher aggregate income per head in Ireland. Multinationals play a major role in the higher productivity in Ireland. Foreign investment in Northern Ireland has not had as big an impact on productivity levels. Higher productivity in Ireland arises primarily from higher productivity in individual sectors rather than differences in the structure of employment.

In both jurisdictions, there is regional variation in productivity. Notably, it is mostly at a similar level in areas adjacent to both sides of the border and below the average of the respective jurisdiction.

There are important differences in the export bases of the economy, north and south. Ireland has developed high-value sectors in goods and services that export on a very large scale to European and global markets. Exports have played a critical role in allowing Ireland's economy to achieve strong growth in income and living standards from the 1990s, and they support highly-paid employment and generate a high level of corporate tax revenue.

The Northern Ireland economy is less export-oriented and has a higher share of goods rather than services in total exports compared to Ireland. Its external sales are substantially concentrated on Britain (€11.9bn) and Ireland (€4.7bn) (approximately two thirds of all external sales, €24.5bn). After sales to Britain, Northern Ireland exports more to Ireland than to any other country in the world. Machinery and equipment is the most valuable export sector for Northern Ireland but external sales of services are growing rapidly; the value of these almost doubled in nominal terms over the seven years to 2018.

Higher productivity is reflected in higher wages in Ireland. The average (mean) value of gross earnings in Ireland was approximately one third higher than in Northern Ireland in 2019 in nominal terms. Taking account of the higher cost of living in Ireland, it is estimated that annual gross earnings in Ireland are 20 per cent higher than in Northern Ireland.[1] The median value of gross earnings (the level below which half of workers earn less and half earn more) in Ireland in 2018 was 11 per cent higher than in Northern Ireland, after taking account of consumer price differences.

The economy in Northern Ireland has been more stable compared to Ireland. The experience of the recession that began in 2008 was much less severe in Northern Ireland. While the annual average rate of unemployment reached over 15 per cent in Ireland, the highest corresponding rate for Northern Ireland was 7.5 per cent. Prior to the pandemic, the unemployment rate in Northern Ireland in 2019 was 2.7 per cent compared to 5.0 per cent in Ireland.

Living standards depend on taxation and provision of public services and benefits, as well as employment, wages and prices. Living standards, as measured by the average private consumption and government spending on services, were estimated to be 3 per cent higher in Northern Ireland in 2016 due to higher provision of public services there. This

[1] This is based on the difference between consumer prices in Ireland and the UK as a separate price index is not available for Northern Ireland. Insofar as prices are lower in Northern Ireland relative to the UK, this will understate the relative value of wages, incomes and living standards in Northern Ireland.

measure has some limitations. First, not all government consumption expenditure has a tangible effect on living standards. Second, the measure takes account of differences in housing costs, but the adjustment is based on average UK housing costs rather than Northern Ireland costs. It is not a comprehensive measure of the quality of life.[2] The subvention to Northern Ireland from the UK government helps to support living standards.

Relative income poverty is the share of population below a specified income level such as 60 per cent of median income. The share of the population in relative income poverty is lower in Ireland compared to Northern Ireland.

Economic links on the island

Trade represents the most substantial economic connection on the island. There is some uncertainty in the data on cross-border trade, but Intertrade Ireland estimated the total value of this trade at €7.4bn in 2018. For both economies, cross-border trade is of particular significance for smaller companies and as a stepping stone to larger markets. Cross-border flows are also important for supply chains on the island.

There is uncertainty about the total number of cross-border workers. The most comprehensive source for this is the census in both jurisdictions but this information is dated. The 2021 census is now underway in Northern Ireland while that for Ireland has been postponed to 2022 due to Covid. The 2016 census in Ireland shows that there were just over 7,000 workers in Ireland commuting to Northern Ireland, an increase of 10 per cent on 2011. In 2011 there were 6,300 people commuting from Northern Ireland to Ireland for either work or study. This only includes those travelling to a fixed place of work. Considerably more workers would cross the border in the course of their work but the numbers involved are not known.

The energy sector is one in which there has been successful and sustained cross-border co-operation. The electricity market is organised on an all-island basis and this is set to continue despite Brexit. This has improved efficiency and provided cost savings. However, the full benefits of an integrated electricity system on the island would require completion of the north-south interconnector. This would improve security of supply, support the expansion of renewable electricity and provide cost savings to consumers. In both north and south, there is an emphasis on the rapid and ambitious scale-up of renewable energy to meet 2030 targets and this provides opportunities for collaboration, as discussed by NESC (NESC, 2021).

Intertrade Ireland has published research on the spatial pattern of enterprises by sector across the island, and the scope to promote the development of successful economic sectors on an all-island basis. This research identified three economically significant sectors (pharmaceuticals, medical devices and software) that have considerable potential benefits from enhanced co-ordination in relation to research, innovation, education and training. Other research on the Dublin-Belfast Economic Corridor identified many possibilities for beneficial co-operation, including the areas of skills development, research and infrastructure.

The agri-food sector plays an important role on the island of Ireland. In both jurisdictions, dairy and cattle account for the highest share of agricultural output. Agriculture north and south faces common environmental challenges and the same economic problem of volatile farm incomes. Given the similarities, common challenges and linkages in the agri-food sector, there would seem to be considerable scope for enhanced co-operation in the years ahead.

Movement towards a sustainable pattern of economic development is required in both parts of the island. Both jurisdictions need to achieve major reductions in greenhouse-gas emissions and to shift from a decline in biodiversity to its restoration. NESC has published a consultation paper on *Climate and Biodiversity Challenges and Opportunities for the Island of Ireland* (NESC, 2021). Following consultation, further research on sustainability issues in the Shared Island context is being undertaken by NESC.

Despite differences in the economies on the island, the expansion of cross-border trade and the increased interconnections of business on the island mean that to some extent an island economy has been developed. This needs to be sustained through enhanced co-operation, to the mutual benefit of both parts of the island.

Brexit poses unique challenges for the island but also presents opportunities in some sectors. For Northern Ireland, there is also an overall opportunity in that it is the only region that, in relation to goods, enjoys no trade barriers to either the EU Single Market or the rest of the UK internal market. This should be used to reinvigorate investment in Northern Ireland.

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[2] A number of quality of life indicators are presented in this paper, drawing on Bergin and McGuinness (2021).

1.1 Introduction

This paper provides an overview of the economies on the island of Ireland, north and south, and the connections between them. Following some discussion of the measurement of economic performance (Section 1.2), the paper provides a brief historical overview of economic development on the island and the evolution of macroeconomic measures of income (Section 1.3). Subsequent sections examine developments in productivity (Section 1.4), unemployment (Section 1.5), trade (Section 1.6) and living standards (Section 1.7). Section 1.8 discusses underlying factors affecting the performance of the Northern Ireland economy. Next, economic connections on the island are explored, focussing on cross-border trade, cross-border movement of workers, energy and tourism (Section 1.9).

Research by Intertrade Ireland on the spatial distribution of economic activity on the island and potential for a collaborative approach to three economically significant sectors is summarised in Section 1.10, while Section 1.11 concludes the paper.

1.2 Measuring Economic Progress

At the outset, it is worth noting an important point about measurement of economic activity. GDP and GDP per capita are widely used measures of economic performance. There are well-known difficulties with the use of GDP for Ireland, and for that reason analysts of the Irish economy typically used GNP until recently. However, in recent years GNP has also become problematic as an indicator for Ireland. Following an examination of the issues, the CSO began producing a new indicator: modified gross national income (GNI*), which seeks to remove the impact of accounting distortions on the measurement of Ireland's national income. In this paper, *modified* GNI* is used as the measure of Ireland's national income in recent years, while for earlier years use is made of GNI.[3] For Northern Ireland, GNI or GNP measures are not available so GDP is used. Comparisons are made between modified GNI* in Ireland and GDP in Northern Ireland.

In drawing these and other comparisons in this paper the data are expressed in purchasing power standard terms. This is an artificial currency that adjusts for price differences between countries. In making this adjustment for Northern Ireland, the adjustment is based on UK prices.

Modified GNI* is not a measure of living standards. 'Actual individual consumption', adjusted for price differences, is a measure that can be used to compare living standards internationally. This measure covers private consumption and also government services such as health and education that are directly consumed by households[4]. Honohan (2021) has recently pointed out that Ireland's relative prosperity measured on this basis is substantially lower than on the basis of GDP or modified GNI*. While Ireland's modified GNI* was 9 per cent above the EU average in 2019, actual individual consumption (adjusted for consumer price differences) was 6 per cent below the EU (28) average, and Ireland ranked 12th within the EU (28). On this measure, Ireland was 14 per cent below the UK in 2019. Actual individual consumption is not available for Northern Ireland but other measures of consumption are used in Section 1.7 to compare living standards, north and south.

Actual individual consumption is affected by household and government savings. In addition, a major factor in Ireland's lower ranking in terms of consumption as against national income is the relatively high level of consumer prices in Ireland. Ireland's consumer prices were estimated to be 23 per cent above the EU (15) average and 12 per cent above the UK in 2019.[5]

In regard to income, household income is also important, as is its distribution. Data on this is presented in Section 1.7.

Probably the most significant limitation of GDP and related measures of performance is that they do not give any indication of the sustainability of current output or income. Economic activity generally is putting huge pressure on the

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3 The CSO has published modified GNI* data from 1995. This series excludes certain elements of GNI that in recent years have distorted GNI. For years prior to 1995, standard GNI data is used.

4 Actual individual consumption does not cover collective government services such as defence or public and private investment.

5 Comparisons of GDP and GNI presented in this paper also take account of price differences. However there are separate price adjustments for the different components of GDP. The price difference between Ireland and other countries is greater for consumer prices than the average price difference for GDP.

planet, in a way that threatens the ability to meet future needs. A recent United Nations Development Programme (UNDP) report on measuring progress pointed out that 'warning lights—for our society and the planet—are flashing red' (UNDP, 2021: 3). That report cites the Covid-19 pandemic as the latest consequence of imbalances arising from pressures on ecosystems. There is also the continuing threat posed by climate change. In addition, the report points out that 'the planet's biodiversity is plunging, with a quarter of species facing extinction, many within decades' (UNDP, 2020: 3). Reversing the loss of biodiversity is a shared challenge on the island of Ireland and there is a need to build on existing collaborative work in meeting this challenge (NESC, 2021).

The pressures on the environment and critical natural resources lead some to question the desirability of continuing economic growth. There is a literature on 'De-growth' that proposes an equitable downscaling of production and consumption (Kerschner, 2010: 544).

It is argued by Daly, a leading figure in ecological economics, that for many countries GDP growth has become 'uneconomic' because the costs of generating growth, including environmental damage and depletion of natural resources, exceed the additional benefit of higher GDP. In Daly's perspective there is a need to limit what he refers to as 'throughput', the use of energy and materials. If these are appropriately limited, he is open to the possibility that GDP growth could continue on the basis of qualitative improvements and greater efficiency (Daly, 2012). For Daly, the critical issue is limiting throughput.

An overlapping but different perspective on these issues is provided by Helm, who is a leading proponent of the concept of natural capital. Helm argues that the preservation of natural capital should be an urgent policy priority and that this would in the short term lead to lower living standards. However, he does not see economic growth itself as the problem: 'it is the sort of *unsustainable* growth we now have that is the problem' (Helm, 2015: 15). He argues that zero growth has two serious defects as a solution: 'it is not necessarily desirable and it is never going to happen' (*ibid.* 15).

Although the focus of this paper is on economic performance in Ireland, north and south, other dimensions of performance are clearly important. A recent paper by Bergin and McGuinness (Bergin & McGuinness, 2021) compared measures of income and a range of indicators on quality of life on the island of Ireland; their key findings are summarised in Section 1.7.

This is one of a series of papers in NESC's shared island project. In addition, the next phase of this research will, among other issues, focus on the question of sustainability and how this is understood in the policy process in both jurisdictions. The Programmes for Government in both jurisdictions are committed to developing and implementing wellbeing frameworks. NESC is providing a vehicle for consultation with stakeholders on the development of the wellbeing framework for Ireland.

1.3 Evolution of the Economies on the Island

1.3.1 Historical Overview

As the industrial revolution advanced in the 19th century, most of the island of Ireland experienced industrial decline, as the existing industries were mainly not able to compete with the much higher productivity of industries in Britain. The major exception to this was in the north-east of the island where industrialisation did take place (Barry, 1999). In the early 20th century there was a concentration of heavy industry around Belfast. The largest textile machinery, rope-making and cigarette factories in the world were then in Belfast (Bernie & Hitchens, 1999). The effect was that, when the two jurisdictions were established on the island, they had very different economic bases. The newly established Irish state has been described as 'an agricultural economy with a very small, mainly agri-business industrial sector' (Bradley & Best, 2012: 81). Despite the structural differences, there was not a major difference in terms of the level of GDP per head, estimated by Kennedy *et al*. (1988) at 56 per cent of the UK level for Ireland and 62 per cent of the UK level for Northern Ireland in 1926.

Both economies experienced slower growth than the UK overall, in the period up to the Second World War. While Northern Ireland had a substantial industrial base, its economy and industry were strongly specialised in a few sectors (farming, linen and other textiles, and shipbuilding). Bernie and Hitchens point out that during the 1920s and early

1930s export demand for these products declined (Bernie & Hitchens, 1999). The Northern Ireland economy experienced an upturn during the Second World War and in its aftermath, and output per head grew faster than in both the UK overall and Ireland.

For the most part the new Irish state during the 1920s continued to adopt a free-trade approach; there was modest use of protective tariffs on a selective basis. There was a change in policy in the 1930s with the widespread introduction of protectionist measures. Protectionism led to an increase in industrial output and employment but there was little increase in productivity (Kennedy *et al*., 1988).

Ireland was not unique during the 1930s in adopting protectionist policies, although the experience of the Economic War with Britain in a dispute about the payment of land annuities was distinctive. Ireland was relatively slow among European countries in shifting away from protectionism in the post-war years. This is widely agreed to have been costly. However, it is argued by O'Rourke (2016) that even in the 1950s Ireland was not as uniquely protectionist and inward-looking as sometimes claimed. He points to Ireland being a founder member of the Organisation for European Economic Co-operation (OEEC) in 1948 and the European Payments Union in 1950. In terms of quantitative barriers to trade such as quotas (which are more damaging than tariffs), Ireland was the second-least protectionist country in the OEEC in 1950. Ireland was slower to reduce tariff barriers than core European countries. In this respect Ireland was more like other peripheral European countries at this time, including Finland, Greece and Spain.

The 1950s was a time of economic boom in Europe but neither of the economies on the island of Ireland experienced much growth. Growth of GDP per head was at similar growth rates, north and south, but in the case of Ireland this relied, in part, on population falling due to emigration.

While the 1950s were a time of poor economic performance in Ireland, important building blocks were put in place towards the adoption of a new economic development policy. The Industrial Development Authority (IDA) had been established in 1949 to initially review the operation of tariffs and quotas. In 1952 its remit was extended to attracting foreign investment as well as encouraging the establishment of indigenous industry. In 1951 the Irish Export Board was established to promote Irish exports. In 1956 a policy of tax relief on corporate tax for exports was introduced. This evolved in subsequent decades to the current 12.5 per cent corporate tax rate.

Kennedy *et al.* characterise these and other developments as taking place in a piecemeal fashion and as not always successful initially. In 1958, an *Economic Development* study was published, written by the Secretary of the Department of Finance, T.K. Whitaker. This brought a coherence to the emerging export-oriented strategy, according to Kennedy *et al*., and also signalled an intention to move to free trade. This move was a gradual one, beginning with unilateral tariff cuts in 1963 and 1964, while the Anglo-Irish Free Trade Agreement was negotiated in 1965.

The 1960s saw an improved performance of both economies on the island, and the growth rate of output per head in both cases was faster than the UK. However, in neither case was there catching-up with the faster-growing European countries. It is argued by O'Rourke (2016) that the Irish economies north and south continued to underperform in this period, as growth was considerably faster in other lower-income European economies (Spain, Portugal and Greece), which experienced above-average growth in this period.

O'Rourke poses the question as to how Greece and Portugal were able to achieve much faster growth than Ireland during the 1960s. In the case of Greece, tariffs were even higher than Ireland's. O'Rourke identifies Greece's association agreement with the European Economic Community (EEC) as a key factor in its success at that time. This provided a major stimulus for foreign investment. Likewise, Portugal was a founding member of the European Free Trade Association in 1960 and also experienced a sharp rise in foreign direct investment. Prior to Ireland's membership of the EEC, the IDA had to sell Ireland as an export base for the UK and the Commonwealth, which O'Rourke points out was never as effective as selling Ireland as an export platform to the EU.

In addition to the obvious human costs, the start of the Troubles in the late 1960s substantially damaged the economy in Northern Ireland. Employment in manufacturing began to fall from the late 1960s, while it continued to expand in Ireland. Bradley and Best point out that the decline in manufacturing employment in Northern Ireland followed a similar decline to that experienced in Britain. However, Northern Ireland differed from the rest of the UK in the extent to which it relied on public-sector employment to offset this.

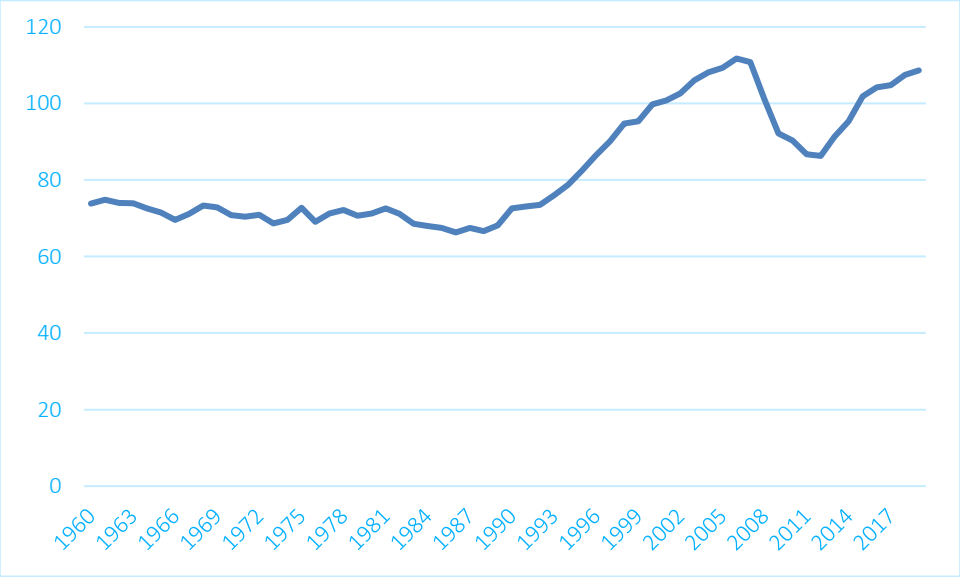
The 1970s were characterised by a widespread slowdown in economic growth, arising from the ending of the post-war boom and the two oil shocks. Economic growth in Ireland over the period 1973–80 was the highest in the then EEC. This, however, was achieved at the cost of a high level of foreign borrowing and was followed by a period of very low growth in the first half of the 1980s.

1.3.2 Emergence of Growth from the Late 1980s

From the late 1980s, and particularly from 1994, Ireland entered a phase of exceptionally strong economic growth. There was rapid progress in catching up with the income levels of richer European economies. The level of gross national income per head in Ireland rose from 62 per cent of the EU average in 1987 to 111 per cent in 2007 (see Figure 1). Ireland's gross national income per head then fell sharply with the economic crash in 2008, but by 2019 it had increased again to 109 per cent of the EU average.

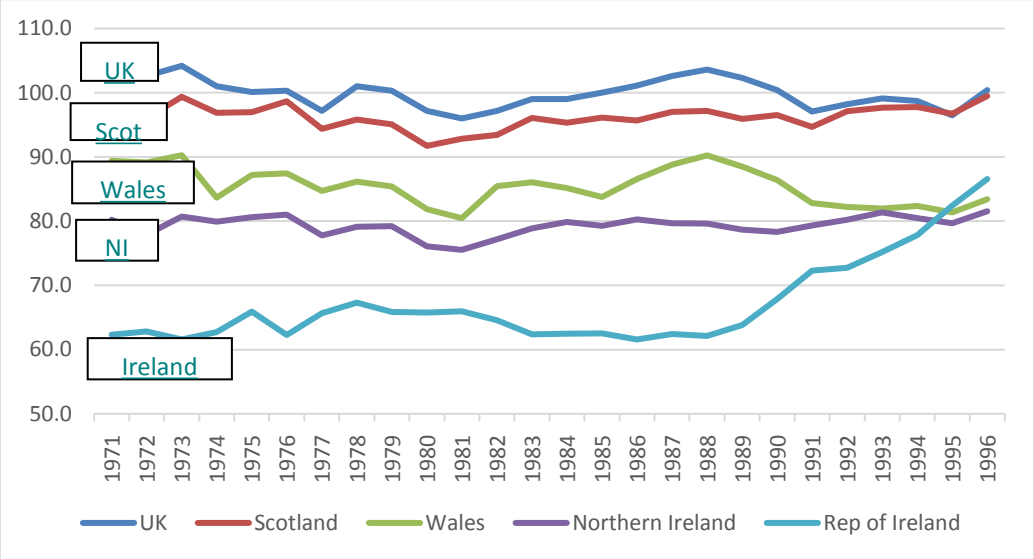
There was rapid progress in Ireland in the 1990s in catching up with the levels of GDP per head in the countries of the UK, including Northern Ireland (see Figure 2) (using GNI per head as a better measure for Ireland). There was a sharper fall in Ireland's economy compared to Northern Ireland and other economies from 2008 (see Figure 3). From 2013, economic growth in Ireland returned at an above average rate until the Covid crisis. In the early 1990s national income per head in Ireland was around 90 per cent of Northern Ireland's GDP per head, while economic growth since then has led to it to now being substantially higher.

Figure 1: Gross National Income per Head for Ireland relative to the EU (15) = 100, 1960 to 2019 (Purchasing Power Standard terms)



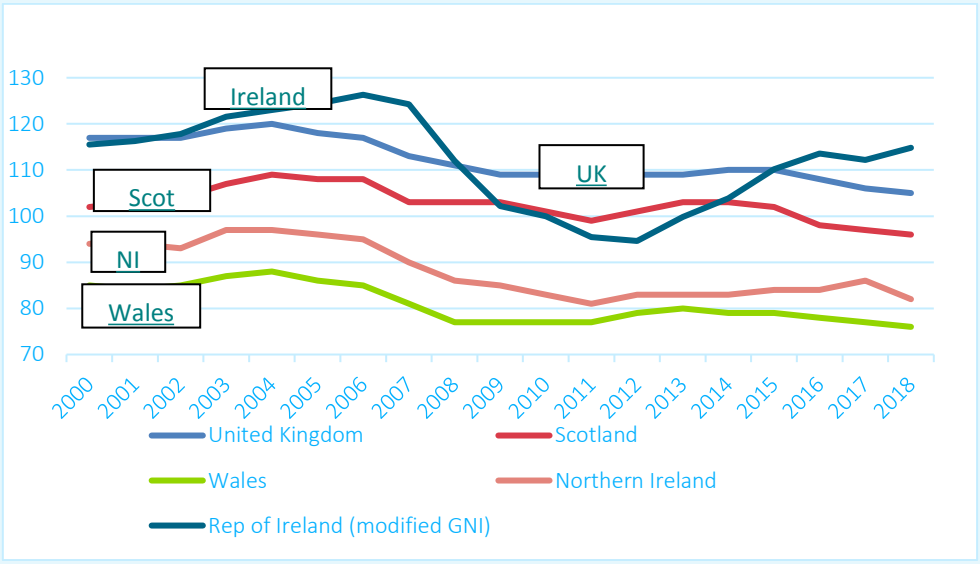
Source: European Commission AMECO database. From 1995 the GNI figures are converted to modified GNI* using CSO data. The data is presented in purchasing power standard terms. This means that it is expressed in a common currency that takes account of price differences.

Figure 2: GDP per Capita relative to the EU (15) = 100 for UK, Scotland, Wales, Northern Ireland and Ireland (GNI per capita), 1971 to 1996 (Purchasing Power Standard terms)



Source: UK country data are based on GDP at factor cost from the Office of National Statistics. These figures have been applied to the index of GDP per capita for the UK relative to the EU (15) from the European Commission AMECO database to compute data for Scotland, Wales and Northern Ireland relative to the EU. The GDP figures for Ireland are converted to GNI using CSO data from 1971 to 1994 and converted to modified GNI *from 1995 onwards.

Figure 3: GDP per Capita relative to the EU (28) = 100 for UK, Scotland, Wales, Northern Ireland and Ireland (GNI* per capita), 2000 to 2018 (Purchasing Power Standard terms)



Source: Calculated from Eurostat data. For Ireland, the GDP data in purchasing power standard terms have been converted to modified GNI* using CSO data.

Growth as measured by national income measures such as GNP (with modified GNI now considered the best measure for Ireland) is not the same as growth in household income. However, the expansion of national income from 1987 in Ireland has been matched by a large increase in household income. Callan et al. (2018) showed that, from 1987 to 2014, both GNP per head and mean equivalised household income more than doubled in real terms. In addition, there was substantial growth across all income levels. If households are split into 10 deciles, deciles two to nine had income growth of 100 per cent while income for the lowest decile increased by close to 95 per cent.

There is an extensive literature on the reasons for Ireland's remarkable economic growth from the late 1980s/early 1990s. As a small open economy, a necessary condition for strong growth is export growth. During the 1990s, the rate of growth of imports in EU countries and the OECD accelerated. The completion of the EU internal market was an important element in this for the EU. Ireland benefitted from this growth in its markets while simultaneously achieving an increased share of these markets (Kennedy, 2001). The ability to achieve a large increase in foreign direct investment was central to this, while NESC (2003) also pointed to an improvement in indigenous performance. A range of factors underpinned the ability to attract FDI including a well-educated workforce, effective policies to attract FDI, and corporation tax. NESC (2003) and others argued that social partnership played an important role at this stage through its influence on wage bargaining and industrial peace, and as an influence on developing a coherent approach to economic and social policy. A comprehensive review of the different factors and perspectives on Ireland's economic boom is provided by (O'Malley, 2012).

It is possible to disaggregate the output or income per head of an economy into two key factors: the share of the population in employment and the output or income generated by each worker (productivity). Ireland had been achieving substantial annual growth in productivity for several decades prior to the 1990s. Since the late 1960s productivity growth in Ireland was growing faster than the EU average (Barry, 1999). However, Ireland's income per head was held back on account of a relatively low and declining share of the population in employment. What was exceptional about the 1990s compared to earlier periods was the acceleration of employment growth in Ireland. This was combined with continuing strong productivity growth. Between 1993 and 2000, the annual average growth of employment in Ireland was 4.7 per cent, while GNP per worker grew by 3.4 per cent annually, resulting in a growth rate of GNP per head of 7.2 per cent (NESC, 2003). The share of the population in employment rose from 32.6 per cent in 1993 to 44.1 per cent in 2000.

1.3.3 Northern Ireland Economy from the 1990s

Both parts of the island benefitted from the ceasefire in 1994 and the Good Friday Agreement of 1998. The Northern Ireland economy had reasonably strong growth in the 1990s, with annual employment growth of 1.8 per cent and annual productivity growth of 2.3 per cent (FitzGerald & Morgenroth, 2019;2020). These exceeded corresponding growth rates for the UK overall, although the Northern Ireland economy did not experience the type of very rapid catch-up with EU countries experienced by Ireland in this period.

Over the period 1998 to 2018, the annual growth of modified GNI* in Ireland was 2.7 per cent compared to annual GDP growth of 1.9 per cent in both Northern Ireland and the UK overall. Population growth, however, was also much faster in Ireland (the source of pressure on housing) so that the annual growth of GDP per head in volume terms was coincidentally the same in all three areas (Ireland, Northern Ireland and the UK overall) over this period, at 1.3 per cent (see Table 1).[6]

This growth rate, over this period, may seem surprisingly low for Ireland. It includes the effect of the very deep recession experienced in this period. Following the last recession, Ireland returned to strong economic growth, with annual growth of 5.3 per cent and 4.3 per cent for GDP and GDP per head respectively, between 2012 and 2018. Real annual growth in Northern Ireland during this period was considerably lower, at 1.9 per cent (GDP) and 1.3 (GDP per head), and also lagged behind UK growth.

[6] Growth for Ireland is measured using modified GNI*.

Table 1: GDP and GDP per Person for Ireland, Northern Ireland and UK, 1998 to 2018

	GDP			GDP per Person		
	Ireland	Northern Ireland	UK	Ireland	Northern Ireland	UK
1998-2006	5.0	3.7	3.0	3.2	3.2	2.5
2006-2012	-2.8	-0.3	0.5	-4.0	-1.0	-0.3
2012-2018	5.3	1.5	2.0	4.3	1.0	1.3
1998-2018	2.7	1.9	1.9	1.3	1.3	1.3

Source: For Ireland modified GNI* is used in place of GDP. Population data for Ireland from European Commission AMECO database. Data for Northern Ireland from ONS, 'Regional Gross Domestic Product for all NUTS level regions' (2019), https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

When looking at growth rates over a period such as this (1998–2018), the results can be sensitive to the start and end years used. If one takes the period 2000 to 2018, then the annual growth rate of GDP per head for Northern Ireland at 0.9 per cent was somewhat below the UK average of 1.1 per cent.

The trend in GDP per head in Northern Ireland relative to the UK over the 1998 to 2018 period is shown in Figure 4. In the initial years following the Good Friday Agreement, Northern Ireland continued to enjoy stronger economic growth than the UK so there was some catching-up in terms of GDP per capita. However, the recession in Northern Ireland was deeper than in the UK overall (although less severe than in Ireland), leading to a reversal of most of this gain. There was some recovery of relative GPD per capita when measured in current prices over the period 2014 to 2017 but another fall in 2018. The net effect of these changes is that Northern Ireland's GDP per capita relative to the overall UK figure in 2018, at around 81 per cent,[7] was little changed from 1998.

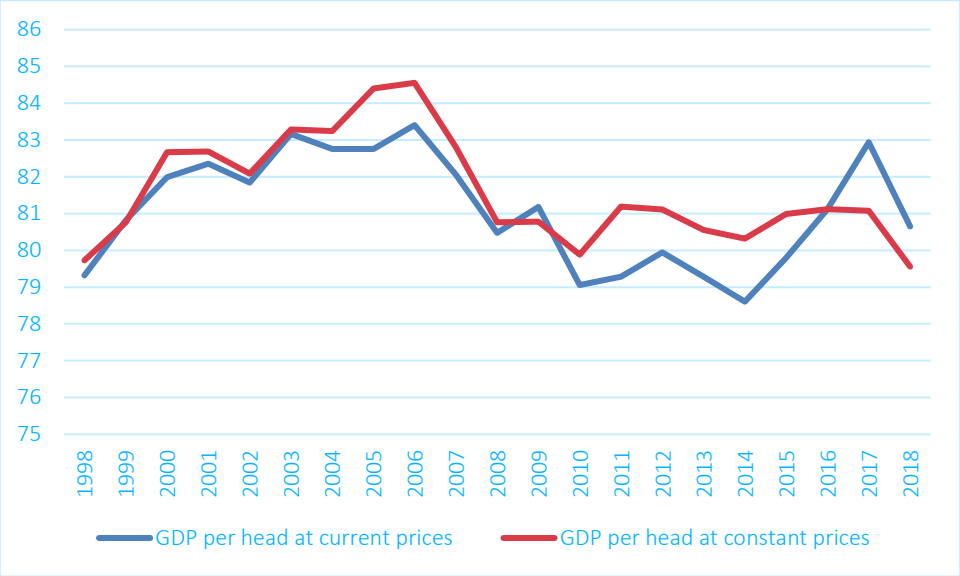
Northern Ireland was the only one of 12 regions in the UK to experience a fall in GDP in 2018. This is likely to have arisen from the uncertainty of Brexit (Johnston *et al.*, 2020). The most recent year for which GDP data for Northern Ireland have been published is 2018. More recent information on the trend in the economy is available from the Northern Ireland Composite Economic Index (NICEI), although this measure does not follow the same trend as GDP. This index showed almost no growth in Northern Ireland in 2019 before falling in 2020 with the onset of the Covid–19 crisis.

In terms of an alternative measure of aggregate performance, gross value-added (GVA) per capita, Northern Ireland's relative position in 2018 was one percentage point higher compared to 1998 when measured in current prices, but there was a fall of three percentage points in terms of constant prices.

The UK average for GDP per capita is boosted by London, where GDP per head was 70 per cent above average in 2018. Northern Ireland ranks eighth among 12 UK regions in terms of GDP per head, above Wales (74 per cent) and below Scotland (92 per cent).

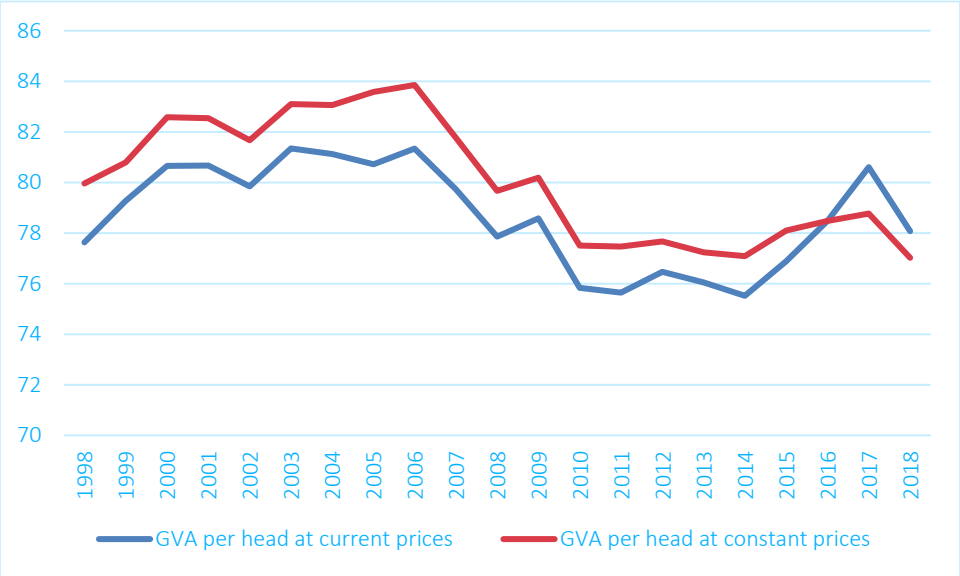
[7] Northern Ireland's GDP per capita in current prices in 2018 was 80.6 per cent of the UK average and 79.6 per cent in constant prices.

Figure 4: GDP per Capita in Northern Ireland relative to UK = 100, 1998 to 2018



Source: ONS (2019), 'Regional Gross Domestic Product for all NUTS level regions', https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossdomesticproductallnutslevelregions

Figure 5: GVA per Capita in Northern Ireland relative to UK = 100, 1998 to 2018



Source: ONS, 2019.

Table 2: GDP per Capita in Current Prices for UK Regions, 2018

	£ Sterling	UK = 100
London	£54,686	170
South East	£34,083	106
East of England	£30,069	93
Scotland	£29,660	92
North West	£28,449	88
South West	£28,231	88
West Midlands	£27,087	84
Northern Ireland	**£25,981**	**81**
East Midlands	£25,946	81
Yorkshire and The Humber	£25,859	80
Wales	£23,866	74
North East	£23,569	73
United Kingdom	**£32,216**	**100**

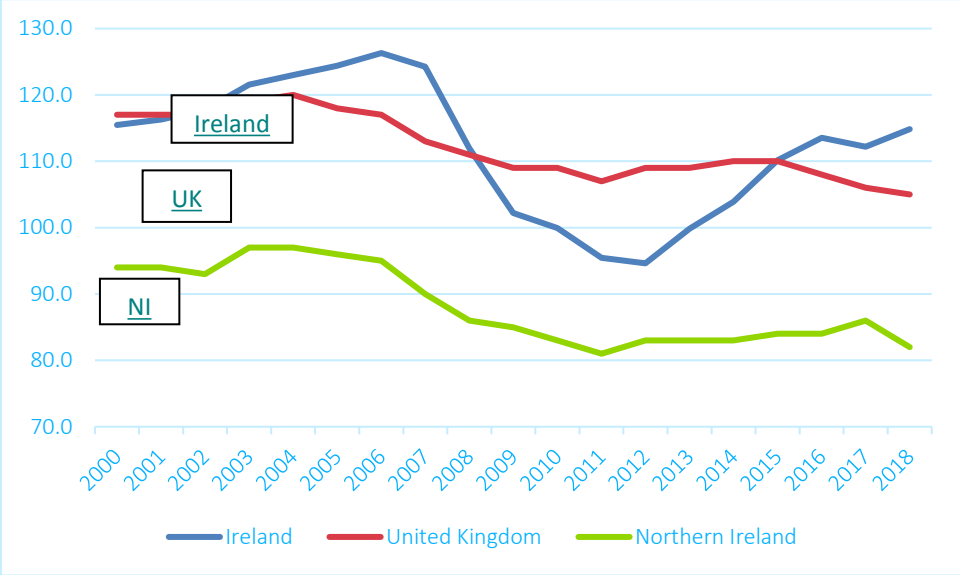
Source: ONS, 2019.

GDP per head in Northern Ireland has shown slower growth than the EU average over the period since 2000. In 1998, Northern Ireland's GDP per head was 94 per cent of the EU average. It rose initially to 97 per cent in 2003 and stayed close to this level until 2006 but by 2018 it had fallen to 82 per cent of the EU average. The recession brought Ireland's modified GNI* per head below the EU average over this period but it has since returned to, and surpassed, this level. Northern Ireland was clearly better off to have avoided the severe economic shock experienced by Ireland from 2008 to 2012. However, in the recovery period from 2013 onwards Ireland's economy returned to a stronger growth rate than Northern Ireland up to the Covid crisis and one that was more sustainable in economic terms than before.

The annual rate of growth of employment in Northern Ireland, as measured by the Labour Force Survey, was 1.3 per cent over the period 2000 to 2018—faster than the corresponding growth rate for the UK (1.0 per cent). Growth was more rapid in Ireland over this period at 1.7 per cent annually. The Labour Force Survey is the most comprehensive measure of employment and the most widely used for looking at the growth of employment in the economy. Eurostat publishes an alternative measure of employment that is adjusted to be consistent with output growth. With this measure, annual employment growth was again fastest in Ireland (1.5 per cent), while that in Northern Ireland (0.8 per cent) was slightly slower than the UK (0.9 per cent).

Northern Ireland, like Ireland, has historically had a relatively low share of its total population in employment. In 1994, the ratio of employment to population for Northern Ireland was 37.1 per cent, somewhat higher than the corresponding ratio for Ireland (34.0 per cent). It was pointed out above that an increase in the employment-to-population share was central to the achievement of rapid convergence of Ireland's income levels with the EU. During the 1990s, Ireland's ratio caught up with the level in Northern Ireland and for a period Ireland had a higher share of population in employment. However, this ratio fell by much more in Ireland with the economic crash, so that now there is relatively little difference in these shares between Ireland and Northern Ireland. As a comparator, the level is higher in the UK overall, so there is scope in both jurisdictions on the island of Ireland to achieve an increase in the share of the population in employment.

Figure 6: GDP[8] per Capita for Ireland, UK and Northern Ireland relative to EU (28) = 100 (Purchasing Power Standard terms)



Source: Eurostat. Ireland data are based on modified GNI* data from the CSO.

Table 3 provides a comparison of the level of modified GNI* per head in Ireland to GDP per head in Northern Ireland. In 2017, the level of modified GNI* in Ireland was 31 per cent higher than GDP in Northern Ireland. The employment ratio (ratio of employment to total population) was somewhat higher in Ireland (by 3.5 per cent). It follows, then, that the major reason for the higher GNI per head in Ireland is productivity. Productivity in 2017 (using modified GNI* per worker in Ireland and GDP per worker in Northern Ireland) was 26.3 per cent higher in Ireland. Thus, while an increase in the employment-to-population ratio was a central factor in the achievement of rapid economic growth in Ireland from the late 1980s, productivity is now the primary difference between the economies, north and south.

Table 3: Output per Head, Output per Worker and Share of the Population in Employment in Ireland, Northern Ireland and UK in Purchasing Power Standard terms, 2017

	Ireland	Northern Ireland	UK
GNI*/GDP per head	€33,786	€25,800	€32,000
GNI*/GDP per worker	€75,622	€59,846	€65,968
Employment/Population	44.6	43.1	48.5

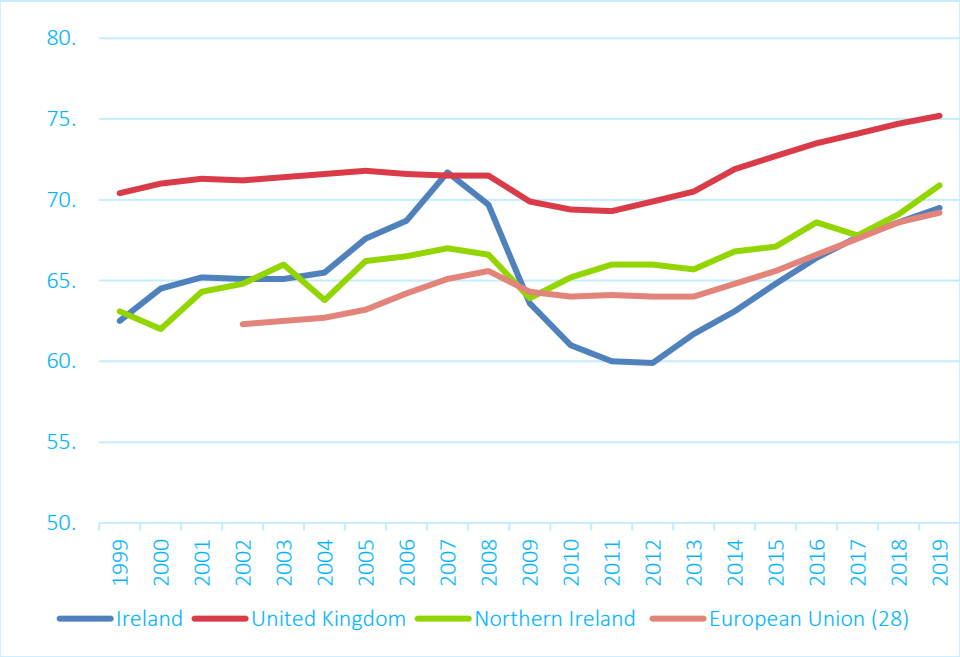
Source: Calculated from Eurostat data. For Ireland, the GDP data in purchasing power standard terms have been converted to modified GNI* using CSO data.

[8] Modified GNI* for Ireland.

Productivity is an outcome of many factors. The next section examines some of the factors influencing productivity and the reasons for the differences, north and south.

The share of the total population in employment depends on the demographic structure of employment, as well as the share of the active working-age population in employment. Over the past two decades, the share of the working-age population (15–64 years) in employment (see Figure 7) in both Ireland and Northern Ireland has increased. In 2019, it was higher in Northern Ireland at 70.9 per cent compared to 69.5 per cent in Ireland. The share for the UK overall was 75.2 per cent. The share of the working-age population in employment in Northern Ireland is the lowest in the UK. There is scope in both parts of the island to increase living standards by increasing the share of the working-age population in employment. NESC (2018) identified a range of policies for Ireland to increase employment among households where there is no-one in employment, or only marginal attachment to the labour force.

Figure 7: Share of Working-Age Population (15 to 64 year-olds) in Employment in Ireland, UK, Northern Ireland and EU (28), 1999 to 2018



Source: Eurostat.

1.4 Productivity

A comprehensive study of productivity on the island of Ireland was published by the Nevin Economic Research Institute (NERI) (Goldrick-Kelly & Mac Flynn, 2018). This study measured productivity as gross value added (GVA) per hour or per worker. To do north-south and other comparisons, GVA was measured in purchasing power standard terms. This means that the data are adjusted for price differences, as noted above. The aim is to compare real productivity levels between countries and regions, rather than just price differences. The adjustment is, however, an imperfect one. Price levels are generally higher in Ireland so there is a risk that, if this is not adequately taken into account, differences in nominal value-added due to higher prices may be confused with productivity differences.

It was estimated in this NERI study that productivity in Ireland, as measured by GVA per hour worked in 2016, was roughly one-third higher than in Northern Ireland (see Chart 4.4, Goldrick-Kelly & Mac Flynn, 2018). This was based on using modified GNI* for Ireland.

1.4.1 Sectoral Patterns

Differences in the level of productivity between countries or regions can arise due to differences in either the sectoral composition of economies or in productivity levels between sectors.

The sectoral composition of employment in the economies, north and south, for 2018 is presented in Table 4. The largest sectoral differences are that the share of the combined public administration, health and education sector in Northern Ireland (29.3 per cent) was approximately four percentage points higher compared to Ireland (25.1 per cent), while retail, wholesale, accommodation and food (28.5 per cent) were approximately three percentage points higher in Ireland (25.7 per cent).[9]

Table 4: Employment by Sector in Ireland, Northern Ireland and UK, 2018

	Ireland	Northern Ireland	UK
Agriculture, forestry and fishing	4.9	0.6	1.2
Manufacturing	10.1	11.1	8.0
Other industry	1.1	3.4	1.3
Construction	6.9	6.9	7.2
Wholesale and retail trade, transport, accommodation and food service activities	28.5	25.8	26.0
Information and communication	3.9	2.7	4.5
Financial and insurance activities	3.9	2.6	3.3
Real estate activities	0.6	1.2	1.7
Professional, scientific and technical activities; administrative and support service activities	11.1	11.8	16.4
Public administration, defence, education, human health and social work activities	25.1	29.3	24.9
Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies	4.1	4.9	5.6
Total – all NACE activities	100.0	100.0	100.0

Source: Eurostat regional accounts data.

'Public administration, defence, health and education etc.' includes the public sector, but is not a measure of public-sector employment as such in that it includes private-sector employment in health, education and related sectors. The public sector in Northern Ireland, excluding public corporations (operating in the market sector), represented 24.2 per cent of total employment in 2019. The public sector in Ireland (excluding commercial semi-states) represented 17.4 per cent of employment in the same year.

The impact of a larger public sector on productivity is a complex one. A larger public sector will reduce productivity if it crowds out private employment with higher productivity. However, the experience of some European countries shows the possibility of combining above-average-sized public sectors with dynamic, high-productivity economies.

The above-average share of employment in 'wholesale, retail, accommodation and food' arises from the accommodation and food component of this. This reflects Ireland's more developed tourism sector, an important

[9] The focus here is on the structure of employment prior to the Covid-19 crisis.

source of export earnings and regional employment. However, productivity is below average so this cannot explain Ireland's above-average productivity.

The impact of differences in sectoral structure on productivity can be computed by calculating the productivity level that would exist in Northern Ireland if it had the same share of employment in each sector as exists in Ireland.[10] When productivity for Northern Ireland is recalculated in this way, it was found to be around 5 per cent higher than actual productivity in Northern Ireland. This would make a modest contribution to reducing the actual gap in productivity.

This calculation may underestimate the contribution of differences in the sectoral structure of employment to the productivity gap. The sectoral employment data presented here and used in this calculation are from the Eurostat regional accounts. Compiled by the statistical authorities using multiple sources, they are designed to be consistent with output data. Other employment data from the Labour Force Survey (also published by Eurostat) show more of a difference in the sectoral composition of employment between Ireland and Northern Ireland. However, Eurostat recommends national (or regional) accounts employment data for analysing the sectoral structure of employment. More detailed sectoral data would be likely to show a greater contribution to the productivity gap by sectoral differences in employment.

The larger part of the productivity gap arises from productivity differences between individual sectors rather than differences in sectoral composition. It can be seen from Table 5 that large gaps in productivity (as measured by GVA per person employed in purchasing power standard terms) arise in certain sectors. These data are not adjusted for accounting issues as the information to do so is not available at sectoral levels. The sectors in which productivity in Ireland is particularly high relative to Northern Ireland are as follows: manufacturing; other industry; information and communications; financial services; professional, technical and administrative services, and real estate. Real estate is an unusual sector in that the larger part of the value added arises from the rents of owner-occupiers, so the productivity figure is not particularly meaningful.

[10] The process adopted was as follows. First a measure of productivity for each sector was calculated; the results are shown in Table 5. Next the hypothetical level of employment for each sector in Northern Ireland that would exist if the share of employment in each sector was the same as for Ireland was calculated. These hypothetical employment levels were then multiplied by the actual productivity of each sector to calculate gross value added for each sector and these are used to compute an adjusted level of productivity.

Table 5: Gross Value Added at Basic Prices per Person in Employment in Purchasing Power Standard terms by Sector for Ireland, Northern Ireland and UK, 2018

	Ireland	Northern Ireland	UK	Percentage difference between Ireland and Northern Ireland
Agriculture, forestry and fishing	23.2	152.7	34.5	-84.8
Manufacturing	413.7	69.9	72.7	491.8
Other industry	186.8	47.6	173.1	292.3
Construction	44.7	49.9	49.2	-10.5
Wholesale and retail trade, transport, accommodation and food service activities	48.8	39.9	39.3	22.4
Information and communication	386.8	65.9	91.6	486.8
Financial and insurance activities	185.7	79.2	126.2	134.6
Real-estate activities	1252.8	475.5	463.9	163.5
Professional, scientific and technical activities; administrative and support service activities	118.4	31.0	46.8	281.6
Public administration, defence, education, human health and social work activities	50.6	42.8	42.5	18.2
Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organisations and bodies	40.0	29.2	36.4	37.0
Total	**119.2**	**51.2**	**58.4**	**132.7**

Source: Calculated from Eurostat regional accounts data.

In the case of manufacturing and the information and communications sectors, the very high productivity in these sectors in Ireland arises due to the presence of foreign-owned multinationals. While around half the employment in these sectors is in domestically controlled businesses, it is the foreign-controlled businesses that have very high productivity (see Table 6). This may also be the case for financial services, but separate information on domestic and foreign enterprises is not available for this sector. For the combined sector of professional and technical services plus administrative activities, three quarters of the employment is in domestically controlled enterprises; the productivity in this sector reflects the high productivity level in domestic businesses.

Multinationals have a major influence on productivity in Ireland: in 2018, gross value added per person in employment in foreign-controlled businesses in the Republic was 5.5 times the level for domestically controlled businesses, according to Eurostat data.[11] However, it is important not to overlook the presence of multinationals and FDI in Northern Ireland. Employment in foreign-owned companies in Northern Ireland represented 14.0[12] per cent of total employment in 2015 compared to 22.2 per cent in Ireland. Turnover per employee in foreign-owned businesses in Ireland in 2015 was almost five times higher than among such businesses in Northern Ireland[13] (McGuinness & Bergin, 2019). While this exaggerates the real productivity difference, it illustrates that multinationals in Northern Ireland do not have the same impact on productivity as those in Ireland.

11 Not adjusted for accounting distortions.
12 There is also 10.4 per cent of employment in GB-owned businesses in Northern Ireland.
13 For Northern Ireland, foreign-owned business are defined as non-UK businesses.

Table 6: Gross Value Added at Factor Cost in Euros in Domestically- and Foreign-Controlled Businesses in Ireland, 2018

	Domestic	Foreign	Total
Manufacturing	78.1	872.9	455.5
Electricity & gas	216.1	872.9	258.5
Water, waste management etc.	79.1	94.3	80.6
Construction	71.2	111.6	73.8
Wholesale and retail trade; repair of motor vehicles and motorcycles	47.7	100.2	62.6
Transportation and storage	61.3	104.9	68.0
Accommodation and food service	26.1	33.3	26.8
Information and communication	83.9	548.8	333.5
Real-estate activities	77.6	45.4	71.3
Professional, scientific and technical activities	92.9	128.0	99.9
Administrative and support service activities	143.9	192.6	159.0
Total business economy excluding financial and insurance activities	69.2	383.0	152.8

Source: Eurostat.

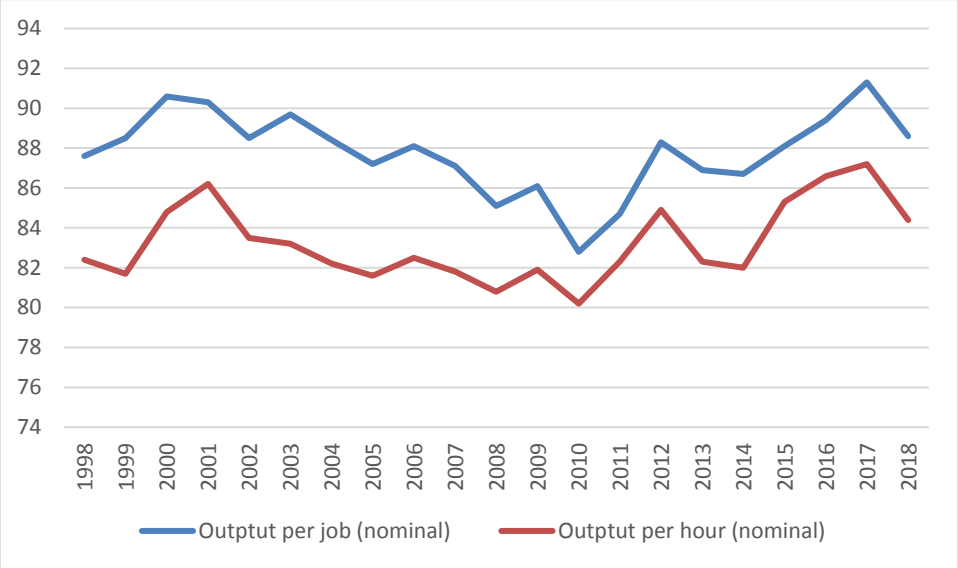
1.4.2 Northern Ireland Compared to other UK Regions

Productivity in Northern Ireland in 2018 was 84 per cent of the UK average as measured by output per hour. It was higher in terms of output per job at 89 per cent, indicating that hours worked in Northern Ireland are on average higher than in the UK overall. From 2000/2001, productivity in nominal terms declined relative to the UK average but recovered from 2010, so that Northern Ireland's productivity relative to the UK in 2018 was not much changed from 1998 (see Figure 8).

When productivity is measured in real or constant price terms, there has been a modest decline for Northern Ireland relative to the UK over the period 1998 to 2018. Output per worker is down 2.4 percentage points and output per job is down by 1.1 percentage points. In the case of both Northern Ireland and the UK, there has been limited real productivity growth in the recovery period from the last recession (see Figure 9).

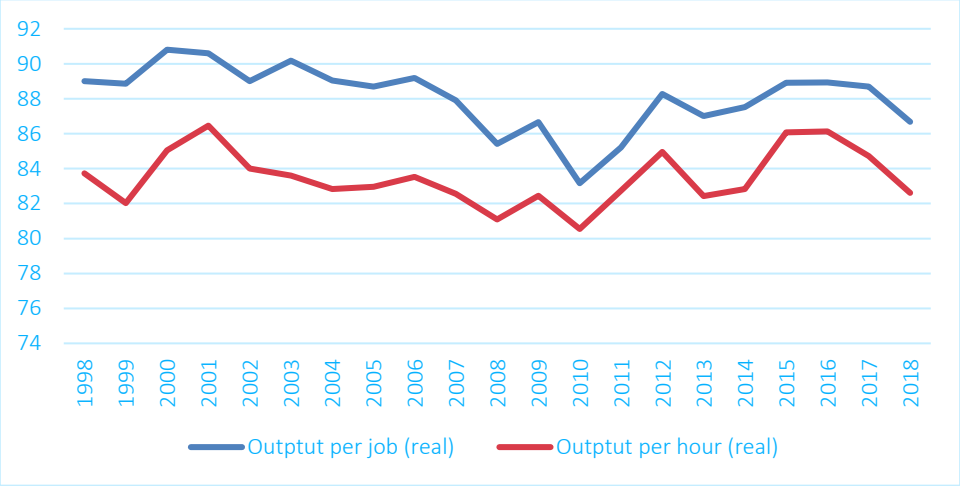
Productivity in Northern Ireland as measured by output per hour was ninth among 12 UK regions. However, Northern Ireland ranked higher (seventh) when productivity is measured in terms of output per job.

Figure 8: Nominal Output per Job and per Hour Worked in Northern Ireland relative to the UK = 100, 1998 to 2018



Source: ONS, 2020b.

Figure 9: Real Output per Job and per Hour Worked in Northern Ireland relative to the UK = 100, 1998 to 2018



Source: ONS, 2020a.

Table 7: Productivity in Northern Ireland as a Percentage of UK Average (UK = 100)

	Output (nominal GVA) per job		Output (nominal GVA) per hour
London	140.5	London	131.6
South East	106.1	South East	109.1
Scotland	96.4	Scotland	97.6
East of England	94.7	East of England	95.4
North West	90.9	North West	91.6
West Midlands	89.1	South West	90.2
Northern Ireland	**88.6**	West Midlands	89.6
South West	86.5	North East	86.5
East Midlands	85.5	East Midlands	86.5
North East	84.2	**Northern Ireland**	**84.4**
Yorkshire and the Humber	83.2	Yorkshire and the Humber	83.5
Wales	81.8	Wales	82.8

Source: ONS, 2020b.

A study on productivity in Northern Ireland compared to other regions of the UK was undertaken by Johnston & Stewart (2019). They found that NI productivity, as measured by nominal GVA per hour worked, grew at 1.9 per cent per annum over the decade 2007–2017, the sixth fastest rate of 12 UK regions. They found somewhat faster productivity growth in Northern Ireland over the four-year period 2014 to 2017, with average annual growth in GVA per hour worked of 2.5 per cent, compared to 2.0 per cent for the UK average. In combination with an increase in the employment rate, this contributed to some convergence of Northern Ireland with the UK over this period.

This study also examined the influence of differences in the sectoral composition of the economy, and productivity differences within sectors, for the Northern Ireland economy relative to the UK average. They showed that both of these were significant factors in lower productivity. Their analysis indicated that Northern Ireland had a larger concentration of employment in lower value-added sectors such as agriculture, retail, and health & social work than the UK average. There is a lower concentration relative to the UK average in higher value-added services, including professional services, information and communications technology (ICT), and financial services.

Productivity within sectors in Northern Ireland was below the UK average in 16 out of 20 sectors in the three-year period average 2014–17. A similar pattern was found in the manufacturing subsectors, in which 13 of 21 subsectors were below the UK average.

1.4.3 Regional Patterns

There are substantial regional variations in productivity and other economic indicators in Ireland and Northern Ireland, particularly in the case of Ireland. Productivity as measured by GDP per worker is presented in Table 8. These data are subject to a number of limitations. First, the data shown are unadjusted GDP data as the relevant modified data are not available regionally. Second, the regions for which these data are available (from Eurostat) for Northern Ireland are smaller than those for which the data are available for Ireland.

Bearing these limitations in mind, it is still possible to draw some inferences on regional productivity from Table 8. It is clear that, in Ireland, productivity is much higher in the south and east of the country compared to the north and west.

The average productivity in the Northern and Western region is also somewhat lower than the average for Northern Ireland. Productivity levels in the regions along both sides of the border are similar. In Northern Ireland, productivity is higher in the Mid and East Antrim district located in the north-east of Ulster (north of Belfast). Productivity in this district was around 50 per cent higher than the average for Northern Ireland in 2017. Productivity in Belfast was 4.2 per cent above the NI average.

Table 8: GDP per Worker in Purchasing Power Standard terms by Region for Ireland and Northern Ireland, 2017

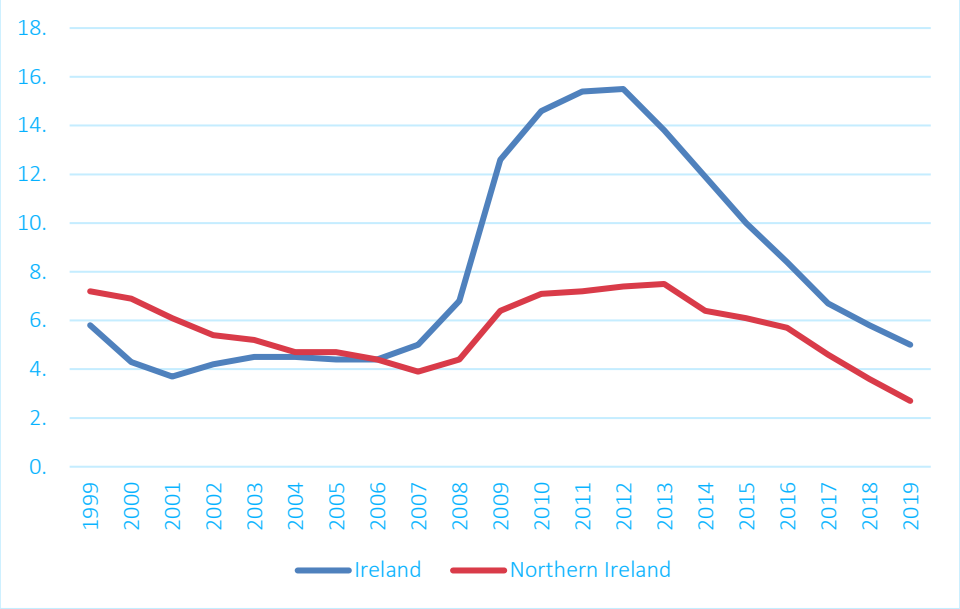
Ireland	**€121,985**
Northern and Western	**€53,767**
Border	€53,191
West	€54,224
Southern	**€154,209**
Mid-West	na
South-East	€86,275
South-West	na
Eastern and Midland	**€123,703**
Dublin	€149,961
Mid-East	€87,947
Midland	€54,035
Northern Ireland	**€59,845**
Belfast	€62,378
Armagh City, Banbridge and Craigavon	€54,276.4
Newry, Mourne and Down	€54,183.77
Ards and North Down	€53,054.65
Derry City and Strabane	€51,116.50
Mid Ulster	€60,658.97
Causeway Coast and Glens	€56,015.78
Antrim and Newtownabbey	€56,281.11
Lisburn and Castlereagh	€60,183.17
Mid and East Antrim	€91,093.60
Fermanagh and Omagh	€54,499.13
United Kingdom	**€65,968.08**

Source: Calculated from Eurostat data.

1.5 Unemployment

Both Ireland and Northern Ireland have traditionally had an underlying problem of insufficient labour demand to provide employment for their populations, and unemployment rates have been high compared to the UK and the EU. In the post-war period, unemployment in Ireland was generally somewhat higher than in Northern Ireland. From the mid-1970s Northern Ireland experienced a much more severe increase in unemployment, which reversed the situation for some years (Kennedy *et al*., 1988). Both jurisdictions had very high unemployment in the 1980s. In both cases, there was a sustained fall in unemployment over the 1990s, and Ireland's rate of unemployment fell below that of Northern Ireland by the late 1990s. The recession of 2008–2012 was much more severe in Ireland, resulting in a much larger increase in unemployment compared to Northern Ireland. With economic recovery, unemployment fell sharply in Ireland. By 2019, unemployment had fallen to 5.0 per cent while it was lower at 2.7 per cent in Northern Ireland. With the Covid crisis, unemployment has again increased in both jurisdictions, but different support schemes make it difficult to compare underlying current rates of unemployment.

Figure 10: Unemployment in Northern Ireland and Ireland, 1992 to 2019



Source: 1992-1998: ESRI databank and ONS; 1999-2019: Eurostat.

1.6 Trade

Strong growth of exports was central to the economic growth of Ireland from the 1990s. This enabled average income levels to catch up with and eventually surpass the average EU level. Differences in the nature of exports are important to understanding the two economies on the island. The focus of this section is on the export pattern of the economies, north and south. There is further discussion of cross-border trade on the island in Section 1.9.

Scale of Exports

A first major difference is in the scale of trade for the two economies, both in absolute terms and relative to the size of the respective economies. Total exports of goods and services from Ireland, as measured by a survey of Enterprise

Ireland and IDA companies in 2018, were worth almost €244bn or 93 per cent of sales.[14] In the case of Northern Ireland companies, the term 'external sales' is used, given that sales to Britain are not included in the export figures. Total external sales by Northern Ireland companies in 2018 were €24.5bn or 31.7 per cent of sales.[15] The exceptionally high level of exports from Ireland is due to the presence of highly export-oriented multinationals, which generated over 90 per cent of the gross value of exports (exports represent 96 per cent of sales of foreign-owned companies in Ireland). Among Irish-owned companies in Ireland total exports were €21.8bn. This is more comparable in scale to the exports of Northern Ireland companies. Irish-owned companies in Ireland, however, were more export-oriented compared to Northern Ireland companies, in that their exports represented 49 per cent of sales.

Destination

A second difference with regard to trade is in the destination of exports. For both economies, Britain is a major export market, but this is particularly the case for Northern Ireland; almost half of this region's external sales go to that market (48.6 per cent in 2018). For Ireland, 16 per cent of exports went to the UK in the same year, although the absolute value is higher than Northern Ireland's sales to Britain. After Britain, the most important external market for the Northern Ireland economy is Ireland, representing 19 per cent of external sales (€4.7bn). The significance of Ireland as a market for the Northern Ireland economy can be seen in the fact that its exports to Ireland are substantially higher than its combined exports to all other EU member states (€2.8bn).

Table 9: Exports by Destination, Ireland, 2018

	Value of Exports (€bn)			Share of Total		
	Goods	Services	Total	Goods	Services	Total
UK	€16.1	€30.3	€46.4	11.4%	16.1%	14.1%
Northern Ireland	€2.0	na	na	1.5%	na	na
Rest of EU	€54.6	€58.1	€112.7	38.8%	30.8%	34.3%
Rest of World	€70.0	€100.0	€170.0	49.8%	53.1%	51.6%
Total Exports	**€140.6**	**€188.5**	**€329.1**	**100.0%**	**100.0%**	**100.0%**

Source: CSO, External Trade (goods) and International Accounts (services) statistics. There are higher figures for goods exports shown in the International Accounts statistics compared to the External Trade statistics. The former includes goods produced abroad via contract manufacturing that are not produced in Ireland. For this reason, goods exports are taken from the External Trade statistics. The CSO includes services trade with Northern Ireland in the UK trade figures but does not publish separate data for Northern Ireland.

Table 10: External Sales by Destination, Northern Ireland, 2018

	Value of External Sales (€bn)			Share of Total		
	Goods	Services	Total	Goods	Services	Total
Britain	€7.4	€4.5	€11.9	43.1%	61.6%	48.6%
Ireland	€3.5	€1.2	€4.7	20.2%	16.8%	19.2%
Rest of EU	€2.3	€0.4	€2.8	13.7%	5.9%	11.3%
Rest of World	€4.0	€1.2	€5.1	23.1%	15.7%	20.9%
Total External Sales	**€17.2**	**€7.4**	**€24.5**	**100.0%**	**100.0%**	**100.0%**

Source: NISRA, 2020.

[14] The Annual Business Survey of Economic Impact is carried out on behalf of the Department of Enterprise, Trade and Innovation. It is a less comprehensive measure of exports than that produced by the CSO; tourism exports, for example, are not covered. However, it has the advantages of presenting consistent sales and export data and also distinguishing the data on Irish- and foreign-owned businesses.

[15] As measured by the Broad Economy Sales and Exports Statistics (BESES) survey.

For Ireland, exports to other EU member states and to the rest of the world are much more significant in both relative and absolute terms. In 2018, close to one third of Ireland's exports (€112.7bn) were to member states of the EU other than the UK, while over half of exports were to countries outside the EU (€170.0bn in value terms).

Composition of Exports

A third difference is in the composition of exports. Ireland's exports are more service-intensive: services represented 57.3 per cent of the value of Ireland's exports in 2018, compared to 30.0 per cent of Northern Ireland's exports. However, the latter's services exports are growing rapidly: services exports from Northern Ireland have doubled since 2012, to reach €7.4bn in 2018.

The composition of goods exports, north and south, is shown in Table 11. It is important to note that the Northern Ireland figures do not include sales to Britain. Ireland's exports are concentrated in a few key sectors while those of Northern Ireland are more evenly balanced across sectors. For Ireland, the largest export sectors by value are: chemicals (61.0 per cent), machinery and transport equipment (14.2 per cent), food and drinks (9.0 per cent), and professional and scientific apparatus (4.5 per cent). At the level of broad sectors, the first three sectors also have the largest export shares for Northern Ireland, in a different ordering: machinery and equipment (35.9 per cent), food and drinks (21.0 per cent) and chemicals (12.9 per cent).

Ireland's goods exports are dominated by just one sector, chemicals, which accounts for over 60 per cent of goods exports. This is unusual and overstates the real economic value of chemical exports. Some of these exports have a very high sales value, but the expenditure generated in the Irish economy is a low share of the gross value of these exports. The chemicals industry represented 4.1 per cent of manufacturing employment (in 2014); however, these exports support highly paid employment and generate corporate tax revenue. Exports of chemicals are also significant for the Northern Ireland economy, representing almost 13 per cent of exports, with pharmaceuticals being the dominant component of chemicals exports.

Food and drinks are a substantial share of exports for both economies on the island and are a relatively higher share of exports for the Northern economy (21.0 per cent) compared to Ireland (9.0 per cent). Within food, meat and dairy are the largest export items for both economies. Drinks exports are also significant, north and south.

For the Northern Ireland economy, exports of machinery and equipment have the highest share of total exports, at almost 36 per cent (€3.6bn). Within this broad category, the largest elements are machinery specialised for particular industries and transport equipment other than road vehicles, both accounting for 9.0 per cent of total exports. The machinery and equipment sector also accounts for a substantial share of Ireland's exports (14.2 per cent), with a value of over €20bn. The largest shares within this for Ireland are: electrical machinery (3.8 per cent), other transport equipment (3.6 per cent) and office machines (3.0 per cent).

Table 11: Composition of Goods Exports for Ireland and Northern Ireland, 2018

	€m		Percent of Total	
	Ireland	Northern Ireland	Ireland	Northern Ireland
Total food, live animals, drinks and tobacco	€12,621.90	€2,115.3	9.0%	21.0%
Meat and meat preparations	€3,938.8	€383.5	2.8%	3.8%
Dairy products and birds' eggs	€2,609.1	€673.2	1.9%	6.7%
Drinks	€1,443.3	€408.2	1.0%	4.1%
Crude materials, inedible, except fuels	€1,921.3	€318.0	1.4%	3.2%
Mineral fuels, lubricants and related materials	€1,022.1	€353.0	0.7%	3.5%
Animal and vegetable oils, fats and waxes	€65.1	€35.5	0.0%	0.4%
Chemicals and related products	€85,757.8	€1,300.3	61.0%	12.9%
Organic chemicals	€26,524.3	€29.6	18.9%	0.3%
Medicinal and pharmaceutical products	€46,200.3	€831.3	32.8%	8.3%
Essential oils, perfume materials etc.	€7,794.9	€65.8	5.5%	0.7%
Manufactured goods classified by material	€2,330.4	€901.3	1.7%	9.0%
Machinery and transport equipment	€20,013.6	€3,609.6	14.2%	35.9%
Power generating machinery and equipment	€875.2	€348.8	0.6%	3.5%
Machinery specialised for particular industries	€776.6	€902.7	0.6%	9.0%
General industrial machinery and parts, n.e.s.	€1,920.9	€513.3	1.4%	5.1%
Office machines and equipment	€4,286.6	€14.7	3.0%	0.1%
Telecommunication, recording etc. equipment	€1,300.9	€83.3	0.9%	0.8%
Electrical machinery, appliances etc., n.e.s.	€5,381.3	€350.3	3.8%	3.5%
Road vehicles	€331.9	€486.5	0.2%	4.8%
Other transport equipment	€5,111.8	€901.5	3.6%	9.0%
Miscellaneous manufactured articles	€15,783.2	€1,392.0	11.2%	13.8%
Furniture and parts	€192.9	€558.8	0.1%	5.6%
Professional, scientific apparatus	€6,290.1	€349.8	4.5%	3.5%
Photo apparatus, optical goods, watches, clocks	€1,363.9	€18.0	1.0%	0.2%
Commodities and transactions n.e.s.	€1,129.6	€29.3	0.8%	0.3%
Total	**€140,645.0**	**€10,054.3**	**100.0%**	**100.0%**

Source: CSO, 'Value of Merchandise Trade', https://data.cso.ie/table/TSA09; UK Trade Info, https://www.uktradeinfo.com/trade-data/rts-custom-table/
Note: The export figures above for Northern Ireland do not include sales to Britain.

Among other export sectors, a notable feature for Northern Ireland is that furniture continues to be a significant source of exports, with a 5.6 per cent share in 2018. The nominal value of furniture exports for Northern Ireland in 2018, at €558m, exceeded the value of the corresponding exports from Ireland.

Exports of services are increasingly important for both economies on the island, although the scale of these exports is much higher in the case of Ireland. Almost half of services exports from Ireland in 2018 consisted of computer services (49.4 per cent). Business services (19.4 per cent) and financial services (8.1 per cent) were the other major export categories. Within business services, leasing (8.2 per cent) is very significant; it includes the successful aircraft leasing business in Ireland.[16]

The vast bulk of the gross value of Ireland's services exports come from foreign-owned companies (94 per cent), according to the Annual Survey of Business Impact (DBEI, 2018). Nonetheless, Irish-owned companies in Ireland still generate considerable services exports, with a value of €8.7bn, excluding tourism. Around 79,000 people are employed in Irish-owned companies producing international services, compared to just over 100,000 for foreign-owned companies.

Tourism and travel generated export earnings of €5.6bn for Ireland in 2018 and accounted for 3.1 per cent of the gross value of services exports. The real value of these exports in terms of the impact on employment and income is greater than this. As compared to other exports, there is a higher domestic economy and employment content, as well as more regional balance. Tourism revenue in Ireland, as elsewhere, has been badly hit by the Covid-19 restrictions.

The sectoral data on services exports for Northern Ireland use a different classification system.[17] The largest services export sector for Northern Ireland is information and communication (26.7 per cent); this would include computer services. After this, the largest export sectors are services related to manufacturing (17.8 per cent) and construction (15.0 per cent) (NISRA, 2020).

The financial technology or fintech sector is important in both jurisdictions. A recent report on the sector in Northern Ireland found its fintech ecosystem to have the highest concentration of fintech employment in the UK, with an estimated 7,000 fintech-related roles (Whitecap Consulting, 2020). To promote and connect those involved in the sector along the Dublin-Belfast corridor, a Fintech Corridor has been established, with support from Intertrade Ireland.

The closely related cyber-security sector is also a successful export sector, both north and south. Approximately 6,500 people are employed in cyber-security in Ireland and 1,700 in Northern Ireland. A report commissioned by Intertrade Ireland developed an account of the types and impact of linkages engaged in by a sample of cyber-firms in Ireland and Northern Ireland. This included local, cross-border and international linkages (Hobbs *et al.*, 2020).

To conclude, the export profile of the two economies on the island is different. Ireland has developed high-value sectors in goods and services that export on a large scale to European and global markets. Over half of the value of Ireland's exports consists of services. The exceptionally high gross value of exports of €374bn[18] from Ireland overstates their value in generating income, in that much of this gross value is associated with outflows in the form of imported inputs, profits, royalties, etc. At the same time, these exports have played a critical role in allowing Ireland's economy to achieve strong growth in income and living standards from the 1990s, and they support much highly-paid employment and generate a high level of corporate tax revenue.

The Northern Ireland economy is less export-oriented, has a higher share of goods exports, and its external sales are substantially concentrated on Britain and Ireland (approximately two-thirds of all external sales). Machinery and equipment are the most valuable export sector for Northern Ireland but external sales of services are growing rapidly. The value of these almost doubled in nominal terms over the seven years to 2018.

16 CSO, 'Exports and Imports of Services', https://data.cso.ie/table/BPA03.
17 Services exports do not include sales to Britain.
18 This comprises goods exports for €152.5bn from the external trade statistics and services exports of €221.4bn, as recorded in the balance of payments.

1.7 Wages and Living Standards

1.7.1 Gross Earnings

Higher productivity in Ireland is reflected in higher wages. Average (mean) annual gross earnings in Ireland in 2019 were estimated by the CSO at just over €40,000. The corresponding estimate for Northern Ireland by NISRA was just under €30,000. Average annual earnings were thus around one third higher in nominal terms in Ireland. The gap varies by sector. In nominal terms, the largest gaps are in financial services (€22,983), information and communications (€21,778) and public administration and defence (€20,749). In percentage terms, the largest gaps are in health (78 per cent), education (65 per cent) and public administration and defence (70 per cent). Employment in health and education is predominantly, but not exclusively, in the public sector.

Some of the benefit of higher wages for employees in Ireland is offset by higher prices. An indication of this effect can be gained by applying Eurostat's purchasing power parity (PPP) adjustment to take account of price differences. Since Eurostat does not produce a separate PPP index for Northern Ireland, the UK one is used here. If the earnings data are adjusted using the PPP measure for consumer prices, the average earnings gap falls to 20.1 per cent. In other words, annual gross earnings in Ireland are 20.1 per cent higher than in Northern Ireland after taking account of consumer price differences.

The averages presented above refer to the arithmetic mean; i.e., total wages divided by the number of workers. The gap is lower in terms of median wages, an alternative measure of average wages.[19] In 2018, the median wage across all sectors in Ireland was 24.8 per cent higher when measured in euros and 11.0 per cent higher in purchasing power standard terms. This difference in the wage premium between the mean and median is likely due to the influence of multinationals: higher wages in multinationals directly increase the mean wage but the median worker is likely to be employed outside the multinational sector.

1.7.2 Household Income and Living Standards

Household Income

Gross earnings adjusted for price differences are not a measure of living standards. The latter also depend on taxes paid and the provision of social services, among other things. In 2017, equivalised household disposable income, adjusted for price difference, was $4,600[20] higher (15.6 per cent) in Ireland compared to Northern Ireland (Bergin & McGuinness, 2021). This measure takes account of both taxes and price differences. In addition, equivalised means adjustment for difference in the size and composition of households.

Another income measure that can be computed from Eurostat data is net disposable household income per capita. With this measure the gap was smaller, as noted by FitzGerald (2021[21]); income was 2.8 per cent higher in Ireland compared to Northern Ireland in 2017.[22] Equivalised income could be considered a better measure than income per capita, in that the former measure takes account of the economies of scale in living costs achieved within households.[23] On the other hand, it is possible that to some degree the relatively higher equivalised household income, compared to household income per capita in Ireland, could arise from household size being higher than people would like due to high housing costs. To the extent that this is the case, equivalised income would overstate the real income advantage of Ireland.

In adjusting for price differences between Ireland and Northern Ireland, use is made of the average price level for the UK as a whole, as this measure is not available for Northern Ireland. As Fitz Gerald (2021) notes, this has the disadvantage

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19 The median wage is the wage in the middle of the wage distribution. One half of workers earn less than the median and the other half earns more.

20 This analysis by Bergin & McGuinness is based on the OECD regional database in which income comparisons are expressed in dollars.

21 FitzGerald, J. (2021), 'Who is Better Off? Measuring Cross-border Differences in Living Standards, Opportunities and Quality of Life on the Island of Ireland', *Irish Studies in International Affairs*, 32 (2):162-164.

22 Based on the data shown on Eurostat on 14 January 2021. As of 26 April 2021, the data for Northern Ireland for this measure are no longer shown on Eurostat.

23 With the equivalised scale, where more than one person is in a household, lower weights are given to the additional people, while with income per capita every person (adult or child) has the same weighting.

of not taking account of relatively lower housing costs in Northern Ireland compared to the UK. This will lead to relative income being understated in Northern Ireland.

Table 12: Average (mean) Annual Earnings by Sector in Ireland and Northern Ireland in Euros, 2019

	Republic of Ireland	Northern Ireland	Difference between Republic of Ireland and Northern Ireland	Percentage Difference between Republic of Ireland and Northern Ireland
Human health and social work activities	€38,390	€21,551	€16,839	78.1%
Public administration and defence	€50,376	€29,627	€20,749	70.0%
Education	€44,745	€27,100	€17,645	65.1%
Financial, insurance and real-estate activities	€60,409	€37,426	€22,983	61.4%
Information and communication	€64,345	€42,567	€21,778	51.2%
Wholesale and retail trade; repair of motor vehicles and motorcycles	€31,002	€22,460	€8,542	38.0%
Administrative and support service activities	€32,071	€24,021	€8,050	33.5%
Industry / Manufacturing	€47,104	€35,581	€11,523	32.4%
Professional, scientific and technical activities	€49,256	€37,635	€11,621	30.9%
Construction	€41,686	€33,354	€8,332	25.0%
Transport and storage	€43,127	€34,646	€8,481	24.5%
Accommodation and food	€19,153	€16,758	€2,395	14.3%
Arts, entertainment, recreation and other service activities	€26,318	na	na	na
All economic sectors	**€40,283**	**€29,885**	**€10,398**	**34.8%**

Source: Ireland: CSO, 'Earnings Hours and Employment Costs Survey'; Northern Ireland: ONS, 'Annual Survey of Hours and Earnings'. The Northern Ireland figure for 'financial, insurance and real-estate activities' is the employment-weighted average of earnings in (i) financial and insurance activities and (ii) real estate.

Consumption

Living standards depend on the consumption of public services as well as household income. One way of taking account of public services is to examine consumption of goods and services per head of population. Fitzgerald and Morgenroth (2020) found that, taking account of higher consumption of public services in Northern Ireland, living standards were higher there compared to Ireland in 2016.

Data on household and government consumption (i.e. public services) are presented in Table 13. The data are shown in purchasing power standard terms; that is, Eurostat's PPP index has been applied to convert expenditure on consumption into a common currency that takes account of difference in consumer prices in different countries, in order to measure consumption in real or volume terms. In the case of government consumption, this price adjustment

is mainly based on wage levels in the government sector. Government consumption does not include transfer payments (social welfare payments) or government capital expenditure.

Table 13 shows that household or private consumption per person in 2016 in Ireland was slightly higher (by 1.7 per cent) compared to Northern Ireland. However, government consumption per person in Northern Ireland was 15.8 per cent higher compared to Ireland and was also higher than in the UK (by 13.7 per cent). Taken together, total consumption per person (an indicator of living standards) in Northern Ireland was 2.8 per cent higher than Ireland.

Table 13: Consumption per Capita in Purchasing Power Standard terms, 2016

	Ireland	Northern Ireland	UK
Household consumption	15.4	15.2	19.7
Government consumption	5.8	6.7	5.9
Total consumption	21.2	21.9	25.6
Consumption per capita, Ireland = 100			
Household consumption	100.0	98.3	127.5
Government consumption	100.0	115.8	101.9
Total consumption	100.0	102.8	120.4

Source: Ireland data from CSO. Northern Ireland and UK data from NISRA (2019), *NI Economic Accounts Overview*. Population data is from Eurostat. Data are converted into purchasing power standard terms using Eurostat data.
Note: Household consumption includes consumption by non-profit institutions serving households.

The most recent year for which consumption data are available for Northern Ireland is 2016. More recent data are available on consumption for national economies from Eurostat (see Table 14). Since 2016, government consumption per head has risen faster in Ireland than in the UK; by 2019, government consumption per head in Ireland was 9.8 per cent higher than in the UK, measured in purchasing power standard terms.[24] Given this increase in government consumption per capita in Ireland relative to the UK since 2016, it is likely that the gap in government consumption between Ireland and Northern Ireland has narrowed. This, in turn, would have reduced the gap in total consumption between Ireland and Northern Ireland by now. Average total living standards in the UK and high-income EU member states continue to be higher than levels in Ireland and Northern Ireland. The EU (28) average for total consumption in 2019 was 6.2 per cent higher than in Ireland.

Public services are undoubtedly important to living standards. However, one caveat in relation to the impact of public consumption in Northern Ireland on living standards arises from the methodology used to compute it. It is based primarily on real expenditure by the public authorities.[25] Some of the higher level of public consumption in Northern Ireland arises from higher employment in the public administration and defence element of the public sector in Northern Ireland and not all of this necessarily directly contributes to higher living standards in tangible terms. On the other hand, the adjustment for price differences will tend to understate Northern Ireland's income and living standards, as the housing cost component is based on the UK as a whole rather than Northern Ireland, as noted above.

[24] When measured in terms of euros (i.e. not adjusting for differences in the 'price' of public services), government consumption per person in Ireland in 2019 was 19.0 per cent higher than the UK. This arises, in part, due to higher government sector wages in Ireland.
[25] In regard to education, the price adjustment produced by Eurostat seeks to take account of differences in quality. See Eurostat, 2012.

Table 14: Consumption per Capita in Purchasing Power Standard terms, 2019

	Ireland	UK	Denmark	Germany	EU (28)
Household consumption	15,800	19,900	17,600	20,300	17,100
Government consumption	6,700	6,100	9,200	7,600	6,500
Total consumption	22,700	26,800	27,300	28,500	24,100
Consumption per capita, Ireland = 100					
Household consumption	100.0	124.4	110.0	126.9	106.9
Government consumption	100.0	91.0	137.3	113.4	97.0
Total consumption	100.0	118.1	120.3	125.6	106.2

Source: Eurostat database.

Eurostat produces data on 'actual individual consumption'. This is defined as goods and services actually consumed by individuals, irrespective of whether these goods and services are purchased and paid for by households, by government, or by non-profit organisations. While this is probably the best measure for comparing material living standards across countries, it is not available for Northern Ireland.

The question arises as to why consumption in Northern Ireland appears somewhat higher than in Ireland despite higher national income/output per head in Ireland. The most significant factor is the position of Northern Ireland as a region of the UK. This means that government spending in Northern Ireland does not have to be matched by revenue raised there. If the relatively high level of government spending in Northern Ireland were financed by taxation raised within the region, taxation would have to be higher and private consumption would be lower. This difference is covered by a UK government subvention.

A second factor concerns price adjustments. While both the comparisons of national income/output and consumption per head take account of price differences by using purchasing power standard data, the price difference is greater in regard to consumer prices than it is for GDP.

FitzGerald and Morgenroth (FitzGerald & Morgenroth, 2020) report the average size of the UK government subvention to Northern Ireland at around 20 per cent of GDP for the period 2000 to 2016, allowing for the effects of the great recession in 2008. This is done by taking the difference between the level of the public-sector deficit in Northern Ireland and that of the UK. This is higher than the average for the period 1980–1999 (18 per cent). In absolute terms, the ONS reports, the size of the Northern Ireland fiscal deficit in 2019/20 was £10.3 billion. Not all of this deficit or subvention is in the form of a transfer of money to Northern Ireland. A proportion of it represents Northern Ireland's share of the cost of common UK government expenses such as national debt interest, foreign aid, etc.

Income Distribution

Living standards are also influenced by income distribution. The Gini coefficient in Ireland (28.3) was lower than in Northern Ireland (31.0) in 2019 (Department for Communities, 2020). The share of the population in relative income poverty (defined as the share below 60 per cent of median equivalised household income) was lower in Ireland at 12.8 per cent in 2019 compared to 17 per cent for Northern Ireland (2019/2020) (Department of Communities, 2021; CSO, 2020).

Quality of Life Indicators

In addition to comparing income and its distribution, Bergin and McGuinness undertake a wide-ranging comparison of opportunities and quality of life. A range of indicators show that educational attainment is substantially higher in Ireland than in Northern Ireland. Just under 40 per cent of NI young people were qualified in the two highest levels of

educational attainment (post-secondary or third-level) compared to 64 per cent in Ireland. Educational enrolment for 3-5 year-olds is higher in Ireland, as is participation in lifelong learning.

The population in Northern Ireland has the benefit of universal access to free health care through the NHS, an important benefit. However, the number of active physicians per 1,000 population is higher in Ireland, at 3.3 compared to 2.1 in Northern Ireland.

Bergin and McGuinness consider life expectancy as a cumulative indicator of wellbeing. Up to 2005, life expectancy was higher in Northern Ireland but since then it has become higher in Ireland—and this gap is growing. In 2018, overall life expectancy in Ireland was 1.4 years higher than Northern Ireland.

1.8 Factors Affecting the Performance of the Northern Ireland Economy

A paper by FitzGerald and Morgenroth (2020) identified four factors as relevant to explaining what they considered the under-performance of the Northern Ireland economy over the past two decades. First, there is a low level of investment, with an exceptionally low level of private investment. Total public investment as a share of GDP in 2016 was similar to the rest of the UK but a lower share was allocated to transport infrastructure and environmental protection. A higher share of public investment, compared to the rest of the UK, went to housing and community amenities. Ireland's experience with housing suggests that reducing this part of public investment would not be sensible. Second, the low level of private investment is a reflection of competitiveness problems. Competitiveness is a multidimensional and complex issue. However, Northern Ireland has a lower-cost economy in certain respects than Ireland, which places Northern Irish firms in a position to win contracts in Ireland in some sectors.

A third factor identified is education. Northern Ireland has the highest share of early school-leavers of any part of the UK, while the share of the workforce with third-level qualifications is the lowest in the UK. Graduate migration is a factor in this.

A fourth factor is the legacy effects of Northern Ireland's past and continuing divisions. These, in turn, affect the ability to attract FDI and skilled labour. However, Northern Ireland does attract some FDI, as noted above, while the past decade has seen substantial immigration of people from outside the UK.

It was argued by Ruane (2016) that, until quite recently, the two parts of the island had adopted completely different approaches to competitiveness. While Ireland had adopted competitiveness as a central concern over twenty years earlier, she viewed Northern Ireland as being relatively late in systematically focussing on global competitiveness and productivity levels. Since 2016, competitiveness scorecards have been produced which benchmark the competitiveness of the Northern Ireland economy relative to a range of European and OECD countries across almost 150 indicators. The methodology employed is similar to Ireland's National Competitiveness Council's Competitiveness Scorecard.

The most recent of these reports found that NI's relative competitiveness has eroded over time. However, the report found a relatively strong performance by Northern Ireland on wellbeing, technological infrastructure and environmental sustainability indicators. In addition, one area in which Northern Ireland was found to be ahead of all its competitors is the proportion of electricity generated from renewables. However, it also identified 'a range of challenges including outcomes from the education and skills system, persistently low productivity and innovation levels and childcare costs—all of which inhibit NI's international competitiveness' (Johnston *et al.*, 2020: 6).

1.9 Economic Connections on the Island

This section considers economic connections on the island of Ireland. It returns to the issue of trade but this time looking at cross-border trade on the island as well as supply chains. The issue of cross-border working is also discussed.

1.9.1 Cross-Border Trade

Overview of Cross-Border Trade

The value of goods exports from Ireland to Northern Ireland in 2018 was €2bn, while the total value of trade (i.e. goods plus services) to Northern Ireland was estimated by Intertrade Ireland at €2.7bn (0.8 per cent of all exports).[26] The total value of trade from north to south was €4.7bn (19.2 per cent of external sales). The total value of all cross-border trade for 2018, as estimated by Intertrade Ireland, was €7.4bn in 2018.[27]

Cross-border trade in goods, as measured by Intertrade Ireland, had reached an earlier peak of €3.8bn in 2007 before falling with the recession to reach €2.5bn in 2010. It subsequently recovered and the level reached in 2018 (€3.9bn) exceeds the earlier peak (Intertrade Ireland, undated).[28] Food and drink is the dominant component of cross-border trade in goods in both directions, representing over 40 per cent of this trade.

Table 15: Cross-Border Trade in Manufactured Goods (€m), 2018

	South to North	North to South	Total Cross-border
Food, drink and tobacco	€743	€810	€1,553
Chemicals and chemical products	€326	€76	€402
Mechanical engineering	€84	€108	€192
Non-metallic minerals	€96	€86	€182
Wood and wood products	€46	€98	€143
Transport equipment	€41	€87	€128
Manufacturing not elsewhere specified	€344	€79	€423
Basic metal products	€110	€167	€277
Rubber and plastic products	€76	€110	€186
Textiles, clothing and leather	€108	€49	€157
Pulp, paper and publishing	€22	€109	€131
Electrical and optical	€46	€53	€99
Total	€2,041	€1,831	€3,774

Source: Intertrade Ireland based on CSO and NISRA data. Retail purchases are not included in these figures.

The importance of cross-border trade for Northern Ireland companies is evident in the data presented above. After sales to Britain, Ireland is the most significant market for companies in Northern Ireland. For companies in the Republic, cross-border sales represented 1.5 per cent of the gross value of goods exports in the same year. However, this is an

[26] The value of exports of services from Ireland to Northern Ireland is not published by the CSO. Intertrade Ireland produces estimates of the value of these exports based on allocating a share of exports to the UK to Northern Ireland on the basis of the Northern Ireland economy's share of UK trade.

[27] 2018 is the most recent year for which data in both goods and services are available. There is no CSO data on services trade between Ireland and Northern Ireland, but Intertrade Ireland estimates this trade using data on services trade between Ireland and the UK.

[28] Intertrade Ireland treats retail and wholesale trade as trade in services rather than goods.

understatement of the economic value, as an above-average share of these exports came from companies outside the multinational sector, so that a given value of exports is associated with a relatively higher income and employment impact. Beyond this, there are a number of other important dimensions to cross-border trade.

Small-business and Cross-border Exports

Research by Intertrade Ireland (2013) has demonstrated the particularly vital role of cross-border trade for small businesses on both sides of the border. This research was based on a sample survey of businesses which had participated in the trade programmes of Intertrade Ireland, Enterprise Ireland or Invest Northern Ireland. Key findings from this research were as follows:

- Almost two-thirds of the exports of small firms in Northern Ireland went to Ireland, while almost a sixth of the exports of small firms in Ireland were to Northern Ireland.
- The cross-border market is critical for first-time exporters. For almost three-quarters of businesses across the island (73 per cent), cross-border sales represented their first export market; this applied to 90 per cent of Northern Ireland firms and 63 per cent of firms in Ireland.
- Cross-border trade is significant for the development of companies' export capabilities. For 71 per cent of businesses surveyed, it has had a significant influence on the development of additional export markets. Companies in Ireland found Northern Ireland a useful stepping stone to the British market; some companies benefitted from establishing relationships with companies in Northern Ireland that are also established in Britain.

Subsequent research by Intertrade Ireland (2018b) compared the performance of exporting and other firms on the island of Ireland. They found that companies involved in exporting had a consistently better performance in terms of productivity, employment and turnover relative to non-exporters. This effect could arise because better-performing firms are more likely to export—and this research found evidence to support this. However, there is evidence from elsewhere that the effect also works the other way. Research on Slovenian manufacturing companies found that export entrants become more productive once they start exporting, and that the productivity gap between exporters and their domestic counterparts increases further over time (De Loecker, 2007). For many companies, exporting across the border represents the first step to realising the benefits of exporting.

Economic Integration and Supply Chains

Supply chains can be national or international. When supply chains cross international borders, this implies international trade in intermediate products (OECD & CEFTA, 2013). Intermediate products have become a major part of global trade. Research on the extent of trade in intermediate products on the island of Ireland was commissioned by Intertrade Ireland from the ESRI (Intertrade Ireland, 2018a).

The standard UN classification system was used to divide trade products into consumer goods, intermediate inputs, capital goods and others. The research found that a substantial share of trade on the island is in intermediate products. Very little trade consists of either capital goods or other products. For exports from Ireland to Northern Ireland there is a fairly equal split, intermediate and consumer, while for imports across the border into Ireland there is a somewhat higher share of intermediates to consumer goods (roughly 60: 40). However, this understates the extent of trade in intermediate products because, using the standard classification system, almost all beef and dairy products are treated as consumer products. These account for a substantial share of cross-border trade.

Another indicator of integration of supply chains is the extent to which trade is undertaken by companies trading in both directions, particularly where the exports and imports are within the same sector. The term 'two-way trader' is used to describe companies that both directly export and import. The focus here is on companies engaged in two-way trade across the Irish border. The Intertrade Ireland study found that two-way traders accounted for 60 per cent of exports and over 70 per cent of imports in 2015. In the case of dairy products, almost all of the cross-border trade was estimated as being by companies trading in both directions. This indicates a high degree of cross-border integration for the dairy sector. The share of this type of trade was also more than 60 per cent in both directions for metals and machinery. In the case of meat and fish, the bulk of imports to Ireland were by two-way traders who also engaged in export, although less than 20 per cent of exports were by two-way traders involved in imports in this sector.

Potential Expansion of Cross-Border Trade

The trend and current level of cross-border trade was described above. An Intertrade Ireland study in 2010 examined whether the actual level of cross-border trade was at, above or below the level that would be expected based on international patterns of trade (Morgenroth, 2009). The approach to addressing this question was to estimate what is known as a 'gravity model' of trade and to compare actual trade levels to those predicted by the model, at both aggregate and sectoral level. The variables used in a basic gravity model are GDP and distance: the higher the level of GDP in the countries concerned and the closer they are to each other, the higher the level of trade expected.

In addition to these basic variables, a range of other variables were included in the Intertrade Ireland analysis. Dummy variables were used to take account of a number of relevant features: whether the trading partners share a common language, a common border or a common currency; whether there are trade barriers; and whether the trading partners are landlocked or located on islands. Population was also included as a variable. Since trade fluctuates year to year, this type of analysis usually examines trade over a period of years. For this study, most of the analysis was based on the period 1988 to 2007. The aggregate level of trade in manufacturing products was examined, as well as sectors within manufacturing. The cross-border trade data for the island of Ireland were taken from the CSO; sensitivity tests showed similar results using other sources. Trade in services was not included; the CSO does not collect data on trade in services on a north-south basis.

The key finding from this study was that, taking account of a range of economic and geographic factors, the level of trade between the two jurisdictions on the island was substantially below the level that would be expected. This applied to all sectors, with one exception, although not all the sectoral results were statistically significant. The one exception was non-metallic minerals, where trade was somewhat higher than the predicted level. Non-metallic minerals include cement and bricks. These are bulky products that tend to be traded locally rather than over very long distances, so high levels of trade on the island are natural. In the case of food, the actual level of trade was reasonably close to, but somewhat below, the predicted level. This study also found that the gap between the actual and expected level of trade was increasing over time; as GDP and population grew, trade was not growing as fast as predicted by the model.

A subsequent study by Intertrade Ireland looked further at possible explanations for the trade gap (Morgenroth, 2011). The two factors examined were the differences in the sectoral structure of the two economies on the island of Ireland and in the level of foreign direct investment in different sectors.

The role of the sectoral structure is significant because of the large share of trade globally represented by intra-industry trade, i.e. trade in products within the same industry. There will be more of this type of trade between countries or regions that have a similar sectoral structure. Hence, differences in the sectoral structure of industry north and south could be a factor in explaining the finding regarding trade being below the expected level.

The scope for intra-industry trade depends on qualitative aspects as well as the size of sectors. If firms have a very different level of sophistication in either product or process, there may be a mismatch, resulting in less trade. One dimension of this is the relative presence of multinationals in a sector. In a sector dominated by multinationals, there may be less trade on the island than would be predicted by the gravity model, as the firms concerned are trading more with sophisticated partners or plants within the same corporation elsewhere in the world. This study found that there was a negative association between the predominance of multinationals in a sector and the size of the gap in cross-border trade on the island.

When account was taken of these two factors, the research by Morgenroth found the real gap between actual and expected north/south trade volumes is considerably closer. It was suggested that there was limited value in seeking to increase cross-border trade in sectors that are dominated by foreign-owned multinationals.

These studies of potential for the further development of trade are concerned only with trade in goods, so do not capture the potential for expansion of trade in services. Significant areas of trade in services include tourism and construction. In addition, there is the potential for other types of cross-border business development, including joint ventures and other types of business collaboration. Research findings on the potential for wider forms of collaboration in three key sectors are presented in Section 1.10.

Brexit

Since Northern Ireland retains full access to the EU Single Market for goods, cross-border trade in goods will continue as before. However, post-Brexit Northern Ireland does not have full access to the EU services market. Despite this, according to Intertrade Ireland, there will be few immediate changes for most services traded across the Irish border, since most of the regulations will remain highly aligned and similar. However, in some services, companies had used single EU-wide authorisations and licenses to do business across the EU. These types of service provider now need to be authorised to do business with any EU member state, including Ireland. Such services include certain financial services, communications, transport and a few other sectors (Intertrade Ireland, 2021).

Data protection is often essential for trade in services to take place. The Trade and Co-operation Agreement (TCA) allows for the continuing flow of personal data between the EU and UK for a six-month period after the end of the transition period (31 December, 2020), pending a decision by the EU to recognise the adequacy of UK data protection arrangements. The European Commission has concluded that the UK ensures a level of protection that is essentially equivalent to the one guaranteed under the General Data Protection Regulation (GDPR) and under the Law Enforcement Directive (LED). In February 2021 the Commission launched a process towards the EU adopting formal decisions on recognising the adequacy of UK data protection.

Recognition of professional qualifications is another essential underpinning of much trade in services. Brexit means the ending of automatic mutual recognition of professional qualifications between the EU and UK. Those whose UK professional qualifications were already recognised in Ireland prior to the ending of the withdrawal period (up to 31 December 2020) will continue to have their qualifications recognised in Ireland (and the rest of the EU). The Irish Government has encouraged regulatory authorities in Ireland, some of which operate on an all-island basis, to engage with their counterparts in the UK in order to manage the process of continued recognition of UK qualifications in national law in Ireland (Government of Ireland, 2020).

Brexit means that EU rules on public procurement no longer apply to the UK. One implication of this is that UK public bodies issuing tenders are no longer required to list them in the Official Journal of the European Union. The UK government has published a Green Paper indicating its intention to transform its public procurement system (UK Cabinet Office, 2020). The UK is joining the World Trade Organization's Agreement on Government Procurement. Companies in Ireland seeking public-sector contracts in Northern Ireland or Great Britain will continue to have access to UK public-sector contracts. Likewise, companies in Northern Ireland will continue to have access to public-sector contracts in Ireland and the rest of the EU. However, in both cases 'the terms and conditions of access as well the enforceability of the rules, will change' (Intertrade Ireland, 2021).

It is important not to overlook the fact that Brexit also presents opportunities in some sectors on the island. For Northern Ireland, there is a further opportunity in that it is the only jurisdiction that enjoys no trade barriers to either the EU or UK markets, in relation to goods. This should be used to reinvigorate investment in Northern Ireland.

Conclusion

For the Northern Ireland economy, trade with Ireland is clearly significant. After Britain, Ireland is the largest destination for Northern Ireland's external sales—bigger than the rest of the EU combined. As an export market, Northern Ireland is, in quantitative terms, of less significance for Ireland than *vice versa*. However, for both economies, cross-border trade is of particular significance for smaller companies and as a stepping stone to larger markets, while cross-border flows are important for supply chains across the island.

1.9.2 Cross-Border Employment

The evidence indicates that the extent of cross-border commuting in the Irish border region is among the highest in the EU, although there are different estimates of its level. According to the two 2011 censuses on the island, there were 8,300 people crossing from Ireland for work or study to Northern Ireland, while 6,500 travelled from Northern Ireland to Ireland. This gives a total of close to 15,000 workers and students at that time (CSO & NISRA, 2014). The more recent 2016 Irish Census indicates that 7,037 residents in Ireland have a place of work in Northern Ireland—an increase of 10 per cent from 2011. If this rate of growth continued in the years to 2021, this would imply 7,750 workers commuting to Northern Ireland while living in Ireland.

In the census questionnaire people are asked to give the address of their place of work. Hence these figures will not include those who work mainly from home, and those with no fixed place of work who may cross the border in the course of their work.

A 2010 study by the Centre for Cross Border Studies estimated a higher number of people engaged in cross-border commuting for work—at 23,000 (O'Kane & Shiels, 2010). This estimate was based on a sample survey of employers, with the results extrapolated to the border region—defined as the area 30 kilometres either side of the border. This study found a considerably higher level of commuting to Northern Ireland compared to movement in the opposite direction, which is consistent with the census results. Of the employees on the northern side of the border, 8.5 per cent were estimated to live in Ireland while the corresponding figure for those employed on the southern side of the border was 4.5 per cent.

Estimates of commuting between Ireland and the UK are available from a study commissioned by the European Commission (2009). This study was based on information gathered by questionnaires and interviews of labour-market experts. The study estimated that there was outward commuting for work of 17,000 people from the UK and inward commuting of 14,700.[29] The corresponding figures for Ireland (RoI) were 12,000 outward commuters and 17,000 coming into Ireland. If it is assumed that all those entering Ireland for work were from Northern Ireland (17,000) and all those leaving Ireland (12,000) were commuting to Northern Ireland, this would indicate a maximum number of workers crossing the Ireland/Northern Ireland border of 29,000.[30]

The European Commission (2009) study also estimated the rates of inward and outward commuting in border regions. Commuting rates were defined as the number of either inward or outward commuters, divided by the number of employees in the region. With regard to inward commuting (apart from Luxembourg, Liechtenstein and Monaco, with special status), it found that the highest level of inward commuting was in Ireland (10.55 per cent) (i.e. from Northern Ireland to Ireland), followed by Switzerland (6.0 per cent). The level of outward commuting from Ireland to the UK (i.e. from Ireland to Northern Ireland) was the highest in the EU at 6.44 per cent.

The differences in the estimates from different sources mean that there is uncertainty concerning the scale of cross-border migration. The most comprehensive sources are the Censuses although this information is now dated. The Census of Population being undertaken this year (2021) in Northern Ireland and that planned next year (2022) in Ireland will provide more up-to-date information on this issue.

1.9.3 Energy

The electricity market is organised on an all-island basis and will continue on this basis despite Brexit. The Single Electricity Market (SEM), a wholesale market for electricity for the whole island, established in 2007, was the first such arrangement in the world. It was restructured in 2018 to be integrated with the European Internal Energy Market for electricity (EirGrid, undated). There are two interconnectors between the island of Ireland and Britain at present. A new interconnector between Ireland and France is planned. Trade in electricity between the SEM and Britain continues after Brexit but the initial experience following the end of the transition period is that there has been a reduction in this trade (Lempere, 2021).

The SEM is operated by the Single Electricity Market Operator (SEMO), a joint venture between the grid operators in the two jurisdictions (EirGrid and the System Operator for Northern Ireland, SONI). It is governed by the SEM Committee. This was established by legislation and has the decision-making authority for all SEM matters. The committee consists of representatives from the energy regulators north and south: the Commission for Regulator of Utilities (CRU) in the south and the Utility Regulator (UR) in the north, along with an independent and deputy independent member.[31] On 25

[29] In this study commuters were defined as workers (including self-employed) who pursued their occupation in one country while living in another. People were required to return home at least once a week to be counted as commuters.

[30] These figures also include what is probably a small number of weekly commuters to Britain or elsewhere, which would reduce the number of cross-border workers as estimated by this source.

[31] The deputy independent member may attend meetings but can only vote in the absence of the independent member.

February 2014 the two energy regulators signed a memorandum of understanding that sets out how they will maintain effective and beneficial co-operation and collaboration (SEM, undated).

The SEM has generated substantial benefits. It has enhanced efficiency, reduced costs for consumers and improved energy security (FitzGerald, 2015; Gorecki, 2013). In the judgement of John FitzGerald, the SEM is probably the most successful of all north-south co-operation projects.

However, the ability of the SEM to achieve its objectives depends on the degree of physical interconnection on the island. Limited interconnection capacity has meant that the full potential benefits of an integrated system have not yet been achieved. A new north-south interconnector has been planned for several years. This would have substantial benefits. First, it would improve the security of the electricity supply, particularly for Northern Ireland. According to SONI, the decommissioning of older electricity generating stations means that, after 2021, demand will outstrip supply in the absence of the interconnector (SONI, undated). Second, it would make it possible to connect more wind-generated electricity to the grid, thereby supporting renewable energy targets in both jurisdictions. Third, it would create cost savings for consumers; according to a former Minister for Energy, the savings in the SEM are estimated to start at €20m, rising to between €40m and €60m per annum by 2030.[32]

Planning permission has been secured in both jurisdictions. In Ireland the project has received approval from An Bord Pleanála; subsequent objections have been rejected by the High Court (Duffy, 2018). However, in November 2020, a campaign group initiated a legal challenge to the decision of the Northern Ireland Infrastructure Minister to approve the North-South Interconnector. Hence, the delivery of this major infrastructure project remains uncertain.

1.9.4 Tourism

The external marketing of the island of Ireland as a tourism destination is undertaken by a joint body, Tourism Ireland. It operates under the auspices of the North South Ministerial Council (NSMC), and its sponsor departments are the Department for the Economy in Northern Ireland and the Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media in Ireland. Its board of directors is appointed by the NSMC.

In 2019, there were 11.3 million overseas visitors to the island of Ireland, comprising 9.7 million visitors to Ireland and 2.7 million to Northern Ireland.[33] An estimated 70 per cent of overseas visitors who come to Northern Ireland travel via Ireland (IBEC/CBI, 2018).

Total revenue from overseas tourism in 2019 for the island was €5.85bn. The revenue generated in Ireland was €5.2bn, compared to €677m in Northern Ireland. The British market is substantial both for Ireland (€1bn or 19.3 per cent of overseas revenue) and even more so for Northern Ireland (€424m or 62.6 per cent of external revenue). The largest share of revenue for Ireland is generated from the EU and wider global markets (€4.2bn or 80.3 per cent of overseas revenue), while these wider markets play a more modest role for Northern Ireland (€252m or 37.2 per cent of overseas revenue).

Ireland is an important tourism market for Northern Ireland, generating revenue of £142m or €162m in 2019, which was 19.4 per cent of external tourism revenue. There were 756,000 overnight visitors from Ireland to Northern Ireland in 2019, just over one quarter of all external overnight visitors. There were 1.28m tourist visitors from Northern Ireland to Ireland in 2019, who generated revenue of €402m. This represented 7.2 per cent of external tourism revenue.[34]

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32 https://www.kildarestreet.com/wrans/?id=2018-12-18a.1254, 21/04/21.

33 Some visitors start their visit in one jurisdiction and then visit the other. Tourism Ireland adjusts for this in compiling figures for the island to avoid double-counting.

34 Excluding receipts by carriers of passengers to Ireland and Northern Ireland.

1.9.5 Infrastructure

Effective infrastructure that connects all parts of the island is an important underpinning of economic and social life. The National Planning Framework (NPF) points out that both the NPF and the Regional Development Strategy for Northern Ireland provide a basis for long-term co-ordination on infrastructure development. The NFP adopts the following objectives on the co-ordination of infrastructure investment:

- In co-operation with relevant Departments in Northern Ireland, enhance transport connectivity between Ireland and Northern Ireland, to include cross-border road and rail, cycling and walking routes, as well as blueways, greenways and peatways.
- In co-operation with relevant Departments in Northern Ireland, strengthen all-island energy infrastructure and interconnection capacity, including distribution and transmission networks to enhance security of electricity supply.
- In co-operation with relevant Departments in Northern Ireland, develop a stable, innovative and secure digital communications and services infrastructure on an all-island basis.
- Support the coordination and promotion of all-island tourism initiatives through continued co-operation between the relevant tourism agencies and Tourism Ireland (Government of Ireland, 2018: 111-12).

The NPF also expresses a commitment to work with Northern Ireland for economic advantage, including support for developing the Dublin–Belfast Economic Corridor and the North West Strategic Growth Partnership. In addition, there is a commitment to work co-operatively to manage shared environmental resources.

The Government of Ireland has announced that €500m is to be allocated to a Shared Island Fund over the period to 2025. This is for capital funding for collaborative north/south projects.

1.9.6 An Island Economy

In a 1992 speech to the annual conference of the Confederation of Irish Industry (since merged to form Ibec), Sir George Quigley introduced the concept of an 'island economy' for Ireland. He envisaged the island as an economic zone, 'permeated by complex circuitry reflecting a network of market and non-market relationships' (Quigley, 2013: 15). He cited a study for the Asian Development Bank on growth triangles in Asia: 'this showed how, by exploiting economies of scale and integrating the resource endowments of their members, adjoining areas in neighbouring countries could together be far more competitive in sectors such as manufacturing and services (including tourism)' (Quigley, 2013: 15). He noted that this type of economic integration in Asia was feasible among countries with very different political systems.

D'Arcy and Ruane (2018) point to progress made towards realising this vision:

> *What was a 'radical proposition' in 1992 is an everyday business reality today for companies with high levels of all-island integration, for example, through input sourcing, production, service provision and supply chains. However, notwithstanding this growth in integration, recent analysis shows that the scale of Ireland's trade with Northern Ireland, relative to its trade with other countries, is still less than would be expected of two jurisdictions so proximately located (D'Arcy and Ruane, 2018: 7).*

It was noted above that research also found that, taking account of differences in economic structures and the role of multinationals, the gap between actual and expected trade on the island is less than it first appears. However, there is potential for these structural differences to decline and for the economies to become more trade-compatible.

In his final interview Quigley commented on the success of an enhanced north-south relationship:

> *Success can be measured in very practical ways. To mention but a few: the North's sales to the South are now roughly the same as its sales to all the other European countries put together; there is close cooperation on infrastructure development; and a Single Electricity Market is being developed (notwithstanding the absence of a North/South body in this area) (Quigley, 2013: 18).*

He also pointed to considerable scope to realise further benefits in terms of an island economy. He cited a study by D'Arcy (D'Arcy, 2012) that had identified significant possibilities for north-south synergy in areas such as health, higher education and research, energy, tourism and water.

One of the proposals in Quigley's original lecture to advance the island economy was the idea of promoting a Belfast-Dublin economic corridor. The idea was that realising the potential of the island economy required development of the normal economic and business connections that would be expected between two cities only a hundred miles apart. He emphasised that it should be a corridor and not a 'tunnel', so that places between these cities would also benefit.

In 2018 a network of eight councils located along the corridor and two universities came together to find ways of realising the potential benefits of further development of the Dublin–Belfast Economic Corridor (DBEC). This network commissioned a study to provide a profile of the current state of the economy along the DBEC, and the potential for further development and cooperation. This study was published in March 2021 (Blair *et al.*, 2021).

The study found that significant progress had already been made: 'Economic growth, the numbers in employment, improvements in transport connectivity and greater levels of interaction have all been realised' (Blair *et al*. 2021: 16).

The study documents the strong demographic and economic profile of the DBEC. The eight council areas concerned have a combined population of two million, which has increased by 12 per cent since 2006. The area had a buoyant labour market prior to the disruption of Covid–19. While there are variations in the skills level of the population within the area, the overall picture is of a well-educated population available for work. Up to the recent recession, demand for higher-level skills along the DBEC exceeded supply. The demand for skills is underpinned by a strong pipeline of inward investment.

The report identifies numerous possibilities for further potential co-operation. These cover the themes of skills development, promotion of sectoral strengths, enterprise supports, infrastructure, research and innovation. It is intended that these will be subject to further development by the network of councils and universities, before being tested with a wider group of stakeholders.

Other cross-border development initiatives include the North West Strategic Growth Partnership, and the Irish Central Border Area Network. The former, jointly led by Donegal County Council and Derry City and Strabane District Council, brings together senior government officials from a number of government departments in Ireland and Northern Ireland. It involves a partnership approach to work towards the vision of a resilient and prosperous region in the North West. The next phase of NESC's shared island work will include examination of this initiative.

1.10 All-Island Sectoral Ecosystems

A study published by Intertrade Ireland (Intertrade Ireland, 2015) explored the scope for all-island economic co-operation at sectoral level. This study developed an approach to this, which it called 'sectoral ecosystems'. This approach builds on the concepts of 'industrial districts' first proposed by the economist Alfred Marshall and the more recent concept of clusters as set out by Porter (1990). Both are relevant to the ability of businesses to benefit from external economies of scale and scope.

The sectoral ecosystems approach examined the potential for benefits from all-island interaction in the following six dimensions: (i) labour market; (ii) education and training; (iii) infrastructure; (iv) goods and services markets; (v) research, technology and innovation; and (vi) institutional supports.

This study developed a new measure of the spatial concentration of enterprises, which involved combining data on employment and the number of enterprises in an area. An industry was deemed over-represented in an area if the

share of employment and number of firms was larger than would be expected on the basis of a random distribution. This was defined as having at least twice the share of employment and number of firms compared to what would be expected from a random distribution. This measure was applied to identify the spatial distribution of enterprises by sector across the island.

The study categorised sectors into four spatial categories: (i) dispersed significant concentration; (ii) concentrations with a cross-border element; (iii) ubiquitous across the island; and (iv) ubiquitous in Northern Ireland, with significant concentration elsewhere.

To assess the relevance of the six dimensions (outlined above) of the sectoral ecosystems approach, three large sectors were selected as case studies: pharmaceuticals, medical devices and software. These three sectors are economically significant in both jurisdictions. The potential benefits of co-ordination across the six dimensions varied but some general patterns emerged.

The study found that the benefits from further integration of an all-island labour market for the three sectors were likely to be limited. This is because there were already few barriers to labour-market movement. It also found limited potential in relation to sector-specific infrastructure as this was not identified as a problem. This could, however, be different for other sectors. The study noted that there were fewer significant sectoral concentrations in the North West of the island and that this may be due to an infrastructure deficit.

The study also found that the potential benefits from further all-island co-ordination across the three sectors were greatest in relation to two of the six dimensions: (i) research, technology and innovation and (ii) education and training. Since the three sectors are based on advanced technology, research and innovation are central to their success. There are many research centres and other actors across the three sectors that support innovation. The study found that the level of cross-border collaboration in this activity was relatively low, with rich potential to enhance it. Specific opportunities for doing so were identified in the three sectors.

An important opportunity identified for the pharmaceutical industry was the creation of an all-island clinical trial co-ordination network. The Intertrade Ireland (2015) study found that the island of Ireland was not reaching its full potential for clinical trials activity, and that international companies and others would be attracted by a one-stop-shop organisation that provided efficient access to patient recruitment on an all-island basis. Progress has been made on this since publication of the report. Intertrade Ireland has facilitated renewed collaboration between the Northern Ireland Cancer Trials Network and Cancer Trials Ireland, and cross-border cancer research trials have been launched (Intertrade Ireland, 2019).

The study found a very low level of all-island co-ordination in relation to education across all three sectors. There are relatively weak cross-border links across third-level institutions, with substantial potential benefits to be realised from improved co-ordination. Examples of potential co-operation identified for the pharmaceutical industry include: an all-island skills assessment to identify critical skill shortages across the island, and all-island promotion of specialist postgraduate training programmes.

In regard to goods and services markets, the study identified an opportunity in the pharmaceutical sector for co-ordination of activity that supports the indigenous sector, north and south, to increase its ability to supply the multinational pharmaceutical industry.

Agri-food is another important sector on the island. The agri-food sector accounted for 9.5 per cent of the gross value of goods exports in Ireland and 6.7 per cent of GNI in 2019. The sector accounted for over one quarter of Northern Ireland's external sales of goods (in 2018) and 3.5 per cent of GVA.

There are many similarities in agriculture north and south, as well as common challenges. In both jurisdictions dairy and cattle account for the highest share of agricultural output (Murphy, 2020): these sectors represented 68 per cent of gross output in Ireland and just over half of output in Northern Ireland in 2019. The agri-food sectors on the island are also closely interconnected through supply chains. For example, Northern Ireland exports 800 million litres of milk annually to Ireland, mainly for processing (Arnold, 2020).

Both parts of the island are characterised by highly volatile farm incomes (Murphy, 2020). Agriculture north and south has the challenge of achieving major reductions in greenhouse-gas emissions. Likewise, there is a common need to address environmental challenges in regard to water quality and biodiversity, and a pressing need to improve soil quality on the island (Arnold, 2020).

Given the similarities, interconnections and common challenges in agriculture and food, there appears to be considerable scope for enhanced co-operation in the years ahead.

1.11 Conclusion

This paper has described the evolution of the two economies on the island, north and south. Value-added per person in Ireland is now substantially higher than in Northern Ireland at an economy-wide level. This arises predominantly from higher productivity rather than higher employment in Ireland.

Ireland has become a major exporter of goods and services to the rest of the EU and global markets. After Britain, Ireland is the largest export market for Northern Ireland. Cross-border trade is of particular importance for small companies on both sides of the border and is often a stepping stone to further export markets.

While gross wages are higher in Ireland, there is not a large difference in living standards north and south. In 2016 it was estimated that real living standards, as measured by consumption of goods and services including public services, were 3 per cent higher in Northern Ireland compared to Ireland.

Brexit poses unique challenges for the island but also presents opportunities in some sectors. For Northern Ireland, there is a further overall opportunity as it is the only region that enjoys no trade barriers to either the EU or UK markets in relation to goods. This should be used to reinvigorate investment in Northern Ireland.

Despite differences in the economies on the island, the expansion of cross-border trade and the increased interconnections of business mean that, to some extent, an island economy has already been developed. This needs to be sustained through enhanced cross-border economic connections and co-operation, to the mutual benefit of both parts of the island.

Appendix

Data Sources on Cross-Border Trade

There is some uncertainty concerning the level of cross-border trade in that there are three data sources on trade in goods between Ireland and Northern Ireland. These are: CSO trade data, UK trade data and data from a survey undertaken by NISRA of companies in Northern Ireland, the Broad Economy Sales and Exports Statistics (BESES). The estimated level of goods exports from Ireland to Northern Ireland from these sources range from €2.0bn (CSO), to €2.5bn (UK trade data) and €2.7bn (BESES survey). For trade in the opposite direction (i.e. goods exports from north to south) the corresponding estimates are €1.5bn (CSO), €3.6bn (UK trade data) and €3.5bn (BESES). One factor that can explain some of the difference is the treatment of retail sales. The BESES survey includes retail sales to consumers in Ireland as exports but the CSO trade data do not record these as imports.

Differences in the data sources on cross-border trade are longstanding. They have been the subject of two studies by Intertrade Ireland (Roper *et al.*, 2009; Morgenroth & Anyadike-Danes, 2003). The 2009 Intertrade Ireland study identified several methodological differences in the different data sources that could explain some, but not all, of the differences. Its recommended approach in the short term was to use the CSO data on exports from Ireland to Northern Ireland and to use the Department of Enterprise, Trade and Investment (DETI) survey data on exports from Northern Ireland to Ireland. For the most part, this approach is adopted in this paper (using the current survey of Northern firms, the BESES), although some of the research quoted here is from studies based on CSO data, as those data are the most comprehensive source on goods trade on the island.

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