The Northern Ireland Economy: Problems and Prospects

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Abstract

This paper considers the lacklustre performance of the Northern Ireland economy in recent decades, in particular the very low productivity growth. The low level of human capital and the continued low levels of investment, account for much of this poor performance. To address its economic weakness Northern Ireland needs to reallocate resources to investment in physical and human capital over a sustained period. To date, large transfers from central government have ensured that the standard of living in Northern Ireland is close to the UK average and above that of Ireland, in spite of its weak economy. However, the dependence of Northern Ireland on these transfers leaves it very vulnerable to shocks. Because of Northern Ireland's dependence on transfers and its weak economic structure, Irish unification, however it was handled, would be likely to be very expensive for both the Republic of Ireland and Northern Ireland.

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1. Introduction

In recent decades the Northern Ireland economy has suffered from a lack of dynamism. From the late 1960s through to the Good Friday Agreement[3] of 1998, the ongoing violence had a huge negative impact on society, as well as on the local economy. While the signing of the agreement ushered in a new peaceful era, over the last 20 years the economy has not recovered any of the vigour it had shown in the 1940s and 1950s. This paper analyses some of the reasons for this poor economic performance, it discusses the risks posed for the Northern Ireland economy by changes in its external environment, and it makes some suggestions on how the very slow growth in productivity could be reversed in the coming years. In concluding, the paper considers some broad options for the Northern Ireland economy over the coming decades.

The decision of the UK government to leave the EU raises serious concerns about the future of the Northern Ireland economy. While Northern Ireland voted against Brexit, Northern Ireland still faces the prospect of a serious negative impact on its local economy. The Northern Ireland economy is quite closed, and those firms that do export may be disproportionately affected by the departure from the EU. Also, the farming sector is very dependent on EU subsidies, subsidies that may not be replaced by corresponding new UK transfers after Brexit.

An even more serious long-term concern is that the Northern Ireland Economy depends on very large transfers from the UK government to maintain its current relatively high standard of living. Northern Ireland is more generously treated than some other relatively poor UK regions, such as the north-east of England and Wales. The rise of English nationalism, mirrored by Scotland's current disenchantment with the Union, may call into question the substantial regional support for Northern Ireland funded by the thriving economy in the South of England. A reduction in regional solidarity within the UK, could see Northern Ireland suffering a major loss of transfers just when the economy is already fairing very badly from Brexit.

In Section 2 of this paper the European experience of convergence and divergence between regional economies is considered. Section 3 reviews the performance of the Northern Ireland economy in recent decades. While the "Troubles" can explain many of the economic problems experienced in the period from 1969 to 1998, in the 20 years since the Belfast Agreement the regional economy's performance has remained lacklustre. These more recent problems stem from policy failures by the Northern administration, frittering away the benefits of exceptional support from central government. Some of the factors underlying the North's poor economic performance in recent years are outlined in Section 5. The economic challenges that Northern Ireland is likely to face over the coming decade are set out in Section 6 and Section 7 concludes.

2. Regional convergence in the EU

In order to understand the performance of the Northern Ireland economy in recent years it is useful to consider examples of failed and successful regional convergence in output and productivity elsewhere in the EU. There are a number of factors that make convergence of regions within a national economy more complicated than in the case of national economies. In particular, because of the high level of integration within national economies, there is often much less difference in regional competitiveness to drive movement of investment to poorer regions. In addition, the

[3] Also referred to as The Belfast Agreement.

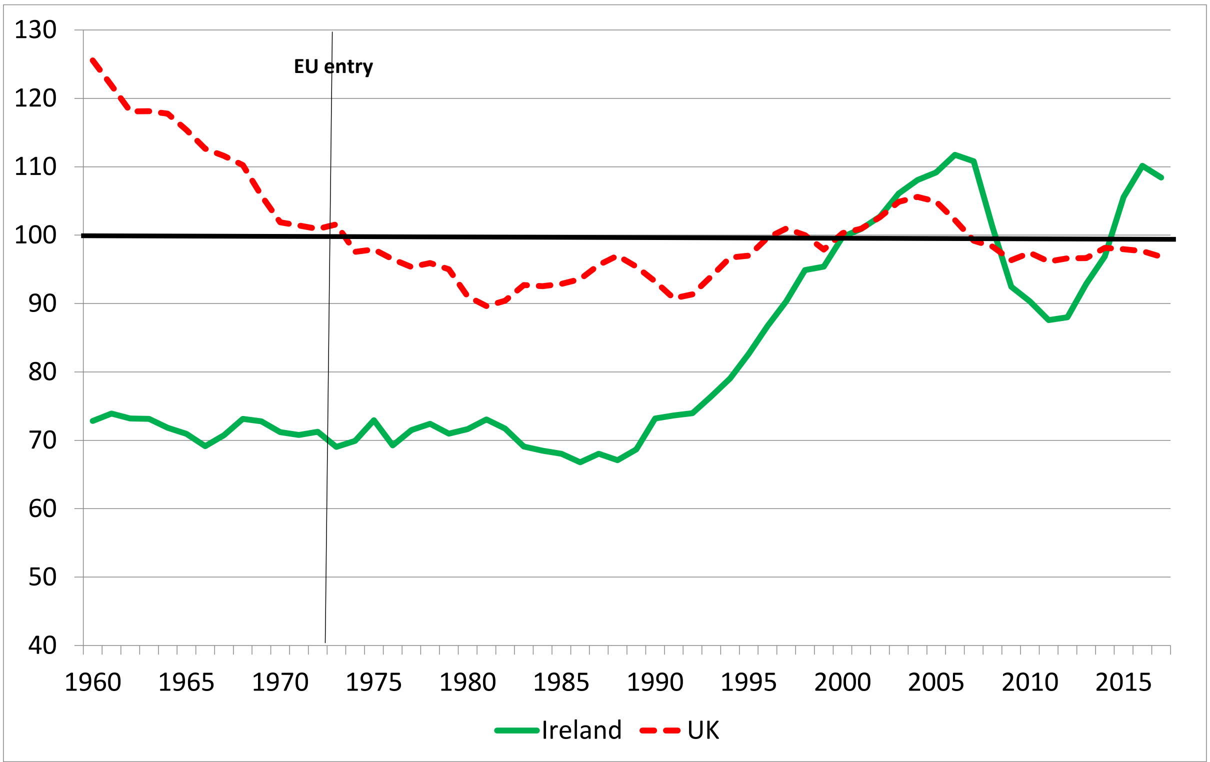
extensive transfers, which are normal between regions within national economies, may either help or hinder convergence in output and productivity[4].

Neoclassical growth models suggest that regions and countries should converge in living standards. However, the empirical literature has shown that convergence is far from automatic and that, over recent decades, European regions have been characterised by persistent and increasing differences (Lammarino et al, 2019). The effects of the financial crisis have exacerbated this, with remote rural regions performing relatively poorly while economically central regions have performed strongly (Dijkstra et al, 2015). Similar trends have also been observed at the regional level in Ireland (Morgenroth, 2014).

2.1 National Convergence

Since it was founded in 1956 the EU has been vital in promoting economic growth across the continent. While the experience of individual members is quite varied, EU membership has brought about a gradual convergence in living standards between countries that began with very different economies.

Figure 1: Irish GNI* per person relative to EU 15 and UK GDP, adjusted for PPS[5]



Source: DG ECFin AMECO database and CSO National Income and Expenditure

[4] Kaldor, 1970, discusses the different channels through which regional policy may operate. Also Morgenroth, 2010, showed how the system of taxes and public expenditure in Ireland acts as a regional redistribution mechanism.

[5] Purchasing Power Standard (PPS) is the technical term used by Eurostat for the common currency in which national accounts aggregates are expressed when adjusted for price level differences using Purchasing Power Parities (PPPs). Thus, PPPs can be interpreted as the exchange rate of the PPS against the euro.

One of the best examples of convergence is the Irish economy over the last 30 years. The contrast between its more recent experience and the first 60 years of independence highlights the fact that convergence is not inevitable, but that it depends on a range of different policies and supportive institutions, not least of which is EU membership.

The evolution of the standard of living in Ireland and the UK since 1960, relative to the average for the EU 15, is shown in Figure 1. In 1960 the Irish standard of living was around 70% of the average for the EU 15. Its position at independence was probably rather similar. For Ireland, there was little progress in raising the relative standard of living until the early 1990s. However, since then, the Irish standard of living has risen dramatically relative to the EU15. While the financial crisis saw a substantial temporary deterioration, the subsequent economic recovery has seen the Irish standard of living rise above that of the average for the EU15.

The path for the UK has been rather different. In 1960 it had a living standard that was around a quarter higher than that of the EU 15. However, the rest of the EU 15 caught up over the 1960s. Since the early 1970s, when the UK joined the EU, the UK standard of living has hovered around the EU 15 average.

The factors underlying Ireland's convergence to an EU-15 living standard have been discussed in a series of papers (Honohan and Walsh, 2002, O'Gráda, 2002, Barry, 2002 and FitzGerald, 2006). Central to the Irish experience was EU membership, which opened the wider EU market to Ireland. Foreign Direct Investment (FDI), encouraged by low corporation tax rates that exploited the opportunities of EU membership, proved very important. The low investment in human capital in the first 50 years of independence was replaced, over the following decades, by a major development programme, which has today transformed the educational attainment of the working-age population (FitzGerald, 2019). Effective institutions, supported by EU membership, have also played a vital role. However, throughout the period of EU membership, the continuing competitiveness of the economy, broadly defined, was essential to underpin the huge expansion in the tradable sector[6].

The collapse of the Berlin Wall saw a transformation in central Europe, with an immediate transition to a market economy affecting many countries. This began a process that has culminated in 11 of the former communist countries now being members of the EU.[7] In 1990 these countries in Central Europe had a much lower standard of living than the EU-15. However, the countries that joined the EU since 2004 have begun to replicate Ireland's convergence.

For these new members adaptation began as soon as the Berlin Wall fell, and progress was apparent before they formally joined. Twenty-five years ago these countries had a standard of living ranging between 25% (Romania) and 65% (Slovenia) of the EU-15. Today these countries have a standard of living ranging between 45% (Bulgaria) and 85% (Czech Republic) of the average. In terms of the distance travelled, Poland has been the star performer of this group. For these more recent members, the economic crisis did not derail progress. All of them improved their position relative to the EU-15 since 2007 (Gros *et al.*, 2017).

[6] By tradable sector we mean the part of the economy that exports the majority of its output.
[7] In addition, Cyprus and Malta have also joined the EU.

A number of factors have been crucial to the success of economies in realising a convergence in living standards to that of the richest EU economies. For many of them their education systems have been successful in building their human capital (FitzGerald, 2019). They have benefited greatly from access to the EU Single European Market. However, they have also relied on their competitiveness to attract foreign investment and to allow their own native firms to grow. Not only have labour costs been well below those in the EU-15, but other costs that affect competitiveness have also been well below those in richer countries, driving investment in the tradable sector of these economies.

While there have been significant EU transfers to the new member states, these have been used to fund substantial investment programmes. The transfers have generally not been used to temporarily boost living standards by cutting taxes or increasing current expenditure. Instead, progress has been underpinned by a convergence in productivity, ensuring a sustained convergence in living standards.

2.2 Regional Convergence[8]

In principle, the same factors that drive convergence in living standards between richer and poorer countries explain convergence between regions within individual countries. Regional differences in large EU countries, such as the UK, Germany and Italy, are smaller than those between the full range of EU members across a range of dimensions: institutions, education and key factors driving competitiveness, such as labour costs[9]. One major difference for regional economies compared to national economies is the existence explicit regional transfers and the operation of progressive tax and expenditure systems, which results in significant transfers of resources between richer and poorer regions within a country.

A key determinant of the standard of living in an economy is the level of output per person employed (productivity). In the absence of significant transfers in a national economy, productivity ultimately determines the sustainable standard of living. For spatial equity, and to minimise the need for transfers, regional policy aims to promote convergence in productivity. However, transfers can blunt some of the factors that may cause convergence between regions as they make it possible to have a better standard of living in poorer regions, even if productivity there is lower. Transfers can raise wage rates in poorer regions, thereby reducing the incentive for workers to move from an underperforming labour market within a country to one that is more successful. Higher wages due to transfers may also reduce the incentive for firms to locate in these areas as the productivity differences are not fully reflected in lower wages (Pench, 1993). As in Northern Ireland, transfers may also support a large public sector which may absorb important resources, such as skilled labour. Such a situation can result in locking a region into long-term underperformance and dependence on transfers.

In Italy there was some convergence in productivity between the Mezzogiorno (South) and the rest of the country up to 1970. Thereafter progress stalled. Likewise, research suggests that convergence was not achieved among West German regions because transfers were used to subsidise declining industries (Baskaran *et al.*, 2017). In contrast East Germany after unification, where transfers were used to invest in human and physical capital, has recorded steady but slow progress since unification in 1990. Thus, at the regional level German unification, and the subsequent progress of East

[8] A fuller treatment of the experience of regional convergence is given in FitzGerald and Morgenroth, 2019,

[9] The variance for the percentage of the population aged 25 and above that hold a third level qualification is 67.7 across the 28 EU Member States but just 22 across German NUTS 2 regions.

Germany, is an example of a relatively successful regional convergence in productivity, whereas the experience of the Mezzogiorno in Italy is one of a failed convergence process. However, as part of that adjustment, East Germany has seen a dramatic reduction in population. When the trajectory of Northern Ireland is considered within the UK regional context, it appears to be closer to the Italian than the East German experience.

Recent research shows that living standards of poorer regions across the EU have also tended to converge on the EU average. However, this convergence is weaker than at a national level. Indeed, poorer regions in Southern Europe have reversed in relative terms over the last decade (Alcidi *et al.*, 2018).

For Central Europe the pattern is rather different. Some regions – the Bucharest region in Romania and the Bratislava region in Slovakia – have made exceptional progress. Interestingly, both these regions contain the national capital. The differential performance of individual regions within states shows that rapid growth tends to be driven by the presence of important cities. It also shows a much more diverse experience than at the national level.

2.3 Lessons from EU Experience

The German experience of regional convergence involved quite a tough initial regime, where many jobs were lost in a short space of time in uneconomic enterprises. However, at unification there was widespread acceptance of the benefits of the transformation, something which may not easily be replicated elsewhere. In most normal economies the process of convergence involves a more gradual approach.

The ability to undertake rapid transformation is also affected by the freedom of individuals to migrate. At the individual level it may be much faster to migrate to areas where productivity and the wages are higher, rather than to wait for the transformation of the local economy. As in the case of Italy, this may result in the better qualified leaving, which adds to the problems of the local economy. Competitiveness matters but the freedom to migrate and substantial inter-regional transfers limit the scope for wages to differ by wide margins in regions within a country.

A key element in successful convergence is the upgrading of the public capital stock to support a higher level of economic activity. This has been very important in the German case and it was also important in the case of Italy. A good educational system, ensuring a high level of human capital in the labour force, is also essential for growth.

Finally, a large public sector can be a barrier to convergence (Fölster and Henrekson, 2001). This is a particular problem if too much of the available resources are allocated to public consumption rather than to investment. Also, if a disproportionate share of the best educated in the local population work for the public service it can pose problems for the private sector.

3. The Northern Ireland Economy – Past Performance

3.1 Growth and Productivity

The 1920s and the 1930s were a particularly difficult period for the Northern Ireland economy, with very low growth as industry faced a problematic external environment (Table 1). In the 1930s Northern Ireland was treated with greater parsimony by central government than other UK regions, despite being the poorest region (Barton, 2003). In 1938 the unemployment rate in Northern Ireland was 30%, higher than in 1931 (Isles and Cuthbert, 1955). However, the Northern Ireland economy responded well to the challenges of the Second World War, and it proved reasonably successful in its immediate aftermath. As a result, over the period 1938 to 1960 the Northern Ireland economy significantly outperformed the Irish and UK economies in terms of output per head (Table 1) (Kennedy *et al.,* 1989).

Table 1: Northern Ireland, Ireland and UK, average annual % change

	GDP per head, annual average, %			Productivity, annual average, %		
	Ireland	UK	Northern Ireland	Ireland	UK	Northern Ireland
1926-38	1.4	1.9	0.7	1.4	1.1	
1938-50	1.1	1.4	3.1	1.3	1.2	
1950-60	2.2	3.0	2.0	3.2	3.0	2.8
1960-70	3.9	2.4	3.1	4.3	2.8	3.5
1970-80	2.5	2.0	1.4	2.9	2.0	0.7
1980-90	1.3	2.8	2.2	1.8	2.2	2.3
1990-00	5.4	2.2	3.0	2.5	2.2	1.7
2000-10	0.2	0.9	0.4	1.2	0.9	0.2
2010-16	2.4	1.3	1.0	1.3	0.7	0.8
1950-00	3.0	2.5	2.3	2.9	2.4	2.2

Sources: see FitzGerald and Morgenroth, 2019

During the war years there was greatly increased demand for the output of key sectors of Northern Ireland, such as shipbuilding and clothing. The result was a dramatic reduction in unemployment and some increase in productivity (Isles and Cuthbert, 1957), that resulted in particularly strong growth in output between 1938 and 1950.

However, major problems remained in the economy in the 1950s. Productivity was still well below the UK average and significant difficulties with the quality of management aggravated the situation (Isles and Cuthbert, 1957). The war years had seen wage rates rising more rapidly than in the UK, reducing the competitiveness of the Northern Ireland economy.

While the development of world trade and technological change posed increasing problems for the outward facing part of the Northern Ireland economy, in the 1960s there was a significant inflow of firms in new sectors. As a result, continued growth in Northern Ireland saw the economy outpacing that of the UK. Ireland, having performed poorly in the period 1938 to 1960, also grew rapidly in the 1960s, so that the progress of both economies on the island of Ireland compared favourably to that of the UK.

Beginning in 1969, the "Troubles" caused massive damage to the Northern economy, as well as to the wider society. Any chance of adapting to the changing world trading environment and EU membership through new investment was halted by the domestic turbulence. In the 1970s Northern Ireland became a very unattractive place to invest for both UK and foreign firms.

The 1970s was also a difficult period for the UK and Irish economies, with oil crises in 1973 and 1979, resulting in a significant reduction in output growth. Nonetheless, both the UK and Ireland did increase output per head over that decade. The combination of the unfavourable external environment and domestic unrest proved very damaging for the Northern Ireland economy, resulting in growth in output per head rising by only 1.4% a year over the decade (Bradley and Wright, 1993). This increase was itself supported by a very substantial fiscal injection.

While the domestic unrest continued unabated in the 1980s, Northern Ireland recorded a somewhat better headline performance than in the 1970s, though still growing more slowly than the UK. By contrast, Ireland grew very slowly over the decade as the bad policy choices of the late 1970s resulted in a major fiscal crisis. Tackling that crisis required fiscal policy to be deflationary over the decade (Kearney *et al.*, 2000).

However, Birnie and Hitchens, 1999, stress the high cost of the support for private investment in Northern Ireland that contributed to growth. Even in the 1970s subsidies and capital grants to industry were higher than elsewhere in the UK (Simpson, 1979). These subsidies were essential to overcome the other domestic obstacles to attracting inward investment, but they became an essential feature of the Northern Ireland economy (Crafts, 1995). Even today Northern Ireland spends more per head on such supports to industry than in the rest of the UK.

The 1990s saw quite a good performance by the Northern Ireland economy, better than in the rest of the UK. The external environment was favourable, with reasonable growth in the UK and very rapid growth in Ireland. In addition, a ceasefire was called[10] in 1997 and the 1998 Belfast Agreement permanently ended hostilities in the North, making it a much more attractive place to do business.

Over the period 1950 to 2000 the average annual growth in productivity in Northern Ireland was 2.2% compared to 2.4% for the UK. Thus, while productivity was significantly lower in Northern Ireland than in the UK after the Second World War, it fell further behind over the second half of the 20th century. The growth in productivity in Ireland averaged 0.5 percentage points higher than in the UK each year over the same period.

The signing of the Belfast Agreement in 1998 represented a huge step forward for Northern Ireland, but also for the UK and Ireland. It was achieved through a very substantial political commitment from both the Irish and UK governments, sustained over a long period. Support from the US administration also played an important role. As well as the vital benefits of peace for the wider society in Northern Ireland, it offered an opportunity to turn the Northern Ireland economy round. Having been unattractive for outside investors, the changed circumstances and general goodwill offered an opportunity for a fresh economic start.

However, since the agreement was signed in 1998, relative to other relevant UK regional economies the Northern Ireland economy has fallen further behind in productivity and is today even more dependent on transfers from central government to sustain its standard of living. The growth in productivity in Ireland remained more rapid than that in the UK, and much more rapid than in Northern Ireland.

Anticipating the 1998 Agreement, a symposium in the Statistical and Social Inquiry Society of Ireland in February 1995 considered the opportunities that peace might provide for the Northern Ireland economy. Bradley, 1995, warned: "If northern policy makers remain indifferent to the size of this deficit, and regard the subvention as an enduring aspect of their economy, then the Province risks

[10] There had been a ceasefire in 1994 but it proved temporary.

becoming trapped in a Mezzogiorno-like problem of permanent dependency." He argued that the best way to develop a more sustainable Northern Ireland economy would be to develop an "all-island" economy.

Borooah, 1995, at the same symposium, also highlighted the need to develop a sustainable economy. He emphasised the need for investment to substantially improve education and skills. He also talked of the importance of improving the quality of the intervention by the state in the Northern Ireland economy.

A useful way to decompose the factors affecting output growth over the period 2000 to 2017 is shown in Figure 2. This separates the changes in GDP per head into changes in productivity, the employment rate, the participation rate and the dependency rate. The resulting decomposition is then applied to data for the UK regions and Ireland (Table 2).

Figure 2: Decomposition of Measure of GDP per head

$$\underbrace{\frac{GDP}{Pop}}_{\substack{\text{GDP per}\\ \text{capita}}} = \underbrace{\frac{GDP}{Emp}}_{\text{Productivity}} \cdot \underbrace{\frac{Emp}{LForce}}_{\substack{\text{Employment}\\ \text{Rate}}} \cdot \underbrace{\frac{LForce}{Pop1564}}_{\substack{\text{Participation}\\ \text{Rate}}} \cdot \underbrace{\frac{Pop1564}{Pop}}_{\substack{\text{Dependency}\\ \text{Ratio (inverse)}}}$$

Table 2: Decomposition of growth in GDP[11] per head, 2000-2017, percentage points

	GDP per capita	Productivity	Employment rate	Participation rate	Dependency
Ireland	1.0	0.9	-0.2	0.4	-0.2
United Kingdom	1.0	0.9	0.1	0.2	-0.1
North East	1.3	0.7	0.2	0.5	-0.1
North West	1.4	1.2	0.1	0.3	-0.1
Yorkshire and Humber	0.8	0.7	0.1	0.1	-0.1
East Midlands	0.8	1.0	0.1	0.0	-0.3
West Midlands	0.9	1.0	0.0	0.1	-0.2
East of England	0.8	0.9	0.0	0.1	-0.2
London	1.5	1.0	0.1	0.2	0.1
South East	0.9	1.0	0.0	0.1	-0.2
South West	0.7	0.8	0.0	0.1	-0.2
Wales	1.0	0.7	0.1	0.4	-0.2
Scotland	1.4	1.1	0.2	0.2	-0.2
Northern Ireland	**0.7**	**0.2**	**0.1**	**0.4**	**0.0**
England	1.1	1.1	0.1	0.2	-0.1

Source: Eurostat

Over the period 2000 to 2017 Northern Ireland had the lowest growth in GDP per head of any of the UK regions. A rising participation rate made a slightly bigger contribution to growth over the period than the UK average. However, the main reason for the underperformance in growth in GDP in Northern Ireland relative to the rest of the UK was the exceptionally slow growth in productivity

[11] For Ireland GNI* is used.

over the period. The best regional performance in terms of productivity was in Scotland and the North West of England.

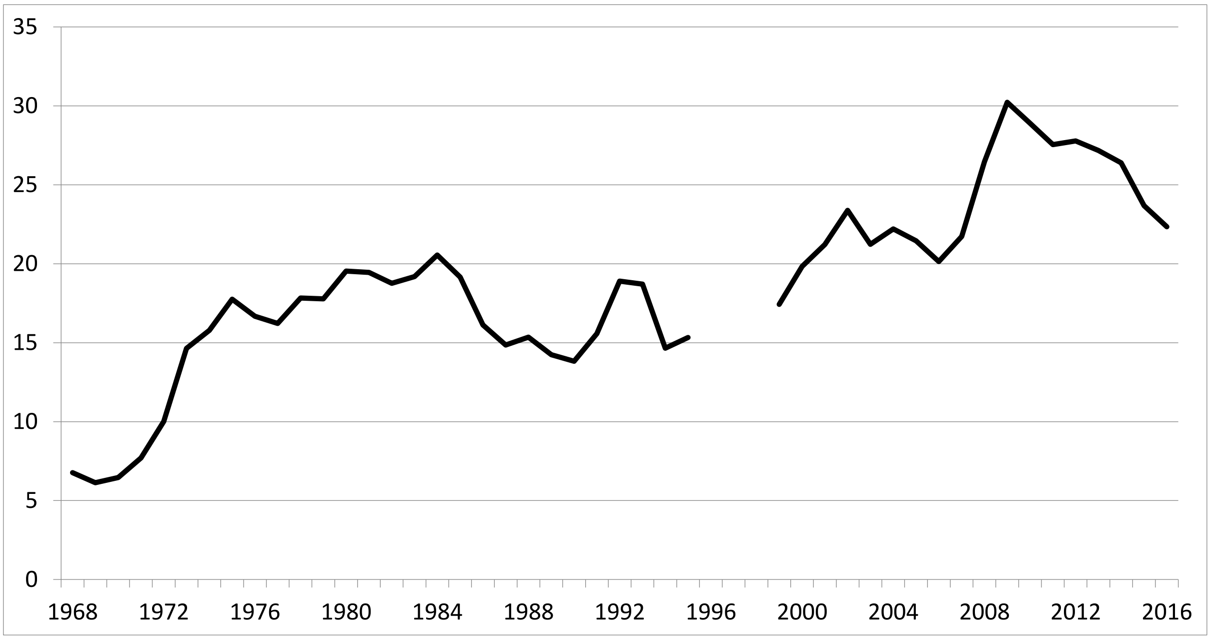
The Public Finances

When the Northern Ireland administration was set up under the Government of Ireland Act 1920 it was envisaged that Northern Ireland would pay an "Imperial contribution" towards the costs of the UK. However, from the start, the economic weakness of Northern Ireland, and higher expenditure than expected on policing, meant that this contribution was not forthcoming (Barton, 2003). Because of the very poor performance of the Northern economy, by 1938 it became necessary for the UK government to provide for a permanent subsidy.

In the mid-1960s the government deficit in Northern Ireland, funded by a subsidy, was around 7% of regional GDP (see Figure 3). However, the trauma faced by the Northern economy in the early 1970s saw a massive increase in this subsidy to average 17% of GDP, as the UK government tried to shore up the regional economy.

The increase in the subsidy provided an injection into the Northern economy of over 1% of regional GDP each year. For a larger more open economy, such as Ireland, the multiplier for an injection of public consumption has been over one since the 1970s (FitzGerald and Keegan, 1982 and Bergin et al., 2013) – a one percentage point of GDP increase in public consumption would add substantially more than one percentage point to GDP. An even greater multiplier would be expected for a more closed economy such as Northern Ireland. This would suggest that the increased fiscal injection accounted for growth of at least one percentage point a year over the 1970s. As GDP per head rose by 1.4% a year, this shows the importance of the fiscal injection.

Figure 3, Northern Ireland Government Deficit as % of GDP at current market prices.



Note: See FitzGerald and Morgenroth, 2019

Cuts in UK expenditure saw some reduction in the subsidy in the second half of the 1980s. Nonetheless, the subsidy continued to average 17% of GDP a year over the 1980s and 18% a year over the 1990s. Taking the whole period 1980 to 2000, fiscal policy had little impact on growth in Northern Ireland.

Table 3 shows the difference in the average net fiscal balance for each UK region compared to the national balance for the period 2000-2016. It thus controls for changes in the net fiscal balance due to cyclical factors, in particular the great recession when the UK fiscal balance peaked at 10% of GDP.

Table 3: Average regional net fiscal balance, less national balance, 2000-2016, % of regional GDP

North East	14.6
North West	8.2
Yorkshire & Humber	6.3
East Midlands	2.3
West Midlands	6.4
East of England	-5.6
London	-8.1
South East	-8.8
South West	0.6
Wales	17.9
Scotland	2.9
Northern Ireland	19.9
England	-1.4

Source: ONS: Country and Regional Public Sector Finances, FYE 2017: Net Fiscal Balance Tables

Table 4: Public Expenditure per head, % of UK average

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
North East	110	109	108	107	109	108	108	106	106	106	105	105	105
North West	104	103	104	105	104	104	105	103	104	103	103	104	103
Yorkshire and The Humber	97	97	97	96	98	98	98	97	97	97	97	97	96
East Midlands	90	90	90	90	90	90	91	90	91	91	92	91	91
West Midlands	96	97	97	97	97	97	97	97	97	96	98	96	97
East	85	86	86	86	87	88	89	88	88	88	89	90	89
London	115	115	115	115	113	114	113	116	114	113	112	112	111
South East	86	85	85	85	87	86	86	86	86	87	87	87	89
South West	91	91	91	90	92	92	92	91	92	93	93	93	93
Scotland	114	116	117	117	114	113	113	115	116	115	115	116	116
Wales	112	112	113	111	110	109	111	112	110	111	110	110	110
Northern Ireland	126	124	123	125	123	120	120	123	123	124	123	120	120
UK	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: HMT Public Expenditure Statistical Analyses (PESA)
https://www.gov.uk/government/collections/public-expenditure-statistical-analyses-pesa

Allowing for the effects of the great recession, the transfer to Northern Ireland has been fairly constant at around 20% of GDP since the Belfast Agreement, having averaged under 18% of GDP between 1980 and 1999. There was no “peace dividend” for the UK government. While it is the highest inter-regional transfer in the UK, this reflects Northern Ireland’s relatively low GDP. The transfers to the UK's next two poorest regions, the North-East of England and Wales, have also been consistently large over the last 20 years.

The transfer of resources from central government to poorer regions comes in two forms. With progressive tax and welfare systems, some of the transfers are made to households. The second channel, whereby resources are transferred to poorer regions, is through support for public services. Public expenditure per head is shown in Table 4 for all the UK regions. In recent years the level of public expenditure in Northern Ireland has ranged between 120% and 126% of the UK average, with the figure for 2016 being 120%. By contrast, for the next poorest UK regions, the North East of England and Wales, public expenditure per head was only 105% and 110% respectively of the UK average. Thus, Northern Ireland has been treated much more generously through public expenditure than other regions with relatively low incomes.

Table 5: Northern Ireland – Allocation of Budget, 2016

	Expenditure per head relative to UK, %	Share of NI Budget	Share of UK Budget
Public order	152	5.9	4.7
Economic affairs	121	7.7	7.6
Environmental protection	84	1.2	1.8
Housing	258	3.7	1.7
Health	102	20.3	23.9
Recreation and Culture	219	2.3	1.3
Education	110	13.2	14.5
Social Protection	123	43.9	43.2
Other	123	1.7	1.3
Total	121	100.0	100.0

Source: HMT Public Expenditure Statistical Analyses (PESA)

While public expenditure per head in Northern Ireland is approximately 120% of the UK average, the allocation of resources in Northern Ireland differs somewhat from that in the rest of the UK. As shown in Table 5, health expenditure per head in Northern Ireland is very close to the UK average, so that it accounts for a significantly smaller share of the larger Northern Ireland budget than it does for the rest of the UK.

Northern Ireland spends much more on public order than elsewhere in the UK. While this is affected by the legacy effects of the Troubles, one might have expected a gradual winding down of this expenditure. Expenditure on housing is also out of line with expenditure elsewhere in the UK – there is more extensive provision of social housing.

Expenditure on education is 110% of the UK average, representing 13% of the Northern Ireland budget, whereas in the rest of the UK education represents 14.5% of public expenditure. The two UK regions that devote a higher share of their budget to education than the national average are Scotland and London where the educational outcomes are the best in the UK. As discussed later, in spite of an above average expenditure share on education, Northern Ireland has the lowest human capital in the UK.

In considering the expenditure on education it is important to take account of the fact that in England and Wales there are very high student fees. In Northern Ireland (and Scotland), where the fees are lower, dependence of higher education on public expenditure is greater.

As a result, of the enhanced level of public expenditure in Northern Ireland, employment in the public sector represents a higher share of total employment than for the UK as a whole (33% compared to 30%).

Standard of Living

NISRA data allow a comparison of the standard of living of Northern Ireland with that of the UK and Ireland for 2016. The data provide an expenditure side estimate of GDP for Northern Ireland, Scotland, and the UK. CSO data can be used to make comparisons with Ireland, using GNI* rather than GDP. To account for price differences, the UK data have been adjusted for differences in prices relative to Ireland using Eurostat PPS data. The UK data are also expressed in € per head. The use of the UK PPS data for Northern Ireland and Scotland may underestimate their standard of living as the price level for housing is lower in those regional economies.

Table 6: Expenditure per head in €000, adjusted for PPS, 2016

	Northern Ireland	UK	Scotland	Ireland
Personal Consumption	15.2	19.8	18.4	16.5
Government consumption	6.7	5.9	6.9	4.6
Personal & Government consumption	21.9	25.7	25.3	21.1
GDP	24.5	31.7	29.3	42.0
GNI*				33.3
As % of Ireland				
Personal Consumption	92	120	111	100
Government consumption	145	128	149	100
Personal & Government consumption	104	121	119	100
GDP	58	75	70	100
GNI*	74	95	88	100

Source: NISRA for Northern Ireland, Scotland and the UK. CSO for Ireland. PPS data come from Eurostat

Table 6 shows the adjusted figures in € per head for the two regional UK economies, the UK and Ireland for 2016. At the bottom of the Table these aggregates are expressed as a percentage of the Irish data.

Personal consumption per head in Northern Ireland in 2016 was around 92% of that in Ireland, while it was substantially higher in Scotland and the UK. However, the gap in living standards was much greater for public consumption – expenditure on health, education and the public service. Funded by the transfer from central government, public consumption per head in Northern Ireland was 45% higher than in Ireland. As a result, when public and private consumption are taken together, an appropriate measure of current living standards, people in Northern Ireland were approximately 4% better off than people in Ireland.

However, using GDP and GNI* per head Ireland was better off than the UK and its regions. The gap with Northern Ireland was particularly large, with GDP per head there being three quarters of GNI* per head in Ireland. The reason for this difference between the GDP and the consumption figures is that Ireland devoted more of its resources to investment[12] (19%) than the UK (17%) or Northern Ireland (14%). Also, while the UK was running a deficit on the current account of the balance of payments Ireland was running a significant surplus, reflecting an excess of domestic savings over investment.

When these results are compared with data for 2012, the gap in living standards between Northern Ireland and Ireland, measured on a consumption basis is seen to have narrowed significantly, from Northern Ireland being 14% better off in 2012 to 4% in 2016.

Comparison of 2012 and 2016 shows that the low level of investment in Northern Ireland is a continuing problem. This is an important factor in explaining Northern Ireland's continuing poor performance on productivity.

4. Factors Explaining Northern Ireland's Weak Economic Performance

There is a range of factors that help explain why Northern Ireland's economic performance since 1998s has been less satisfactory than that of other UK regions. The low level of investment is one issue. A second factor is a poor performance in terms of the regional economy's competitiveness. A third, and probably the most important factor, is the low level of human capital (FitzGerald, 2019). Finally, the legacy effects of the past and the continuing divided nature of Northern Irish society impacts on the attractiveness of Northern Ireland for skilled labour and for Foreign Direct Investment (FDI).

As discussed above, the 2012 data for Northern Ireland indicate that the share of regional resources devoted to investment in recent years was very low. Table 7 shows public capital expenditure in Northern Ireland and the UK as a percentage of GDP. For Northern Ireland, total public investment amounted to 2.6% of GDP, not that different from the rest of the UK. However, as total investment in Northern Ireland was only 14% of GDP in 2016, this suggests that private investment was exceptionally low. For the UK, private sector investment accounted for the vast bulk of total investment of 17% of GDP in 2016.

Much less of Northern Ireland's public investment goes on transport (roads) and environmental protection than in the UK, and significantly more on housing and recreation. While the latter investment does enhance the quality of life, the lower priority accorded to investment in public infrastructure to support growth probably contributed to the poor productivity performance.

Table 7: Public Capital Expenditure, 2016, % of GDP

	Northern Ireland	UK
Transport	0.6	1.0
Environment protection	0.1	0.2
Housing and community amenities	0.7	0.4
Health	0.5	0.3
Education	0.5	0.5
Recreation, culture and religion	0.3	0.1
Total	2.6	2.4

[12] Using the CSO figure for modified investment, excluding MNE investment in intellectual property.

Source: HMT Public Expenditure Statistical Analyses (PESA)

Northern Ireland has fallen behind other UK regions and Ireland in investment in physical infrastructure. Having invested heavily in transport infrastructure in the 1960s, investment since then has been limited. For example, the very poor quality of the roads linking Northern Ireland's second city, Derry/Londonderry, with Belfast and Dublin impacts on development in the region.

The very low level of private sector investment in Northern Ireland is not a problem that the government can address directly. Instead this issue must be tackled by removing the obstacles to private sector investment: problems with Northern Ireland's competitiveness, broadly defined, and its wider attraction for FDI. Siedschlag and Koecklin, 2019, looked at the attractiveness of Northern Ireland for FDI and they showed that the low human capital was a significant negative factor for FDI.

Using a range of indicators of competitiveness, Northern Ireland's performance in 2016 was compared to that of other relevant economies (Johnston and Heery, 2016). This comparison showed that Northern Ireland faired particularly poorly on productivity, labour supply and prices and costs. The position on education and human capital had also deteriorated since 2010. To date, no significant action has been taken to address these issues. A recent paper by Birnie *et al.¸2019,* suggested that the approach in this report provides useful assessment for policy.

Probably the most serious problem for the Northern Ireland economy is that it has the highest share of early school leavers of all UK regions and the lowest share of the workforce with third level qualifications (FitzGerald, 2019). In turn, the evidence suggests that this explains much of the region's poor performance relative to Scotland, which has the highest human capital outside London.

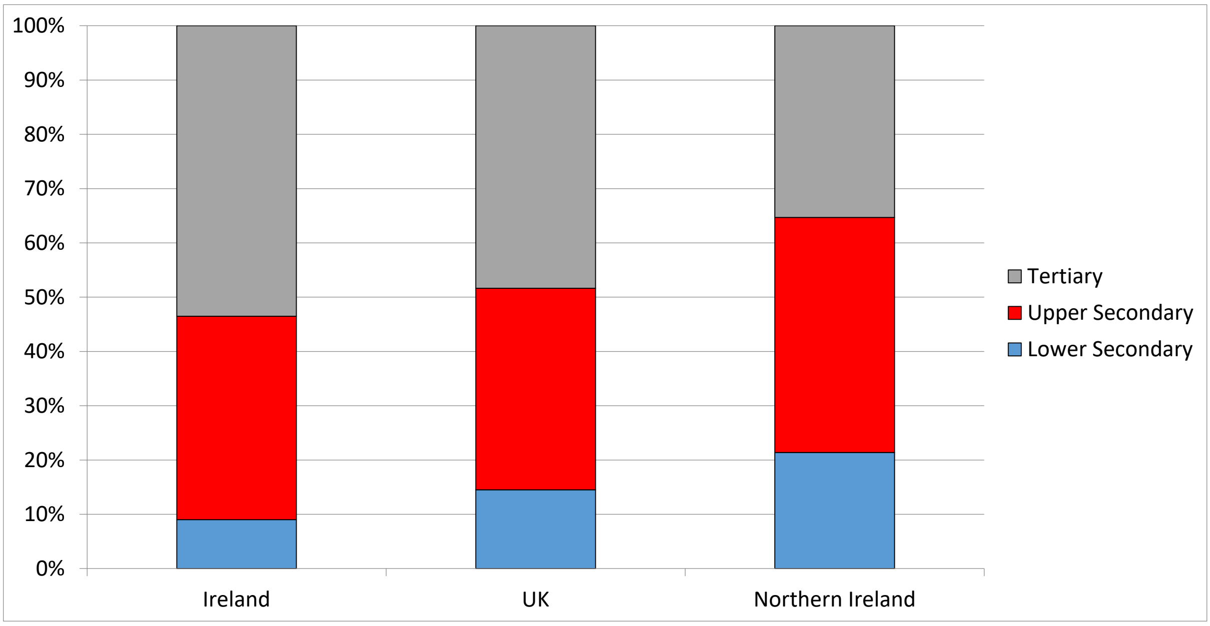
The problems with human capital reflect failings in the education system, as well as the effects of migration (Borooah and Knox, 2015). The selective nature of the second level education system means that the top 40% of children are selected on ability into grammar schools at the age of 11. The remaining children attend secondary schools. A critical assessment of the performance of secondary schools today in Northern Ireland is provided by Borooah and Knox.

The result of this education system is a high proportion of children not completing high school and a reduced level of progression to third level. In addition, FitzGerald, 2019, shows that a substantial share of those who progress to third level emigrate.

The educational outcome for Northern Ireland is compared to that for the UK and Ireland in Figure 4 for 30-35 year olds in 2017. For Northern Ireland the share of this cohort with a third level education (35%) is well below that in the UK as a whole (50%) and even further below that in Ireland (55%). Also, the share of the 30-35 year olds in Northern Ireland who had not completed high school education, at over 20%, is more than twice the figure for Ireland.

There is extensive research which shows that labour market outcomes are poor for those who have not completed high school. This adverse performance relative to other UK regions and Ireland has persisted over a long period and is reflected in the educational attainment of older age groups (McErlean, 2018). However, even if action were taken today, it will take many years to make an impact on the labour force.

Figure 4: Population Aged 30-34, Educational Attainment, 2017



Source: Eurostat Labour Force Survey

The poor performance of the Northern Ireland educational system occurs in spite of the fact that public expenditure per head on education in Northern Ireland was over 110% of the UK average in recent years. This higher level of expenditure is necessary to fund the duplication of facilities across Northern Ireland to provide parallel Catholic and Protestant grammar and secondary schools. However, Borooah and Knox argue very cogently that this high cost of duplication is the least of the problems with the educational system.

Table 8: Regional growth and share of population with third level education

	Real GDP Average growth 1999-2016	Population Third Level aged 30-34
United Kingdom	1.7	48.3
North East	1.4	39.1
North West	1.8	43.7
Yorkshire and Humber	1.3	41.1
East Midlands	1.6	41.8
West Midlands	1.4	39.8
East of England	1.5	40.2
London	2.6	66.0
South East	1.7	47.7
South West	1.6	46.3
Wales	1.5	39.2
Scotland	1.9	57.5
Northern Ireland	1.3	35.3

Source: Eurostat

Northern Ireland has historically suffered a significant outflow of school leavers aged 19 to 21 as they go to study in third level institutions in Great Britain. In 2017 33% of Northern Ireland students studying full-time at third level were at institutions in Great Britain. Because of the limitation on funding of third level education in Northern Ireland, the number entering universities has been capped in the last few years, suggesting a further increase in the outmigration for those seeking third level education. In recent years two thirds of the Northern Ireland graduates from institutions in Great Britain find employment there, rather than return to Northern Ireland.

This outflow of young people has persisted over many years. Ireland has also seen such an outflow of young people, even during the boom years. However, in the Irish case this outflow traditionally occurs after students have completed third level. In the Irish case most of these emigrants have proved to be homing pigeons, returning after a few years abroad (Fahey, FitzGerald and Maître, 1998). This does not appear to be the case for many of the young Northern Ireland emigrants.

In the Irish case, over the last 30 years the returning emigrants have played an important role in transforming the economy. They have returned with important experience, some with a foreign language. Research has shown that they earn 7% more as a result of their experience abroad (Barrett and Goggin, 2010), suggesting that returning emigrants have higher productivity as a result of their experience, and that this is reflected in higher output. In 2011 15% of the population aged 35 and over were returned emigrants and a much higher proportion of those with third level education fell into this category.

Table 8, is taken from, FitzGerald, 2019, and it shows the average growth rate across the UK regions since 2000 and the share of the population with third level education. As discussed earlier, Northern Ireland is at the bottom in terms of growth since 2000 and also for the share of those with third level education. With the exception of London, which has seen significant immigration of skilled labour, Scotland is at the top in terms of both growth and human capital.

These figures are highly suggestive of a link between human capital and growth within the UK. Using these data and the work by Borooah and Knox, FitzGerald, 2019, estimated that, if Northern Ireland had a Scottish (or Irish) level of educational attainment, growth would be between 0.25% and 1.0% higher each year. This would suggest that the vast bulk of Northern Ireland's poor economic performance is attributable to its low endowment of human capital. This conclusion is consistent with the findings of Johnston and Heery, 2016, and Siedschlag and Koecklin, 2019.

The Troubles also saw a movement of population away from Belfast at a time when the economies of cities were playing an important role in growth in developed economies. While this trend has been halted and reversed over the last 20 years, Northern Ireland has not fully exploited the potential benefits from the two main cities Belfast and Derry/Londonderry.

The legacy effects of the Troubles and the divided society also have an economic impact. The political system, instead of concentrating on making the local economy work, has had to deal with a range of other issues. Also, the legacy effects of the past may make Northern Ireland less attractive for potential returning emigrants. Northern Ireland has seen substantial immigration of people from outside the UK, especially in the last decade. For such immigrants the problems of the past have not proved an obstacle to moving and working in the North, providing some offset for the loss of local talent.

6 Challenges for Northern Ireland Economy

The performance of the Northern Ireland economy over the last 20 years highlights some key weaknesses which have manifested themselves in the very slow growth in productivity. Tackling these issues will, at best, take many years. Even if the education system were transformed tomorrow, it will be decades before the benefits of such a policy will fully work their way through the labour force. Effective action to make Northern Ireland more attractive to its well-educated diaspora could, however, pay off in a shorter time scale, but it is not clear how this can be done effectively.

The most obvious and immediate threat to the Northern Ireland economy is the prospect of Brexit. Whatever form the final agreement between the UK and the EU takes, the outcome will be unfavourable for the UK economy (Erken, *et al.*, 2018) and it will have a significant negative impact on the Irish economy (Bergin *et al.*, 2018 and Conefrey *et al.*, 2018). While some of the better-off UK regions may be less exposed to the fall-out from Brexit, Northern Ireland is likely to be worse affected.

In recent years there have been significant political changes in the UK. The narrow miss on the Scottish independence referendum reflects a fracturing in UK politics. The current and likely future governments will probably be more English in character than was the case in the last century.

After Brexit there is a danger that whatever government is in power in the UK will pay much more attention to the poorer English regions and Wales. The result could be a reduction in the rate of subvention to Northern Ireland, bringing support for Northern Ireland more into line with that for poorer English regions. Such an adjustment, if undertaken rapidly, would pose huge problems for Northern Ireland.

With a very weak regional economy, there are a range of longer-term political options for Northern Ireland that may be considered over the coming decades. The option that would be best for Northern Ireland from an economic point of view is if future UK governments continue major transfers to what is the poorest UK region, allowing it the time to undertake major necessary reforms. However, other options have been canvassed including unification of the two economies on the island. Whichever political option is eventually chosen, the need to raise investment in physical and human capital in Northern Ireland will remain. However, as discussed later, if the option on unification was chosen, the economic problems would be magnified by the fiscal and other costs of adjustment to the new regime. This would prove very expensive, both for Northern Ireland and for Ireland, reducing the probability of economic success.

6.1 Brexit

The Northern Ireland economy is highly integrated into the wider UK economy. Lawless, 2019, shows that the Northern Ireland economy is exceptionally concentrated on its neighbouring markets. In 2015, 60% of Northern Ireland's exports went to Great Britain while 15% went to Ireland. The rest of the world accounted for only 25% of exports (NISRA, 2019). Northern Ireland is even more dependent on imports from Great Britain, with 72% of goods imports and 82% of services imports coming from GB (NISRA, 2018). This also means that any significant barriers to the flow of goods and services between Northern Ireland and its key markets could be very destabilising as it would raise the costs of doing business in Northern Ireland. These problems would, of course, be greatly magnified if Northern Ireland left the United Kingdom.

The Northern Ireland economy will be harmed whatever form Brexit takes. Because of the significant North-South linkages and the different industrial structure, Northern Ireland is more vulnerable to Brexit than other parts of the UK. In particular, the regional trade data show that food and live animals make up a disproportionate share of Northern Ireland's exports and imports. The more limited data on services exports shows that over 30% of services exports of high potential firms from Northern Ireland went to the EU (including Ireland) with the share for Architectural and Engineering services as high as 67% in 2013.

An important aspect of the trade relationship between Northern Ireland and Ireland is the close supply chain linkages. Lawless and Studnicka (2018) show that trade in intermediate products is significant. Lawless and Studnicka (2017) suggest that if Brexit were to result in the application of WTO tariffs and non-tariff barriers, together they would cause a 16% reduction in cross border trade, with approximately half the effect on exports from Northern Ireland to Ireland stemming from the effect of tariffs on dairy produce. Applying the methodology of Morgenroth (2015) to Northern Ireland exports suggests that Brexit would result in a reduction of total merchandise exports by over 12%.

InterTradeIreland, 2019, looked at the exposure of firms to Brexit on both sides of the border. They found that the share of firms in the highest risk category is greater than the share of employment, meaning that smaller firms are more represented in this category. This pattern is found for both goods and services firms in Northern Ireland and Ireland. This study found that 45% of Irish goods firms and 51% of Northern Irish goods firms are in an at-risk group.

Siedschlag and Koecklin, 2019, looked at how Foreign Direct Investment in Northern Ireland would be affected by Brexit: they found a very negative effect from a hard Brexit. They suggested that if corporation tax were reduced to 12.5% this might offset the negative effects. However, the wider costs of the loss of revenue from this source of taxation were not assessed.

Lucey, 2019, shows that after Brexit Northern Ireland farmers are likely to lose the direct payments that currently come from the EU. As these constitute the bulk of farmers' incomes, the loss will prove extremely serious. Lucey suggests that the Northern Ireland Department for Agriculture assertion that the future survival of NI agriculture can be secured are "totally detached from reality."

While some of the undoubtedly negative effects of Brexit on the Northern Ireland economy may weaken over time, the poor performance of the Northern Ireland economy under the more favourable conditions of the last 20 years suggests that it may prove less resilient than other UK regions to the change in circumstances that Brexit will represent.

6.2 Living within a changing United Kingdom

The evolving politics and governance of the UK poses a major long-term challenge for Northern Ireland. The changes which are taking place are partly a result of Brexit, but they also reflect some of the political pressures that led to Brexit.

With the UK already experiencing a poor performance on productivity, the medium-term prospect is for a squeeze of living standards and of budgetary resources. Future UK governments, with a strong English representation, may well rebalance the internal transfers within the UK to better reflect relative incomes. The pressures for change may be more acute as the consequences of Brexit for the public finances become apparent. As Northern Ireland is treated more generously on public expenditure than other poor UK regions there may be pressures to reallocate resources, changing the Barnett formula[13] and related arrangements, which have favoured Northern Ireland.

While the Scottish independence referendum was lost, a significant share of the Scottish population remain disaffected from the Union. The fact that Scotland voted by a large majority to remain in the EU has heightened the tension between London and Edinburgh. This leaves open the possibility that Scotland may choose independence at some point over the coming decades, leaving Northern Ireland a potential "orphan", even more isolated within the UK.

Even before the Belfast Agreement there were concerns about the sustainability of the ongoing transfers to Northern Ireland. Borooah, 1995, argued that "Northern Ireland can expect a 'soft' rather than a "hard" landing - a gradual trimming of the subvention rather an abrupt reduction." As discussed earlier, in fact the subvention was increased after 1998.

A sudden reversal of transfers could impart a major negative shock to the Northern Ireland economy in the future. Even for a limited reduction in the transfers, this could wipe out the already anaemic growth in Northern Ireland.

The best economic option for Northern Ireland is that it is given many years to put its economy in order. If the transfer rate were sustained for a decade, and if, as suggested by Birnie and Brownlow, 2018, there was a major reallocation of public resources in Northern Ireland to promote a more productive economy, this could help move the Northern economy onto a sustainable growth path.

Substantial savings will need to be realised in areas of public expenditure to free up resources for other necessary investment. The second level school system needs to be rationalised to replace the current system, where children are selected on ability at age 11, with a mixed-ability system providing genuine equality of opportunity for children from disadvantaged backgrounds.[14] In addition to investing to ensure higher completion rates in high school, significant investment in third level education is needed to expand the number of third-level students in Northern Ireland. In addition, resources need to be reallocated to infrastructural investment to support increasing productivity and output across Northern Ireland.

The failings identified in the report on the competitiveness of Northern Ireland need to be addressed (Johnston and Heery, 2016). In addition, the factors that discourage emigrants from Northern Ireland returning, especially emigrants with third level education, need to be identified and tackled. These obstacles to returning go beyond the realm of economics.

Having to implement significant cuts, affecting the standard of living of the community, at the same time as reallocating resources to build a successful economy, could prove very challenging even for a successful political system.

[13] This formula determines the regional allocation of resources within the UK.
[14] See Smyth, 2016, on the extensive literature on the benefits of mixed-ability schooling.

6.3 Irish Unity

In the case of Irish unity there would, of course, be a very wide set of social, political, and administrative challenges to be addressed, but these are not considered in this paper.[15] Instead we concentrate on some of the economic challenges that would arise in the case of unification. As we have seen in the case of Brexit, the economic effects of a massive constitutional change can be very far reaching, involving many different channels and affecting all sectors of the economy. This paper focuses on only one of the key economic channels: the impact on the fiscal support for Northern Ireland. No account is taken of the need for change within the island, including the possible harmonisation of welfare and public pay rates. The impact of Northern Ireland ceasing to be part of the integrated UK economy would clearly be very serious for the local economy, even if there were some offset from increased trade within the island. This is also left for future research.

A study by Hubner, *et al.*, 2015 argued that a surge in trade on an all-island basis would have a lasting very positive effect on growth in the North. However, they do not account for the increased costs to Northern Ireland's trade with Great Britain from leaving the United Kingdom. All the research on the effects of Brexit on Northern Ireland has highlighted how the dislocation to its economy from the erection of trade barriers with Great Britain would be far greater and more immediate than the gains from increased trade with Ireland. As Hubner *et al.* state, "numerous studies done in a variety of settings (the US and Canada, among Canadian provinces) demonstrate that 'borders matter' to a much greater degree than most observers would expect." With the UK leaving the EU, and given the very close integration of the Northern Ireland economy with that of GB, the dislocation of departure from the UK would be all the greater.

The Hubner, *et al.*, study also assumes that more Foreign Direct Investment would produce convergence in productivity levels within the island of Ireland within 15 years. As discussed above and in FitzGerald, 2019, the fundamental problem with the Northern Ireland economy is its weak capital base, especially its very weak human capital. As Siedschlag and Koecklin, 2019, show, the inadequacy of Northern Ireland's human capital would severely militate against additional FDI in Northern Ireland. Reforming the education system to tackle the fundamental cause of low productivity in Northern Ireland would take many years to pay off. Thus, there would be no prospect of rapid convergence in productivity between the two economies on the island, so that there would be very strong pressure for continuing transfers.

Finally, this study assumed that Ireland would take over responsibility for continuing to make the very large transfer to Northern Ireland after unification. However, as discussed here, the serious implications of this for living standards in Ireland are not considered.

Since Ireland left the UK in 1922, in the case of other "orderly" break-ups of political unions it has been normal for the assets and liabilities of nations to be shared out when the divorce is agreed (FitzGerald and Kenny, 2020).[16] Under the 1921 Treaty Ireland accepted responsibility for a share of the UK national debt, a share that would have amounted to over 80% of Irish GDP. However, this

[15] Some of these issues were considered as part of the work of the New Ireland Forum in 1983.

[16] There have been many cases where this approach has been adopted – the break-up of the Soviet Union, the break-up of Czechoslovakia and, today Brexit. If Scotland had voted for independence they would have shouldered their share of the net liabilities of the UK.

debt was written off in 1925 in return for Ireland accepting the existing border with Northern Ireland.[17]

As in the Irish case, if Scotland had voted for independence, they would have shouldered their share of the net liabilities of the UK. The Brexit divorce will also include a protocol assigning assets and liabilities between the UK and the EU.

Thus, if Northern Ireland were to leave the United Kingdom to join a united Ireland, in addition to ending transfers, Northern Ireland could also have to share responsibility for its share of the net liabilities of the UK. This can be considered as one possible option. An alternative option, which might be considered the most favourable terms for Northern Ireland leaving the UK, might involve an agreement to waive Northern Ireland's liability for the UK net debt and to phase out the transfers from London over a period of 5 or 10 years.

Whatever the form of an agreement with the UK underpinning unification, as a region within a United Ireland it would still have a very large fiscal deficit. As set out in a detailed appendix in FitzGerald and Morgenroth, 2019, even if Northern Ireland joined a united Ireland debt free, so that there was no contribution towards debt interest, the 2016 deficit of £9.3 billion (€11.4 billion) would be reduced to £6.9 billion (€8.4 billion). However, if the usual approach to the break-up of a Union was taken, Northern Ireland taking a share of UK net liabilities, the deficit would be £8 billion (€9.8 billion). These estimates take account of the differing structures of central government expenditure in the UK and Ireland.[18]

While Daly, 2018, has argued that the transfer to Northern Ireland from London is lower than the headline figure published by the ONS, as shown in the Appendix to FitzGerald and Morgenroth, 2019, his estimates are unrealistic. His paper suggests that, even after unification, the UK would continue to pay £2.7 billion to Northern Ireland for ever – just under a third of the current transfer – a most unlikely eventuality. The paper assumes that the population in Northern Ireland would not pay for debt interest, overseas aid, defence, the Department of Foreign Affairs and other common services in a united Ireland. A further £0.7 billion would be saved by firing approximately 50,000 public servants in the North. The study also does not take account of the fact that, while depreciation is counted as part of government expenditure, it is also included as income, leaving no net effect on Northern Ireland's finances.

The post-unification transfer to Northern Ireland to sustain its current standard of living does not take account of any harmonisation of welfare rates, pay rates or the tax system on the island, as happened in German unification. While an Irish tax regime applied within Northern Ireland might bring in some additional revenue, there would be a very substantial cost to raising Northern Ireland welfare rates and rates of public service pay to Irish levels. In the case of welfare rates alone, this could add around £3 billion (€3.7 billion) to the cost of financing Northern Ireland services. These issues are a matter for further research.

If Northern Ireland had to very rapidly adjust to fund its own services in a united Ireland, the economic shock would be extreme. Cutting expenditure (or raising taxes) by 20% of GDP would be

[17] Treaty (Confirmation of Amending Agreement) Act, 1925.
[18] E.g. Ireland spends less per head than the UK on its army but more per head on the EU contribution.

much more severe than any of the fiscal adjustments undertaken in the crisis countries during the great recession[19], bringing about a sudden reduction in GDP of over 20%.[20] The resulting increase in unemployment could well exceed that in East Germany after unification, where the unemployment rate peaked at over 20%. Many of those with skills, especially those in the younger age groups, would emigrate to escape the economic misery in Northern Ireland. This would further reduce the tax base and could contribute to a complete collapse in the regional economy.

In 1983 The New Ireland Forum, in a report prepared by DKM, also considered some of these issues. In the absence of continued transfers from Northern Ireland, this study concluded that:

> "A total and precipitate absence of such transfers would in our view require what can only be described as catastrophic economic adjustments. The disappearance and non-replacement of the British subvention would result, as already indicated, in an immediate loss of income equivalent to 8 per cent of GDP of the combined economies".

The fact that such a scenario could prove so economically disastrous makes it exceptionally unlikely it would be chosen voluntarily by the people of Northern Ireland. Also, for its neighbours in Ireland and in Great Britain, the destabilising effects of such an outcome on society and politics in Northern Ireland would be of grave concern.

The alternative polar case would be for Ireland to take on the task of supporting the Northern Ireland economy, replacing the large transfer from London with a transfer from Dublin. As discussed above, the full economic consequences of this would depend on the terms under which unification occurred. Here we first assume that Northern Ireland, in leaving the UK, would carry with it a share of the UK net debt.

Writing in 1972, FitzGerald, while acknowledging the size of the subsidy to Northern Ireland, took an optimistic approach: "Only the problem posed by UK subsidies to Northern Ireland's agriculture – which will be largely solved by EEC membership – and to the Northern Ireland social services are real obstacles to reunion." However, writing two years later in 1974, Dowling considered the economic impact on Ireland of unity estimating that "the likely cost to the economy is nearer to 15% of GNP when the induced effects of the transfer have taken place."

While the Irish economy is much stronger today than in 1983, funding the Northern Ireland deficit would pose a massive challenge for Ireland. Based on the experience in dealing with the financial crisis in Ireland, to fund the necessary transfer would require a fiscal adjustment in Ireland amounting €20 billion to €30 billion[21]. If the transfer to Northern Ireland were all funded by increasing direct taxes in Ireland, using the HERMES model (Bergin *et al.*, 2013)[22] it is estimated that this would reduce GNI by around 4% and also reduce consumption per head by around 9% and employment in Ireland by around 4%. The effects on GNI would be significantly greater if the transfer were funded by cuts in expenditure in Ireland.

[19] This would be the consequence of Northern Ireland electing for independence.
[20] See the discussion earlier in this paper on the effects of fiscal injections or cuts in small economies.
[21] This takes account of the negative effects on tax revenue and expenditure which result from a major fiscal adjustment.
[22] Because the Irish economy is significantly larger today than it was in 2013 the shock of the €12 billion increase is scaled down by the ratio of GNI* today relative to 2013.

As discussed earlier, living standards are higher in Northern Ireland than in Ireland as a result of the subsidy for public services from the UK government. If the Republic took over responsibility for the transfer to Northern Ireland, this would leave those living in Northern Ireland between 10% and 20% better off than those living in in the Republic, purely due to a huge continuing transfer from Ireland.

While such a once-off shock could possibly be sustained, the long-term economic problem would be that, without major cutbacks in existing programmes in Northern Ireland, there would be no resources to fund the transformative programme of investment in human and physical capital needed to raise productivity in the long term, leaving Northern Ireland dependent indefinitely on continuing transfers.

A third possibility would be a possible gradual phase out of the UK transfers over 5 to 10 years, in addition to a debt waiver. This would postpone but would not avoid the long-term shock to the Irish economy.

Finally, the experience of Brexit in the UK suggests that that political uncertainty hinders investment and ties up management, negatively affecting productivity. As with Brexit, Irish unity would not be achieved rapidly, and the process itself would affect the bandwidth of the administrations North and South, and hence decision making on important other issues. Thus, the process of unification would itself have economic costs, as well as any wider social and political impact.

7. Conclusions

The Northern Ireland economy has not been well managed since the Belfast Agreement in 1998. Subsequent to the Agreement there was a major increase in the very large transfer from the UK government. Today the transfer amounts to over 20% of Northern Ireland GDP. Instead of allocating the increase in resources to investment, this transfer has been used to sustain a high standard of living in Northern Ireland today, on a par with the average for the UK.

As a result of the policies pursued by the Northern Ireland administration, over the last 20 years productivity in Northern Ireland has fallen relative to the UK average. In turn, UK productivity has itself performed very poorly over the same period. This is the central problem of the Northern economy.

The key factor behind the poor productivity performance in Northern Ireland has been the low rate of investment in physical and human capital. In particular, the failure to reform the education system to provide equal opportunity for children of different abilities. This means that Northern Ireland has the highest rate of early school leaving in these islands. Borooah and Knox, 2015, show how this failing has a very high economic and social cost. In addition, a high proportion of talented young people take their first degree in GB third level institutions and do not return. If the stock of Northern Ireland graduates living abroad could be persuaded to return it could make a big difference to productivity. However, it is not clear what policies would be needed to achieve such an outcome.

The dependence of the Northern Ireland economy on very large transfers leaves it very vulnerable to shocks. Brexit will, undoubtedly, have serious negative consequences for Northern Ireland. If greater attention is paid to the problems of poorer regions of England there could also be a change in the approach of the UK to Northern Ireland in the next decade. Any move to reallocate some of the transfers to Northern Ireland to other poor English regions could prove very disruptive for the Northern Ireland standard of living.

The best policy, to guard against these risks, is for the new Northern Ireland administration to rapidly make major changes in economic policy. This should involve a large reallocation of resources from sustaining consumption, especially public consumption (public services), to investing in human and infrastructural capital. While painful initially, it would move the Northern Ireland economy onto a sustainable growth path where it would be less dependent on the whims of a London government.

Finally, because of the state of the Northern Ireland economy and its dependence on transfers, the other possible options of unification (or independence) are made exceptionally expensive. Unification in the foreseeable future, however funded, would result in a substantial reduction in living standards for those living on the island of Ireland.

The best outcome for Northern Ireland is one where future UK governments commit to providing continuing large transfers to Northern Ireland for at least a further decade, in return for a change in economic policy in Northern Ireland aimed at moving the economy onto a sustainable growth path. This would involve some pain up front, as resources are reallocated. As well as enhancing the standard of living in Northern Ireland over the coming decade, the resulting transformation in the economy would leave open the possibility of an affordable unification in decades to come.

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