Operational Programme for INTERREG IV

Annex A

Socio-Economic Profile of Northern Ireland the Border Region of Ireland and Western Scotland

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A Socio-Economic Profile of the Border Region, Northern Ireland and Western Scotland

1. Population (see Table 1)

Between 1996-2002 the population of Ireland increased by 8.03 per cent from 3,626,087 to 3,917,203. Preliminary estimates by the Central Statistics Office suggest that the 2006 census will reveal that the population in Ireland has increased to in excess of 4.3m (an additional c. 10 per cent increase on 2002). This increase is driven by general demographic variation and net in-migration consisting of large-scale return migration and new migrants. Between 1996 and 2002, births exceeded deaths by 165,708 leading to a strong natural increase in population (see Table 2). This is despite the fact that the Total Period Fertility Rate (TPFR) – the average number of children per woman of child-bearing age – fell to 1.97, a figure below the rate required for long term replacement (but still above the EU25 average of 1.46). Since 1996 there has been net in-migration to Ireland. In-migration, including both return migrants (approximately 50 per cent of all in-migrants) and immigrants, accounted for a net growth of 163,000 persons between 1996 and 2002 (there were 356,000 people – 9.2 percent of the population - born outside the State resident in Ireland in 2002). Since 2002, net in-migration has continued to grow, especially with the influx of workers and their families from the EU accession countries. Between May 2004 and May 2006 206,145 PPSNs (Personal Public Service Numbers) were issued to workers from accession states. In the Border Region population change between 1996-2002 was slightly below the national average at 6.2 per cent, although this figure masks high internal variation between counties, with Louth increasing by 10.48 per cent and Leitrim and Monaghan with small growth rates of 2.96 and 2.49 per cent respectively.

The population in Northern Ireland increased marginally by 1.42 per cent between 1994-2001 from 1,661,751 to 1,685,267. Present estimates place the population at 1,710,300 in 2004, an increase of 1.49 per cent from 2001. This slight increase is predominately accounted for natural increase. Between 1996 and 2002 births exceeded deaths by 55,124. This is despite a falling Total Period Fertility Rate (TPFR) in 2002 of 1.77 (down from 2.85 in 1985) and is accounted for by people leaving longer, with the average age of death increasing from 69 to 75 for men and 75 to 81 for women between 1975 and 2005. Net-migration figures show very small marginal gains or losses in the years between 1991 and 2004 with the small flows of in-migrants and out-migrants largely cancelling each other out. While Belfast had a slight fall in population between 1991 and 2001 of -0.66 per cent, the other NUTS III regions increased in population by between 5.61 and 9.7 per cent. Most of this growth seemingly occurred in the early 1990s as population change was low between 1994 and 2001.

The population in Scotland fell marginally by 0.79 per cent between 1994-2001 from 5,102,210 to 5,062,011. Estimates for 2004 are 5,078,400, a slight increase of 0.32 per cent from 2001. The population as a whole is relatively stable with a slight natural decrease in population and an approximate balance of in and out-migrants. Death rates were slightly in excess of birth rates every year between 1996-2002, with 24,802 more deaths than births in the period. Total Period Fertility Rate (TPFR) in 2001 was 1.48, well below replacement level, but approximate to the EU25 average. At the same time, life expectancy has increased from 67.3 years for males and 73.7 years for females born in 1971 to 74.2 years and 79.3 years born in 2002. Between 1996 and 2001 there was a slight net out-migration of population, but this since then there has been net

in-migration in 2002 and 2004 that effectively cancels the effects of out-migration. There was some internal variation of population change with urban areas and western Scotland experiencing between –2 and 0 percentage loss of population and Eastern, non-urban areas experiencing between 0 and 2 percentage gain in population.

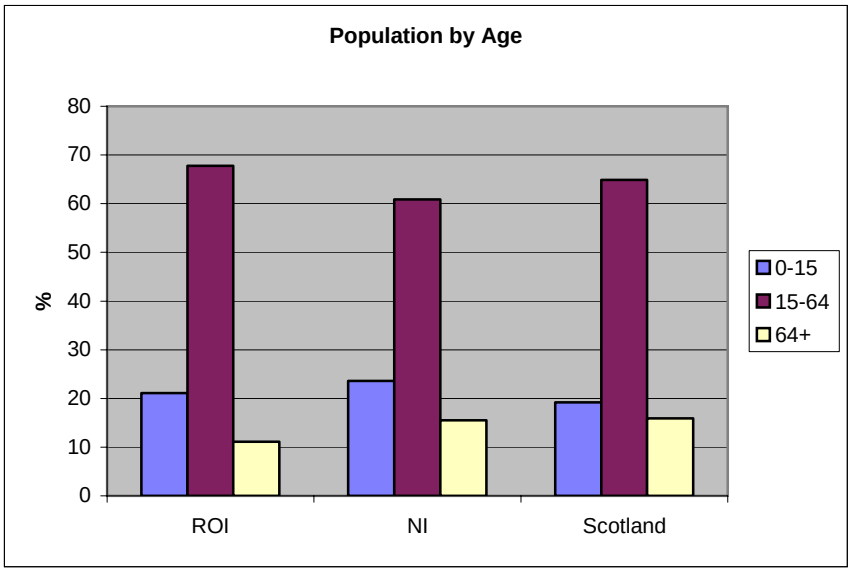
In summary, Ireland has experienced rapid population growth as compared to Northern Ireland and Scotland, which have remained relatively stable over the past fifteen years. All three countries have a population that is living longer, but Ireland has a higher total period fertility rate and a larger inflow of return and new migrants, especially in recent years from ascension states. It seems likely that Ireland's growth will continue to grow, including the Border region, especially on the Belfast-Dublin corridor.

2. **Dependency ratio** (see Table 3)

The dependency ratio indicates the number of people who are dependent on those working. It is influenced strongly by the number of people under the age of 15 and those over the age of 64. As Figure 1 highlights, in 2001 for Scotland and Northern Ireland, and 2002 for Ireland, the percentage of population under the age of 15 was 19.2% (S), 23.6% (NI) and 21.1% (ROI). In all three cases the proportion was higher than then EU25 average of 16.4%[1]. In contrast, the percentage of population over the age of 64 differs slightly. Whereas Northern Ireland (15.5%) and Scotland (15.9%) are close to the EU(25) average of 16.0%, Ireland has a lower rate of 11.2%.

[1] http://epp.eurostat.cec.eu.int/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=Yearlies_new_population&root=Yearlies_new_population/C/C1/C11/caa15632

Figure 1: Population by Age



The result is a difference in dependency ratio, with Ireland as a whole scoring 47, significantly less than Northern Ireland (64.30) and Scotland (54.11). The Border Region (54) is equivalent to Scotland, although there is significant internal variation ranging from 49 for Louth to 59 for Leitrim (see Table 1). There is very little internal variation within Northern Ireland, and marginal variation in Western Scotland. The relatively higher dependency ratio for Northern Ireland, places a larger burden on the local economy to support the economically inactive. The relatively high population under the age of fifteen will translate into a larger workforce over time, but this may well be balanced by a growing elderly population.

3. Productivity (GDP and GVA per head of population)

Gross domestic product (GDP) and Gross Value Added (GVA) are measures for the economic activity. GDP is defined as the value of all goods and services produced less the value of any goods or services used in their creation. GVA is a similar measure – GVA plus taxes less subsidies on products equates GDP. To obtain a measure of productivity or economic welfare, these economic output figures are commonly divided by the population. It is important to note that there are important problems with using GVA or GDP figures as a measure for productivity, particularly in relation to Ireland. First GDP and GVA figures of Ireland are inflated due to the relatively large proportion of foreign companies and the related issues of transfer pricing and profit repatriation. The problem is magnified at the regional level, where the dependency of a region's output on multinational investment will be much more apparent than at the national level. Added to this difficulty is the fact that at regional level a significant fraction of the labour input which produces the output in a given region may reside outside that region. The most obvious examples are the Dublin and Midlands-East regions where there is substantial inter-regional commuting by labour (Boyle et al.)[2].

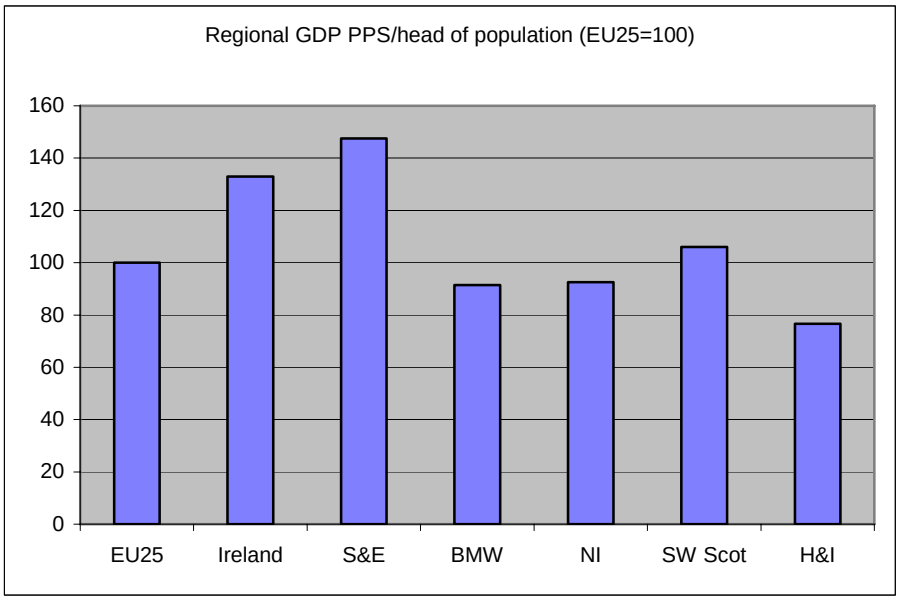
Figure 2 compares the productivity in the regions for the years 2002, using Eurostat GDP/PPS per head of population figures[3]. Regional productivity is expressed as a percentage of the EU25

[2] Boyle, G., McCarthy, T and Walsh, J. (1999) Regional income differentials and the issue of regional equalisation in Ireland, *Journal of the statistical and social inquiry society of Ireland, vol. xxviii, part1*

[3] For comparative purposes Eurostat adjusts the regional GDP figures for purchasing power standard (PPS)

Average (=100). Against this standard, in 2002, Ireland as a whole performs very well scoring 133, well above the EU average (see Figure 2). This figure though hides a large internal difference with the Southern and Eastern Region scoring 147.5 and the Border, Midlands and Western scoring 91.5, below the EU25 average. In fact, the BMW figure is similar to the Northern Ireland score of 92.6. The two NUTS II regions that form part of Western Scotland scored 106 (South Western Scotland) and 76.6 (Highlands and Islands) respectively. In particular, the Highland and Islands perform relatively poorly, highlighting the weak, productive economic base.

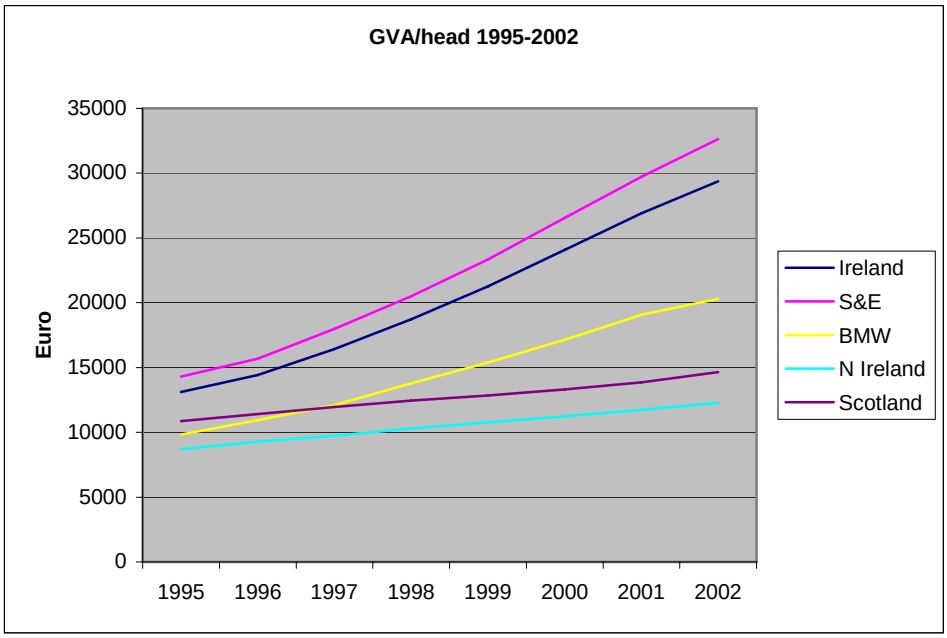
Figure 2: Regional GDP PPS/head of population (EU25=100)



Source: Eurostat

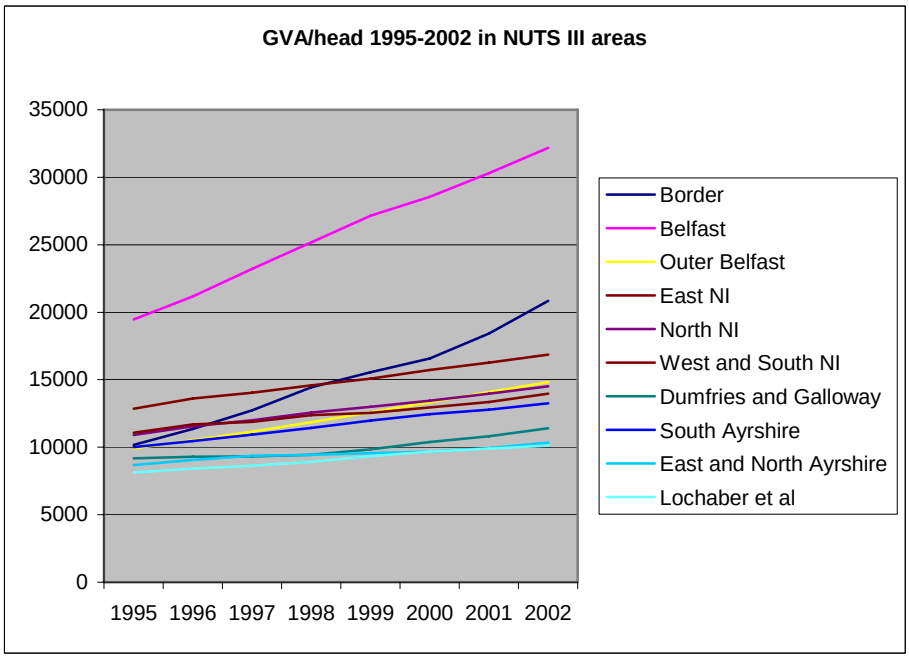
Figures 3 and 4 present a time series of productivity in the various regions (using GVA/head), presented as Euros (note there are problems concerning exchange rates). These figures show that productivity is particularly high in the South Eastern Region (containing Dublin) and the Belfast city. In 2002, rates were €32.641 and €32,180 respectively, far in excess of any other region. Moreover, Figures 3 and 4 demonstrate that with the exception of Belfast GVA growth between 1995-2002 has been sluggish in Northern Ireland and Scotland in general compared with the relatively rapid increases in Ireland, including the BMW region, so that the Border Region has grown faster than any other NUTS III region (with the exception of Belfast) during this period.

Figure 3: GVA/head 1995-2002



Source: CSO, ONS

Figure 4: GVA/head 1995-2002 in NUTS III areas



Source: CSO, ONS

4. Economic status and unemployment

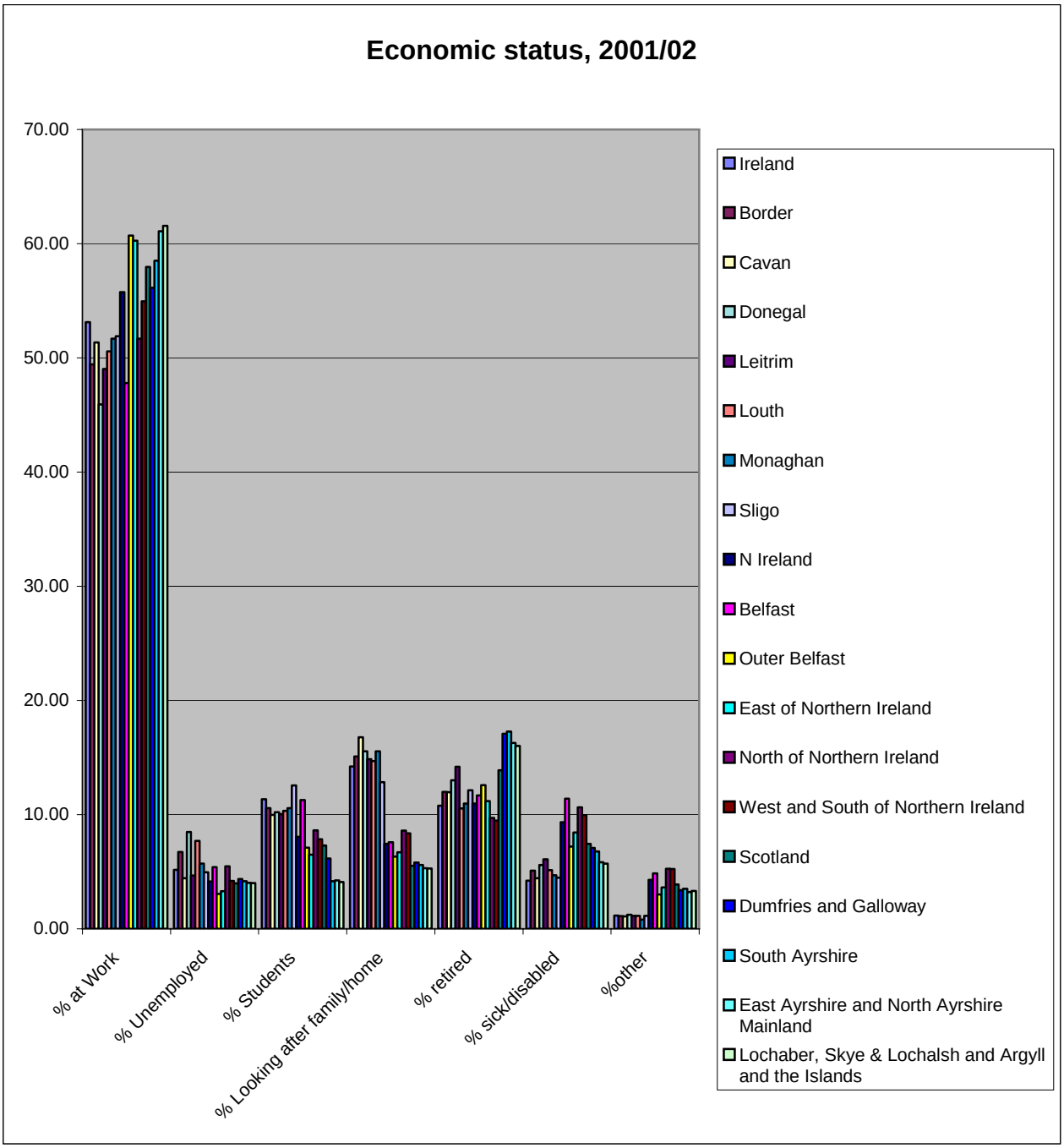
The employment rate for Ireland (53.1%), Northern Ireland (55.8%) and Scotland (58.0%), calculated using census figures (2001/2), are approximately equivalent, with just over half of the population aged between 15 and 64/74 in paid employment (see Figure 5). The rate for Ireland differs slightly to the Eurostat figure of 65.5 for 2002 (based on labour force surveys) which is slightly higher than the EU25 average of 62.8. Unadjusted Eurostat figures for 2005, indicate that Ireland's rate has risen slightly to 68.8%, compared to 66.6% for Northern Ireland, 71.9% for the

UK, and 63.7% for EU25 (see Table 3). While both Ireland and Northern Ireland's rate has grown, they are both still below the Lisbon target of 70 per cent participation rate. They do, however, correspond broadly to the European average.

There are, however, differences between areas. Using the census figures displayed in Figure 5, it is clear that participation rates are highest in Outer Belfast, East Northern Ireland and South, East and North Ayrshire, with Leitrim and Belfast having significantly lower rates. The Border Region in particular performs quite poorly with rates below all the Scottish and Northern Ireland NUTS III areas with the exception of Belfast and North of Northern Ireland.

Figure 5 also shows variation across the other facets of economic activity. Unemployment is higher for some Border Region areas (Donegal, Louth, Monaghan) (see below). In general terms, the number of students is higher in Ireland (see below). There is also a higher stay at home rate in Ireland, with the rate for the Border counties higher (with the exception of Sligo) of the average Irish rate. There are slightly higher retirement rates for Western Scotland and Donegal/Leitrim, most likely reflecting these places as locations people move to after retirement. Northern Ireland has slightly higher rates for disability and sickness than Ireland and Scotland.

Figure 5: Economic status, 2001/02



Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

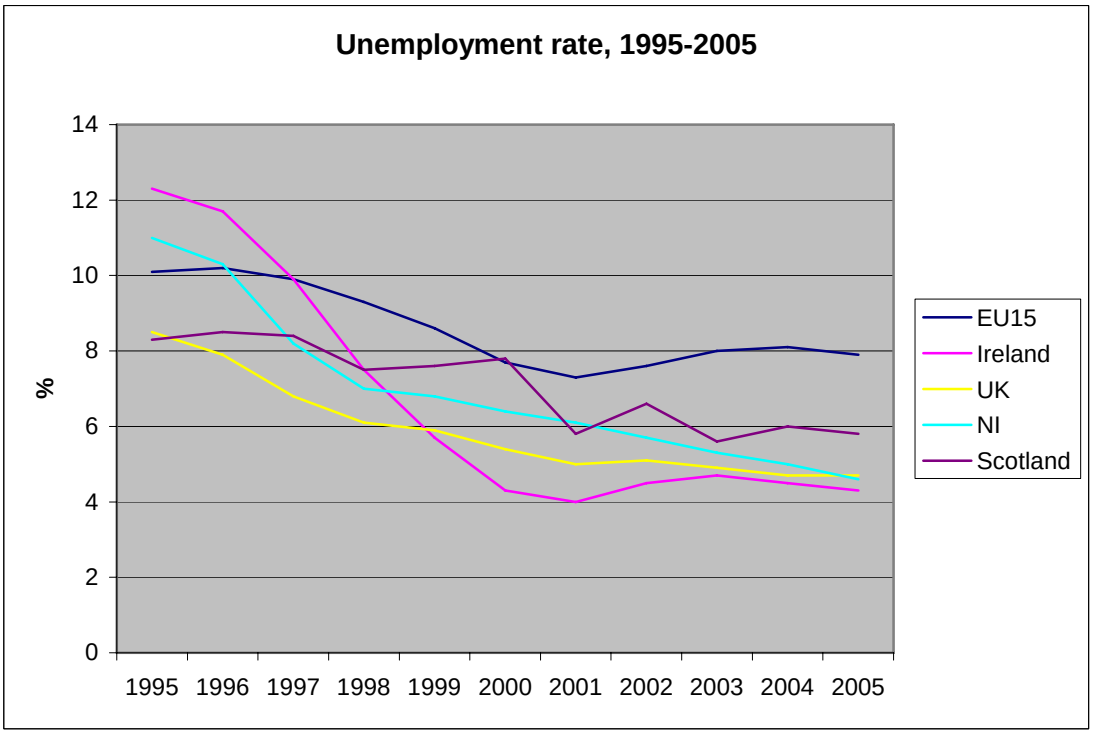
Female participation in the labour force increased dramatically in Ireland throughout the 1990s and the participation rate in 2002 was relatively similar (41.3% of all workers) to Northern Ireland (44.1%) and Scotland (46.8%). The rate for the Border region is slightly lower at 39.9%. This lower rate is reflected in the higher rates staying at home (Figure 6).

Figure 6: Percentage Females of those at work

Irish figures relate to all those working, NI and Scotland to those working between 16-64.

The unemployment rate for Ireland, Northern Ireland and Scotland has fallen pretty consistently since 1995, so that all three are well below the EU15 average (see Figure 7). Ireland, in particular, had a dramatic reduction in unemployment between 1995-2001 in line with the Celtic Tiger phenomena. It rose slightly post the dot.com crash and 9/11 and has since stabilised at around 4.5%. Both the Northern Ireland and general UK rate has fallen to around the same mark. The Scottish rate is slightly higher at 5.8% in 2005.

Figure 7: Unemployment Rate, 1995-2005



With regards to long-term unemployment (measured as those unemployed for more than 12 months as a percentage of total unemployment) Northern Ireland consistently has a higher rate

compared with Ireland and Scotland, although the rates are comparable to the EU25 rate. In other words, those registered as unemployed in Northern Ireland are more likely to remain unemployed for more than 12 months.

Table 4: Long-term Unemployment levels at NUTS level 2, 2000-2003

	2000	2001	2002	2003
EU25	-	-	44.25	45.10
RoI	36.59	32.31	29.91	32.33
UK	26.90	25.31	21.92	21.58
Scotland	30.40	26.70	23.54	22.54
NI	44.33	39.96	37.49	41.40

Source: Eurostat

Furthermore, there is a persistent difference in unemployment rate between the Protestant and Roman Catholic populations in Northern Ireland, with the difference consistent across men and women (see Figure 8; Table 5). In general terms, Roman Catholics are between a third and twice as likely to be unemployed than Protestants despite a general reduction of unemployment as a whole between 1992 and the early 2000s. Tacking this discrepancy remains a challenge of employment policy, and will probably remain persistent for some time given labour market geographies.

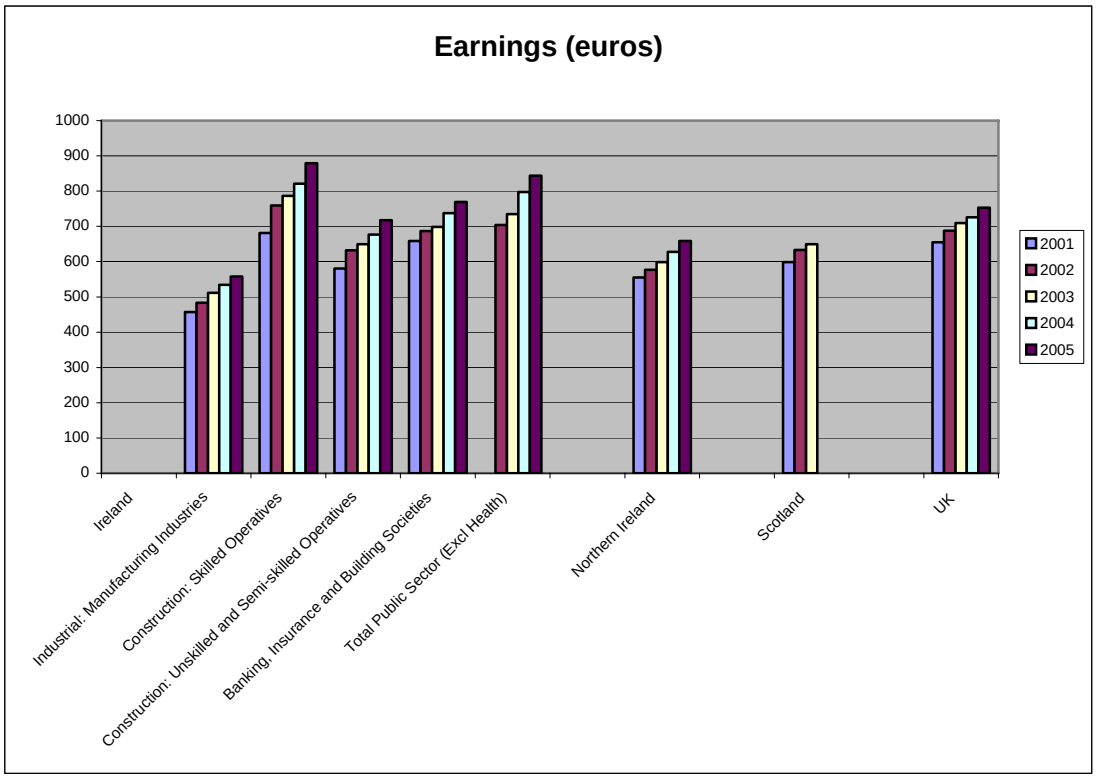
Figure 8: Unemployment by Religion in Northern

5. Earnings

Comparing earnings across jurisdictions is not an easy task given differences in exchange rates, employment law, practices, the tax regime, and how the figures are measured. The data available, once standardised to euros, indicate that average wage levels in Scotland are slightly higher than Northern Ireland, but both are below the UK average (see Figure 9; Table 6). Figures for Ireland are only available for specific industry sectors, but show wages roughly comparable to Northern Ireland and Scotland, if not slightly higher as a whole. The chart shows that wage

increases were approximate across the jurisdictions, with wage growth slightly higher in the construction and public sectors in Ireland.

Figure 9: Earnings (€)



6. Human capital: Education and skills

The *Lisbon Agenda* (2000) calls for economic reform throughout Europe so that it becomes the most competitive and dynamic knowledge-based economy in the world by 2010. As part of this, emphasis is being put on increased investment in people/human capital, in networks, and in R&D. Investment in these areas will, it is argued, have the added benefit of tackling the many factors which lead to social exclusion – unemployment, poor skills, inadequate training and education, etc. (European Commission, 2000). An independent examination of 'key employment policy challenges' by the European Employment Taskforce in 2003 concluded that there are 4 key requirements, all centred on human capital, on which creating more employment is dependent:

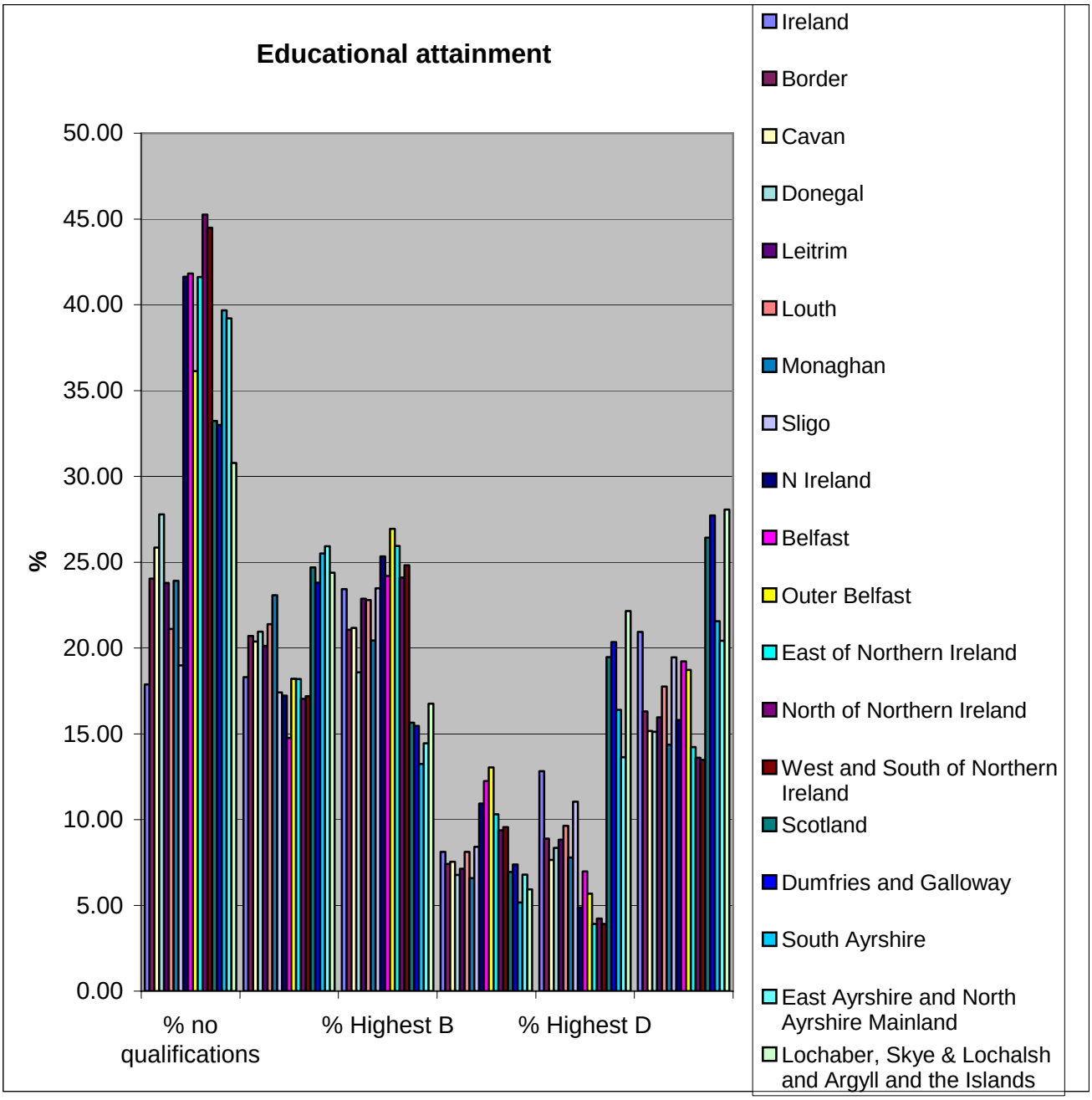
- Increasing adaptability of workers and enterprises
- Attracting more people to the labour market
- Investing more and more effectively in human capital
- Ensuring effective implementation of reforms through better governance.

Human capital is the "knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of economic, social and personal well-being" (European Commission, 2002). The future economic growth of, and balanced regional development within, Ireland, Northern Ireland and Scotland necessitates the provision of human capital "of the highest grade" in order to "combine employability and adaptability" (European Commission, 2002). Adaptability of workers and firms to organisational and technological changes requires a concentrated effort, involving governments, development agencies, educational institutions and businesses, in the promotion of training and lifelong learning (Forfás, 2003).

Educational attainment

Comparing educational attainment across Ireland, Northern Ireland and Scotland is not a simple matter given that the categories used for different types of awards varies between jurisdiction (see Table 7 below). On the whole Ireland has a much lower rate of 'leaving school without qualifications' than either Scotland or Northern Ireland. This can be explained by the awarding of primary certificate on completion of primary education up until the late 1960s. Scotland has a far higher Highest D percentage (degree or higher) in part because degree level awards are included in the Highest C category for Northern Ireland (though not Ireland). Merging categories C and D together to form a generic third-level category, it becomes clear that Scotland has the highest level of population trained to third-level (both non-degree, degree and higher – 26.4%), followed by Ireland (20.9%), then Northern Ireland (15.8%). Two of the Western Scottish NUTS III areas score particularly well (Dumfries, 27.7% and Lochaber, 28.1%). The Border Region (16.3%) is on about par with Northern Ireland as a whole, with the East (14.2%), North (13.6%) and South and West (13.5%) regions of Northern Ireland, along with Monaghan (14.4%) and Donegal (15.2%), performing poorly in comparison to all other regions. The lower rate of third-level trained population in the Border region and Northern Ireland is significant with regards to fostering a knowledge economy given the appetite for graduates such amongst such industries. It suggests that there is a potential labour gap to source high-skilled employment.

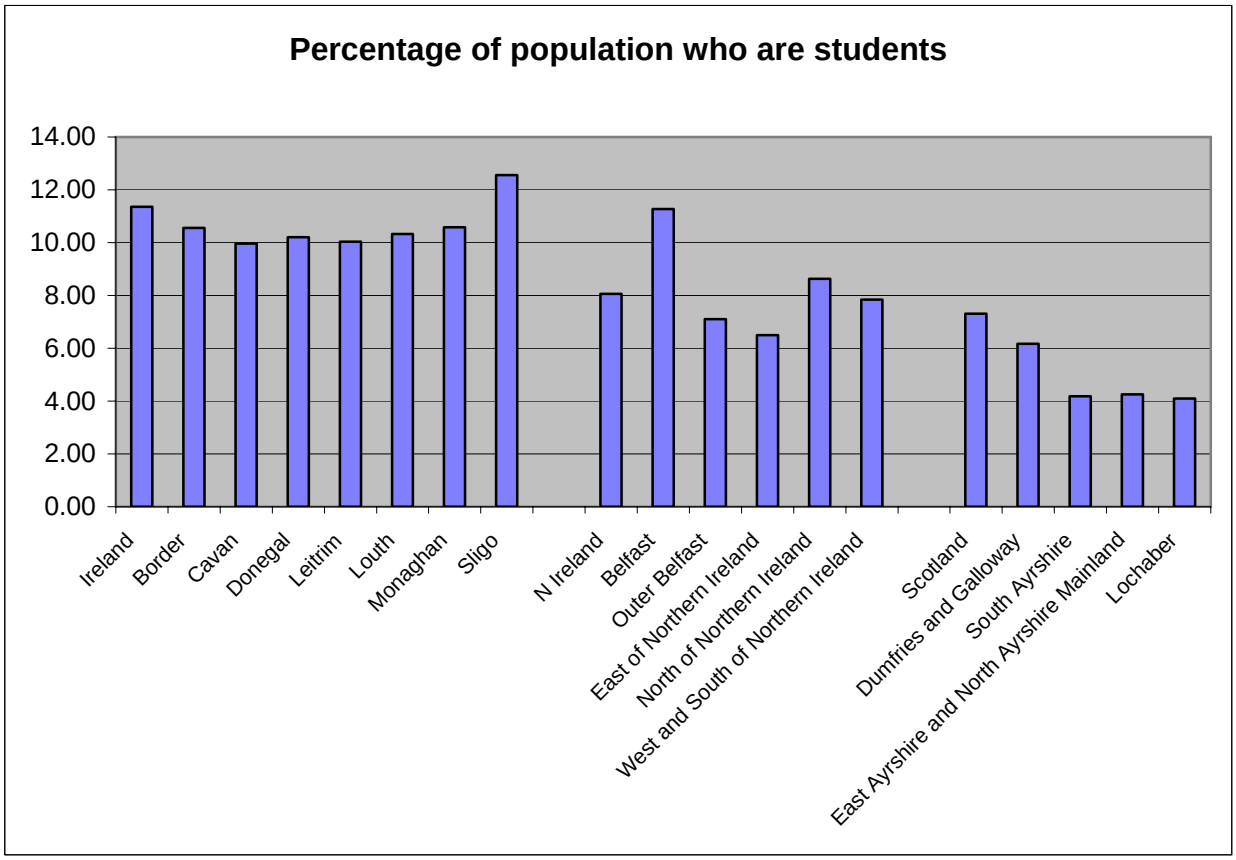
Figure 10: Educational Attainment



Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

Such a gap can be tackled through further education. It seems that Ireland is presently doing the most to tackle any knowledge deficit. The numbers of third-level students as a percentage of population 15-74 for 2001/2 is consistently higher for Ireland than either Northern Ireland and Scotland. In fact, every county that makes up the Border region has a higher percentage of students than every other NUTS III area with the exception of Belfast, which has a higher percentage given large student populations studying at Queen's University Belfast and the University of Ulster. The Western region of Scotland performs particularly poorly in relation to Scotland as a whole and also Ireland and Northern Ireland.

Figure 11: Percentage of population who are students



Apprenticeships

Apprenticeship and traineeship schemes are becoming of increasing importance in meeting the demand for qualified trades people and ensuring the economic competitiveness of local economies. In Northern Ireland and Scotland, for example, they are being promoted as an alternative to third-level education where, not only do you become qualified in a particular field, but you also gain 'on-the-job-experience' and receive a salary while you train.

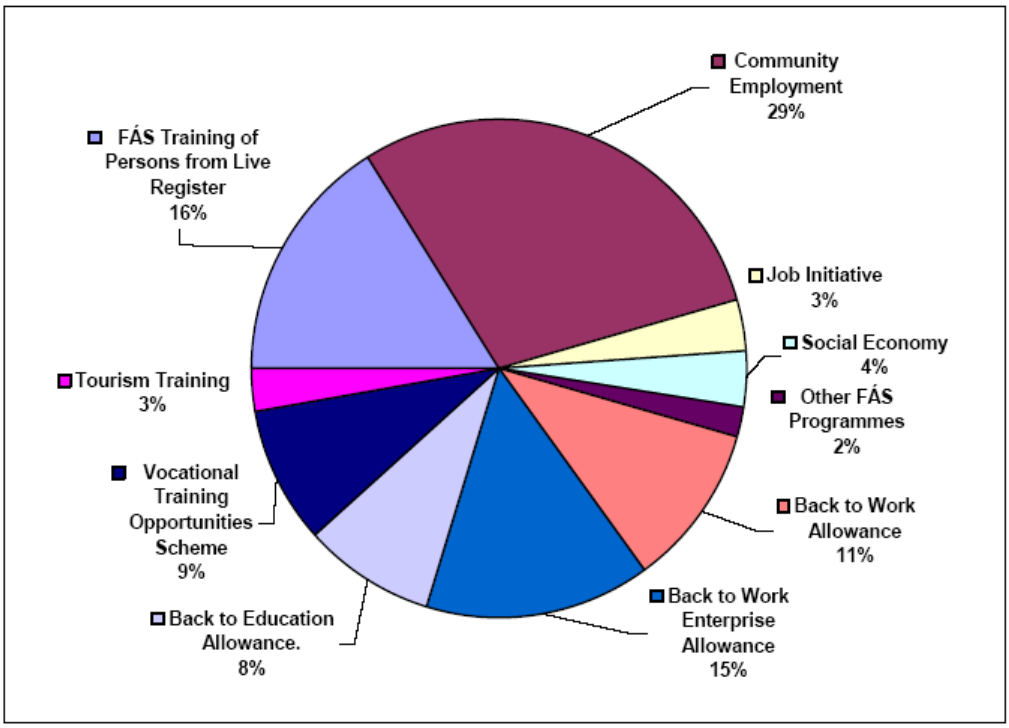
In 2003, it was estimated that 27,000 people aged 16+ in Ireland were undertaking apprenticeship schemes operating within a number of trades, including furniture, printing, engineering and construction. These schemes take between 3-4 years and combine on the job training with college placements. On top of this, a further 1,900 people undertook traineeships in the areas of financial services, childcare, leisure activities, etc. Both these schemes are operated by the national training and employment agency, FAS (Forfás, 2004). As highlighted in Figure 12, there are a number of other training options available. Schemes such as vocational training opportunities and tourism training are short-term programmes which allow participants to update their skills or, in some instances, prepares them for take-up of apprenticeship schemes proper. Other schemes such as community employment, jobs initiative, and back to work schemes are aimed at those who have been unemployed for 6months or more.

The Modern Apprenticeship programmes in Scotland and Northern Ireland combines paid employment with the opportunity to train for jobs in the areas of construction, sport and recreation, security services, customer service, etc. for those aged 16+. As of June 2005, over 33,000 apprentices were in training in the whole of Scotland – with 2,777 of these being from the Highlands and Islands Enterprise Area (Modern Apprenticeship Bulletin, 2005). Within Northern

Ireland this employer-led scheme currently has over 400 apprentices employed in 70 companies (see www.learndirect.co.uk/personal/northernireland/), with strategies currently being implemented to raise this number to 10,000 by 2010 (Department for Employment and Learning, 2005).

Apprenticeship and traineeship schemes have the potential to become important lifelong learning and training tools. However, in line with changing employment practices, the

Figure 12: Various Programmes and schemes in Ireland to Support Return to Work



(Extract from: National Employment Action Plan (Ireland) 2004)

growth of the knowledge economy, and the increasing need for firms to be flexible and adaptable to changing working practices, it may become necessary for such programmes to increase the range of options open to apprentices. Currently, the emphasis is on professional skills/trades and crafts. In the future, it is plausible that further programmes will need to be developed, for example, financial services and ICT.

Lifelong Learning

With Ireland, Northern Ireland and Scotland all experiencing a changing demographic profile due to declining birth rates and longer life-spans, there will be a greater emphasis in the future on older workers staying in the labour force for longer. This will be necessary in order to maintain a sufficient labour market supply. These older workers will be required to adapt to technological changes and as such, lifelong learning programmes will become of increasing importance – whether that be further education provided through the State or training programmes offered by employers.

The *Lifelong Learning Strategy for Scotland*, published in 2003, argues that the "knowledge, skills, competencies and other attributes people acquire through learning, contribute to economic

activity" (p.7). This message was reiterated in the 2004 Forfás report, *Ahead of the Curve*. The *Economic Vision for Northern Ireland* (2005) notes that two key challenges facing Northern Ireland in relation to human capital, skills and employability are: retaining its graduates for the benefit of the local economy, and raising the level of post-school human capital and improving graduate opportunities. These same challenges also apply to Ireland and Western Scotland, with the emphasis on each region having to improve its economic performance and competitiveness. A further key challenge for each region is to address the current jobs-skills mismatch facing many small, medium and large-scale employers.

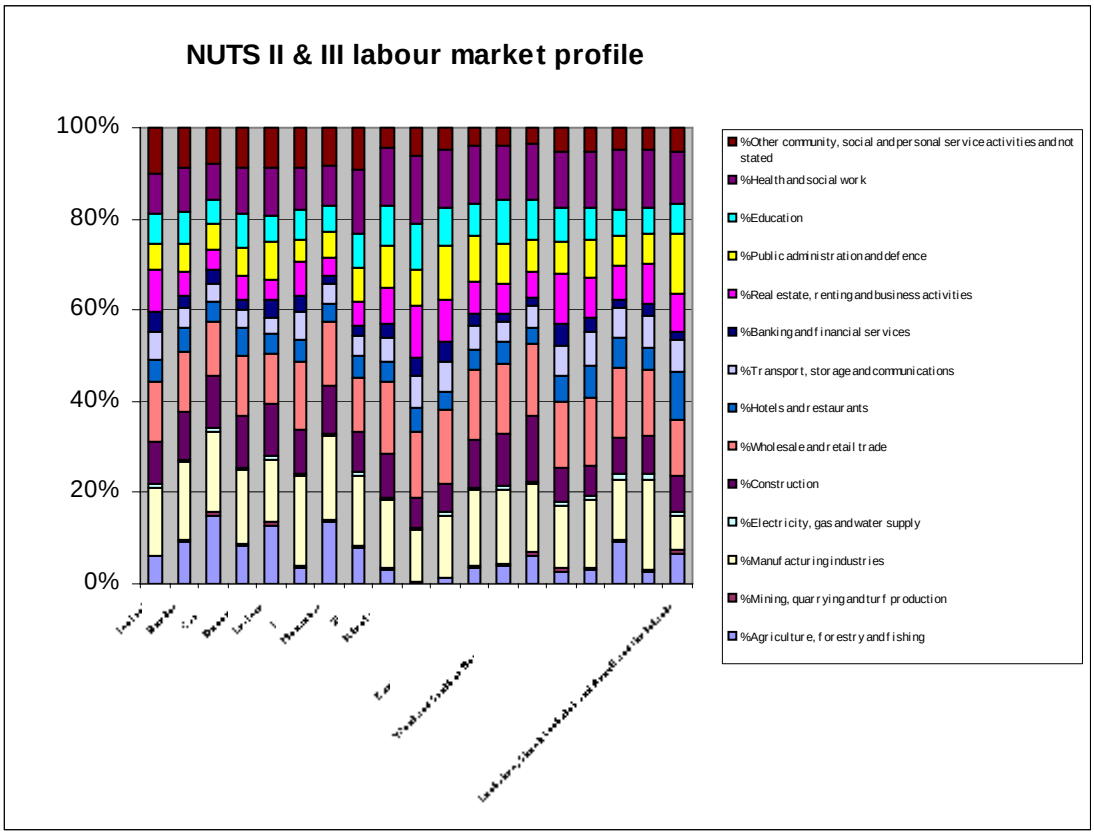
7. Labour market sectors

As would be expected given the wide geographic coverage of the data, there is significant variation across areas for the percentage of population working in different labour market sectors (note: the data refers to labour market, not occupations) (see Figure 13).

To focus on specific labour market sectors, in 2001/02 agriculture employment was higher in Ireland as a whole at nearly 6%, than Northern Ireland (3%) and Scotland (2.4%). It is particularly important in the Border Region, where between 12.7% and 15% of working population are employed in agriculture in three counties, Cavan, Leitrim and Monaghan. Further, Donegal and Sligo both have higher rates than all other reported areas with the exception of South Ayrshire. The only NUTS III area with more than 5% working in agriculture in Northern Ireland is the South and West area. Lochaber et al. in has a more than 5% rate. Typically, agriculture takes on a more important role in rural areas forming a central part of the rural economy. The Border Region is typically rural in character with the only urban elements being small towns (typically less than 10,000 population) and only a handful of towns exceeding 10,000 people.

Mining, quarrying and turf production, along with electricity, gas and water supply, are the lowest employment sectors in Ireland, Northern Ireland and Scotland, with only marginal differences between the reported areas.

Figure 13: NUTS II & III labour market profile



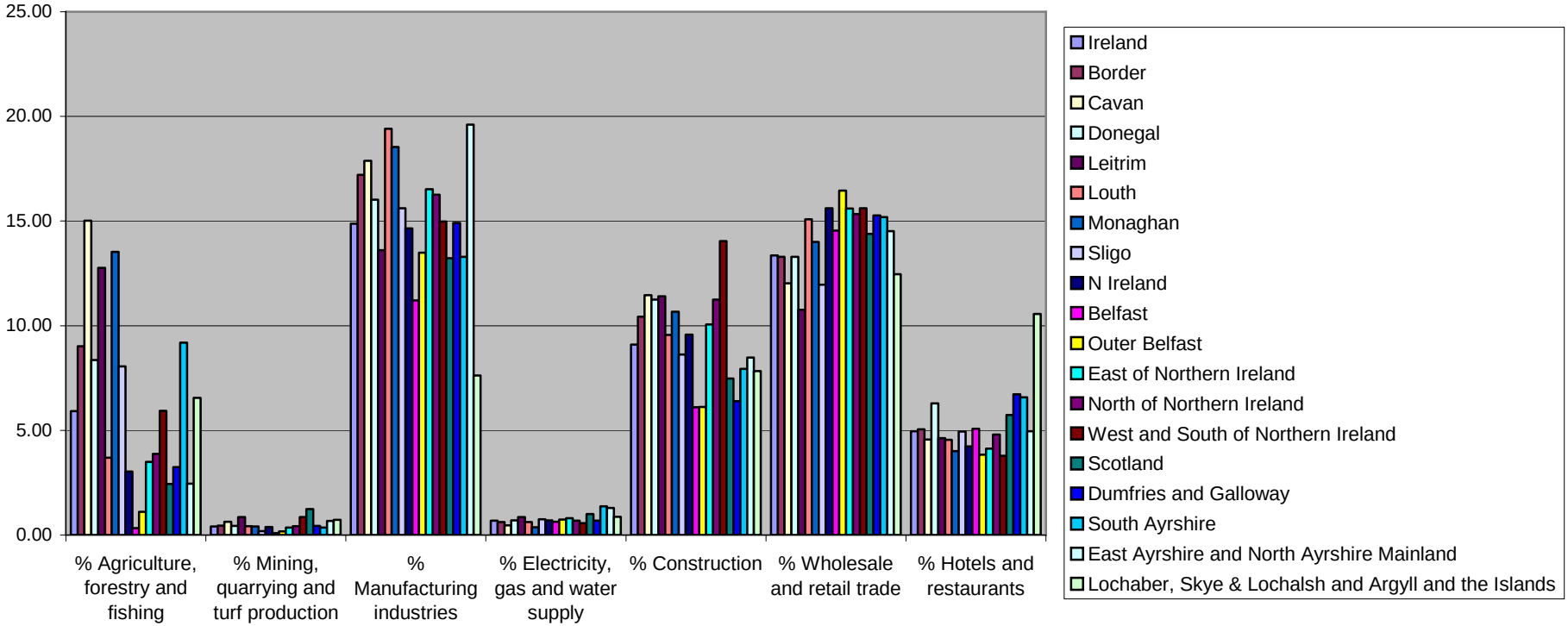
Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

As a whole, manufacturing is one of the four largest employment sectors (along with wholesale and retail, construction and health) in Ireland, Northern Ireland and Scotland. Like Agriculture, it is particularly important in the Border Region, with only Leitrim having less than the Irish average. Indeed, Cavan, Louth and Monaghan have higher rates than all other reported areas with the exception of East Ayrshire. Belfast and Outer Belfast have rates lower than the Northern Irish average, Belfast significantly so, with the other Northern Irish NUTS III areas marginally above the average. Lochaber et al. has by far the lowest manufacturing sector, most likely due to its peripherality.

Construction employment rates are around 9 per cent of the workforce for Ireland and Northern Ireland, and 7.5% for Scotland. The Border region as whole has a rate slightly above the Irish average, varying between 9.6% and 11.5%, with the exception of Sligo which is slightly under the average rate at 8.6%. In Northern Ireland there is a marked contrast between Belfast and Outer Belfast (below the NI average) and the other NUTS III areas. The Scottish NUTS III areas hover around the Scottish average.

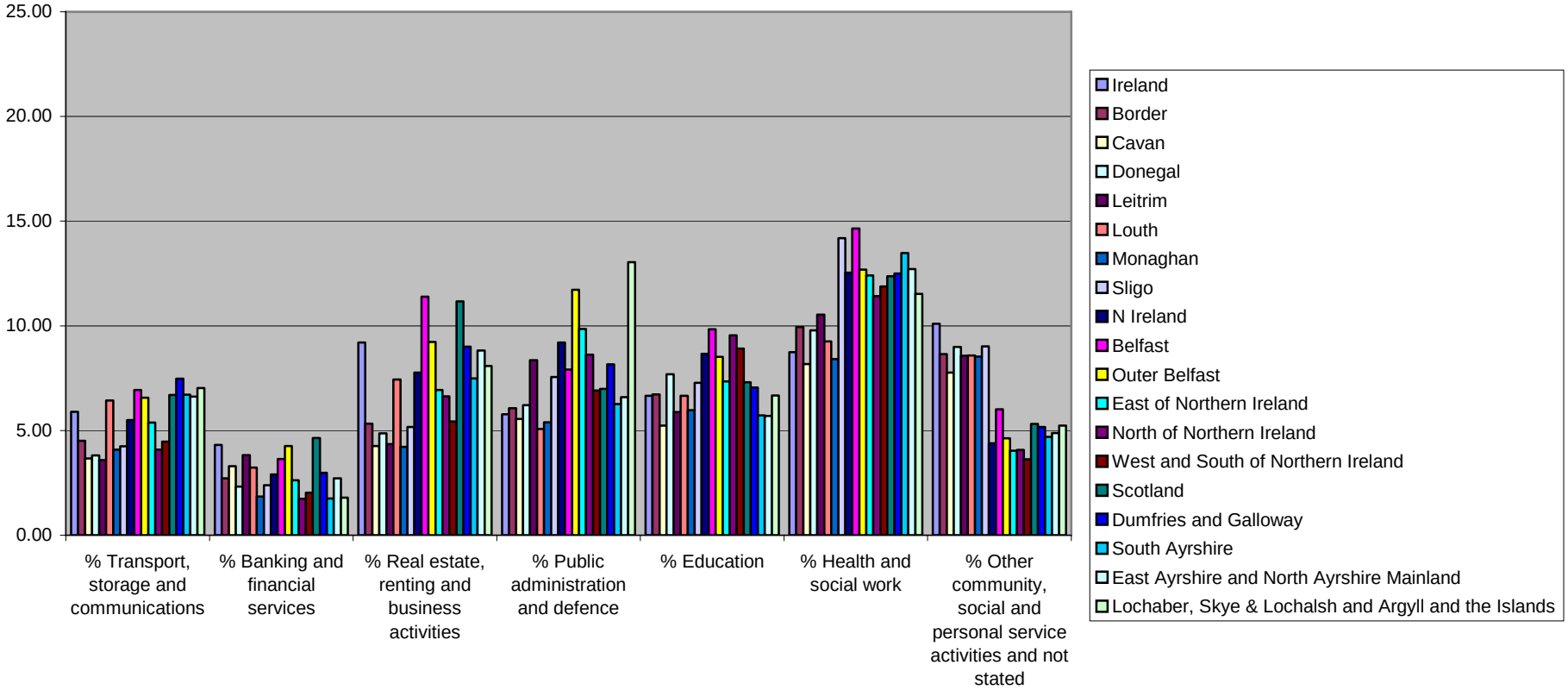
Employment in wholesale and retail varies slightly between the areas (10.7 -16.5%). In general terms, rates are higher for Northern Ireland and Scotland than Ireland, with the lowest rates in Cavan, Leitrim and Sligo. The Lochaber et al. area is slightly lower than the other Scottish NUTS III areas.

Figure 14. Percentage of workers in industries, 2001/02 I



Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

Figure 15. Percentage of workers in industries, 2001/2 II



Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

Employment rates in hotels and restaurants are between 4%-5% percent for most of the reported areas, with the exception of Donegal in Ireland, and Dumfries and Galloway and South Ayrshire (each just over 6%). Lochaber et al. has a disproportionate rate of 10.6%, reflecting a strong tourist industry with the western island and highlands. The extent to which this is seasonal work is not known.

While, Ireland, Northern Ireland and Scotland have similar employment rates in transport, storage and communications, there is some slight variation between counties in the Border region and the NUTS III areas. The Border region areas are lower than the Irish average with the exception of Louth, denoting its position on the Belfast-Dublin corridor. Belfast and Outer Belfast are slightly higher than the Northern Ireland average, and the North and West and South areas slightly below. Rates for the Scottish areas are on a par with Louth, Belfast and Outer Belfast.

Banking and financial services make up a small (less than 5%) but significant sector of the economy. The Irish and Scottish rates are slightly higher than the Northern Irish rate. With the exception of Belfast and Outer Belfast the rates for all counties within the Border region and NUTS III areas are lower than the national averages. This is not surprising given the propensity of financial services to cluster together in large cities. A similar pattern is apparent for real estate, renting and business activities for largely the same reasons.

The proportion of people employed in the public sector (public administration and defence, education, health and social work) is higher in Northern Ireland (30.4%) than either Ireland (21.2%) or Scotland (26.7%). Relatively, the border counties are approximately equivalent to the Irish average with marginal variation for all three sectors, with the exception of Sligo for health and social work (probably due to a large regional hospital). Public administration and defence are slightly higher in Outer Belfast and East NI than the other NI areas, and the Scottish areas are similar with the exception of Lochaber which has double the Scottish average due to the location of military bases along the northern Western Scottish coast. The proportion employed in education is generally higher in Northern Ireland than either Ireland or Scotland. Both Northern Ireland and Scotland have significantly higher rates for health and social services than Ireland, this being consistent across the areas.

In general terms it seems that the more manual and lower skilled employment is slightly higher in the Border Region, outside of Belfast in Northern Ireland, and in Western Scotland, with service sector employment higher in other parts of Ireland and Scotland and in the Belfast area. In other words there is a spatial division of labour between other parts of Ireland and Scotland (notably the principal cities) and the more rural parts of the Border Region, Northern Ireland (excluding Belfast) and Western Scotland.

8. Innovation and the knowledge economy (including R&D)

Lisbon Agenda

The Lisbon European Council meeting in March 2000 agreed to make the EU the most competitive and dynamic knowledge based economy in the world by 2010,

linking this with more and better jobs and greater social cohesion. The Gothenburg European Council meeting in June 2001 added the environmental dimension of sustainable development and underlined the necessity of dealing with economic, social and environmental policies in a mutually reinforcing way. An official short-list of 14 indicators to measure the progress in achieving the Lisbon/ Gothenburg aims have been agreed by the European Commission and European Council.

ESPON (European Spatial Planning Observatory Network) has merged 7 of the 14 indicators and mapped the combined results at NUTS 2 level (see Map 1 at Appendix 1). The seven indicators are: (1) GDP / capita; (2) GDP / employed persons; (3) Employment rate; (4) Employment rate of older workers; (5) Gross domestic expenditure on R&D; (6) Dispersion of regional unemployment rates; and (7) long-term unemployment rate.[4]

The combined indicator highlights the diversity in potential that prevails at the sub-national scale for contributing to the Lisbon Agenda and, based on their current situation/status, it is evident that whilst some regions have a strong competitive platform to pursue strategies to achieve successful knowledge-based local economies, others are poorly positioned to do so. Those regions with a very high performance potential include North East Scotland whilst regions with above average performance include Southern and Eastern (S&E) region in Ireland, Eastern Scotland and the Highlands and Islands of Scotland. Regions with a medium performance rating include the Border, Midlands, West (BMW) region in Ireland and South Western Scotland. The performance rating for Northern Ireland is, along with the North East and North West of England the lowest in the British Isles.

An interim summary of 14 Lisbon indicators for the ESPON area (see Map 2 at Appendix 1) suggests that, with the exception of the S&E region of Ireland, all NUTS II areas in the current study area are underperforming. South West Scotland and the BMW region have below average scores whilst North of Ireland falls into the lowest rank of performances.

Innovation and the knowledge economy

Innovation, knowledge and research and development are strongly related concepts that are often used interchangeably. In this report, *research*, *development* and *innovation* are viewed as steps along a continuum that leads from the creation of new *knowledge*, through the adaptation of that knowledge to the final exploitation of knowledge (O'Malley et al., 2006)[5]. Innovation - the development of new products services and processes – is most directly relevant for economic growth but

[4] The combined measure merges the 7 indicators into a single unit in which each of the seven indicators is weighted equally. Because environmental and poverty risk factors are omitted, the focus of the ESPON regional analysis is restricted to economic competitiveness. The omitted indicators are: (1) Youth education attainment; (2) Comparative price levels; (3) Gross fixed capital formation / GDP; (4) At-risk of poverty rates after social transfers; (5) (Change in) ; (6) (Change in) greenhouse gas emissions; and (7) (Change in) volume of freight transport relative to GDP.

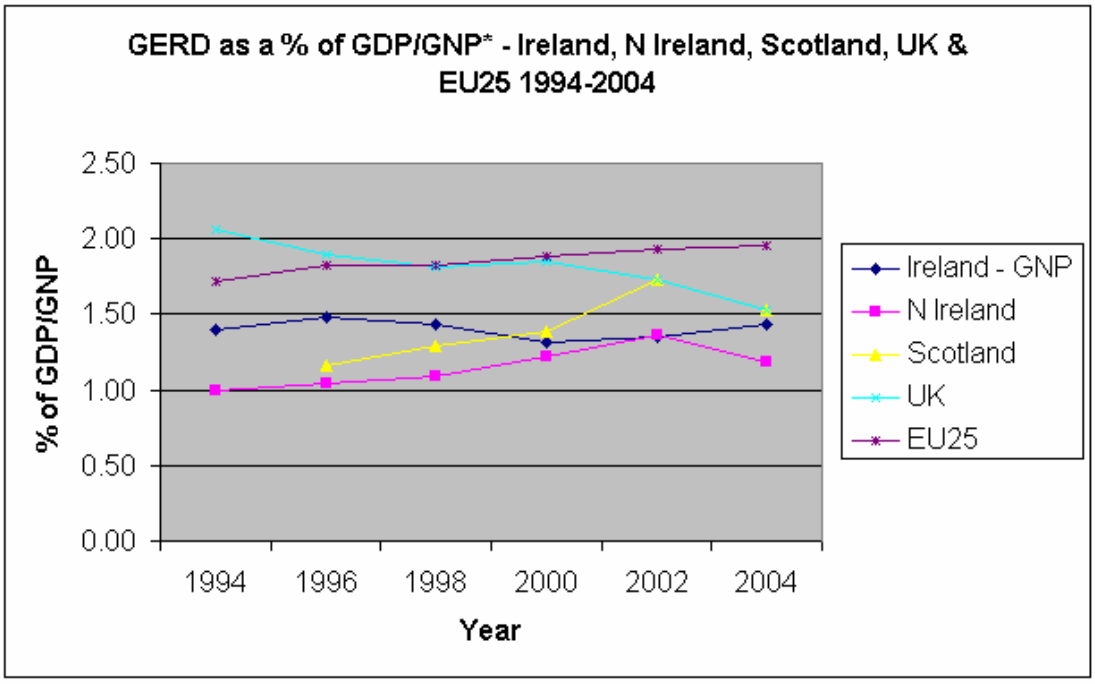
[5] O'Malley, E, Hewitt, N. and Roper, S. (2006), An all-Island system of innovation –myth or reality. Draft paper prepared as part of the Ten Countries Innovation Project (available from authors).

internationally comparable innovation indicators are not well developed and comparable sub-national-level data are virtually absent. Instead, this section presents, compares and analyses, mainly on a national/regional level, a number of common R&D input indicators (expenditure and human resources) as well as one indicator of R&D output (patents per million of population).

Research and Development Expenditure

Research and development expenditure is an important (but not the only) input in the innovation process and is often used as an indirect measure of innovation. Gross domestic expenditure on research and development (GERD) is a commonly used indicator of national/regional R&D spending. GERD is composed of expenditure in three sectors: business expenditure on R&D (BERD), government expenditure on R&D (GOVERD) and higher education expenditure on R&D (HERD). For comparison, R&D expenditure is usually expressed as a percentage of Gross Domestic Product (GDP). In the case of Ireland this introduces one important distortion. Ireland's GDP is strongly inflated because of the relative importance of foreign owned firms and the related manipulation of transfer prices (Barry, 2005). For Ireland it is therefore more appropriate to relate R&D expenditure to GNP.

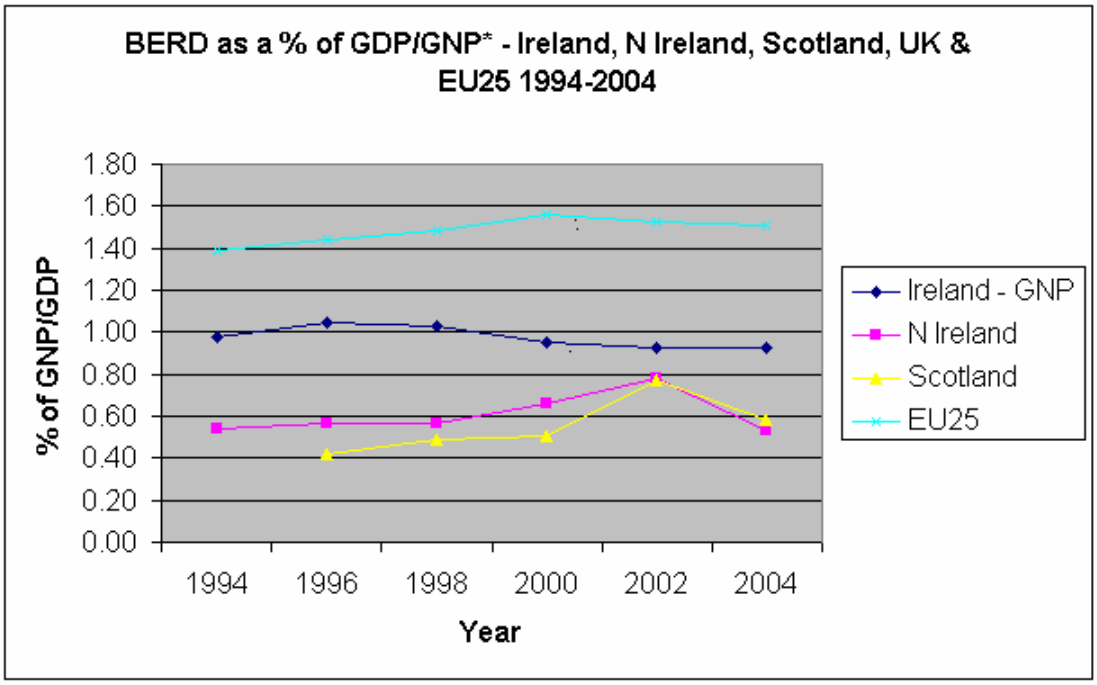
Figure 16: GERD as % of GDP/GNP – Ireland, Northern Ireland, Scotland, UK and EU25, 1994-2004



Source: see table 8

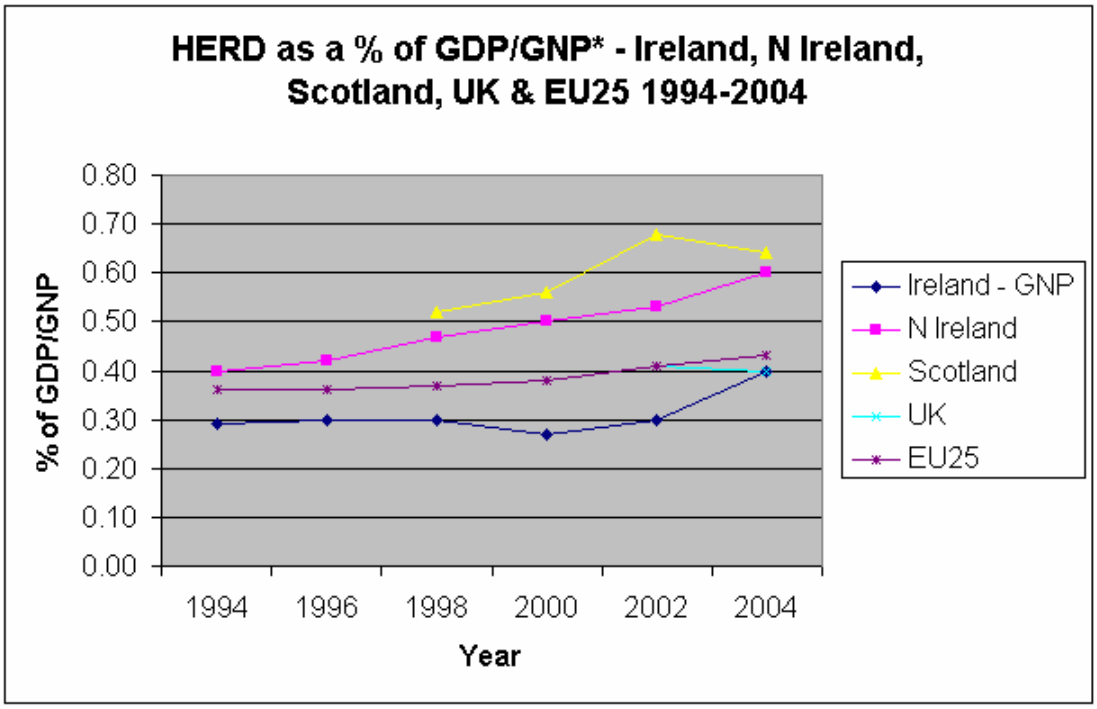
Note: 2003 figures are used for 2004 Scotland, EU and UK data points; 1997 figure is used for Scotland 1996 data point

Figure 17: BERD as % of GDP/GNP – Ireland, Northern Ireland, Scotland, UK and EU25, 1994-2004



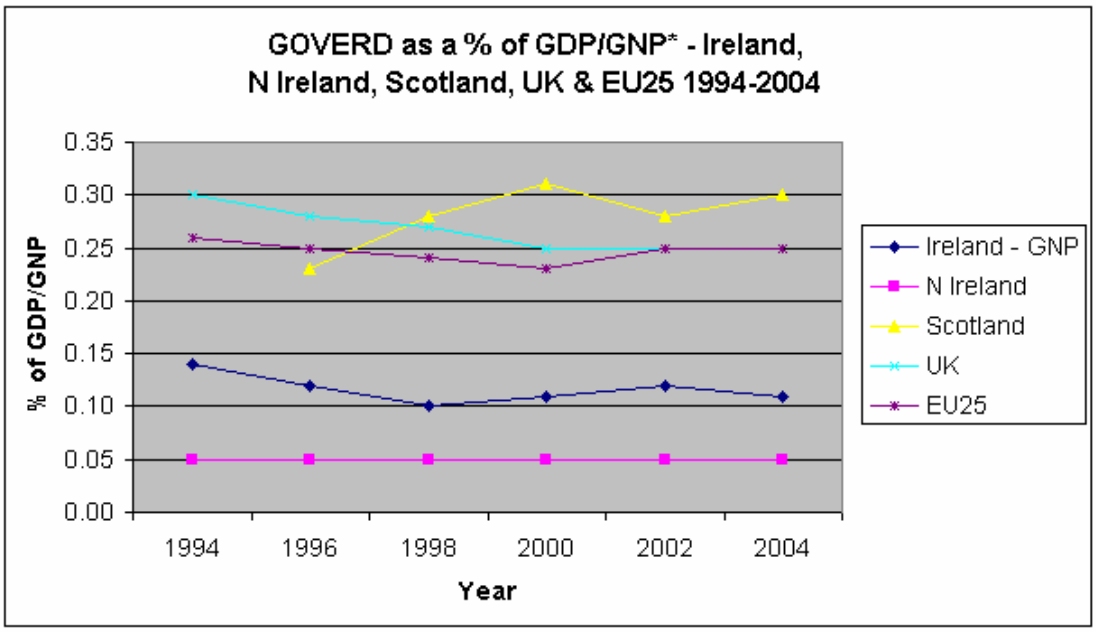
Source: see table 9
Note: 2003 figures are used for 2004 Scotland data point; 1997 figure is used for Scotland 1996 data point

Figure 18: HERD as % of GDP/GNP – Ireland, Northern Ireland, Scotland, UK and EU25, 1994-2004



Source: see table 10
Note: 2003 figures are used for 2004 Scotland data point; 2001 figures are used for 2002 UK data point

Figure 19: GOVERD as % of GDP/GNP – Ireland, Northern Ireland, Scotland, UK and EU25, 1994-2004



Source: see table 11
Note: 2003 figures are used for 2004 Scotland data point; 1997 figure is used for Scotland 1996 data point

The data for the various R&D expenditure indicators are shown in tables 8 to 11 and are graphically presented in figures 16 to 19. Despite a strong policy focus on innovation in recent years, gross expenditure on R&D in all three regions remains low compared to the UK, EU and OECD levels. Since 1994 GERD for Ireland has been relatively stable, ranging between 1.40 and 1.48 per cent of GNP. The figure for NI rose from just below 1 per cent of GDP to a high of 1.36 per cent in 2002 after which it dropped to 1.18 per cent in 2004. Scotland shows similar figures with the exception of the 'outlier' year 2002 (1.73). Clearly, all three regions remain far removed from the EU target of 3 per cent of GDP by 2010.

The three regions have strongly different R&D structures. In both Scotland and Northern Ireland the higher education sector accounts for the largest share of R&D expenditure, while business R&D is the largest component in Ireland. Since the early 1990s, Ireland has experienced a strong increase in business R&D expenditure in absolute terms. However, because the growth in expenditure was more then matched by the absolute growth in GNP, BERD as a percentage of GNP actually declined somewhat, from 0.98% in 1994 to 0.93% in 2004. With 0.53 and 0.58 per cent of GDP, business expenditure in NI and Scotland is far lower than in Ireland. NI initially witnessed a strong growth from 0.54% in 1994 to a high of 0.78 per cent in 2002 but in 2004 the figure had dropped below the 1994 level. For most of the period the levels of business expenditure in Scotland were even lower then in NI. As with gross expenditure, business expenditure in the three regions, including Ireland, remains well below the EU and OECD averages.

It is informative to evaluate these BERD figures in the context of the industrial structure of the three regions. Different industries use R&D inputs more or less intensively. Thus, a region's R&D intensity is partly a reflection of the industry structure. Regions with a high share of their economic output in high technology sectors tend to have high R&D intensities (Davis and Tunny, 2005; Roper et al. 2006)[6]. Table 12 shows the composition of manufacturing employment in the three regions. The high-technology and medium-technology sectors in Ireland, Scotland and Northern Ireland account for 52, 44 and 39 per cent of total manufacturing employment respectively. On the basis of this industrial structure one would expect a relatively high R&D intensity, particularly in Ireland. Ireland's low expenditure level is for a large part explained by the fact that the, mainly foreign-owned, companies that operate in the high-tech manufacturing sector in Ireland have R&D intensities that are considerable below international averages. This provides an even more negative insight into the already relatively low BERD/output figures presented above.

Table 12: Composition (%) of manufacturing sector employment in Ireland, Northern Ireland and Scotland

Sub-sector (Standard Industrial Classification)	N. Ireland (2004)	Ireland (2002)	Scotland (2004)
'Low technology' sub-sectors			
Manufacture of food products; beverages and tobacco	21	17	21
Manufacture of textiles	5	2	4
Manufacture of wearing apparel	2	2	1
Manufacture of leather and leather products	0	0	0
Manufacture of wood and wood products	4	2	3
Manufacture of pulp, paper and paper products	2	1	3
Manufacture of coke, refined petroleum products and nuclear fuels	0	0	1
Manufacture of rubber and plastic products	8	3	5
Manufacture of other non-metallic mineral products	7	5	3
Manufacture of basic metals	0	1	1
Manufacture of fabricated metal products except machinery	7	8	10
Manufacture of furniture; manufacture not elsewhere classified	4	6	3
Largely 'high and medium technology' sub-sectors			
Publishing, printing and production of recorded media	5	8	8
Manufacture of chemicals and chemical products	4	11	6
Manufacture of machinery and equipment not elsewhere classified	7	6	8
Manufacture of office machinery and equipment	3	7	3
Manufacture of electrical machinery and apparatus not elsewhere classified	4	3	3
Manufacture of radio, television and communication equipment	3	6	4

[6] Davis, G and Tunny, G 2005, 'International comparisons of research and development', *Economic Roundup*, Spring 2005, Australian Treasury.
Roper, S., Love, J., Cooke, P. and Clifton, N. (2006), The Scottish Innovation System: Actors, Roles and Actions. Edinburgh: Scottish Executive.

Manufacture of medical, precision and optical instruments, watches and clocks	2	7	5
Manufacture of motor vehicles, trailers and semitrailers	4	2	2
Manufacture of other transport equipment	7	2	5
Total Manufacturing	100	100	100
High/medium technology sectors as a % of total	39	52	44

Source: Ireland: Central Statistics Office, 2002 Census of Industrial Production; Northern Ireland and Scotland: Annual Business Inquiry

Turning to research expenditure in the higher education sector both Scotland and Northern Ireland are characterised by very high and rising levels of expenditure as a percentage of GDP. Starting in 1994 at an already high level, the expenditure in Scotland rose to 0.68 per cent in 2002, after which it dropped somewhat. Expenditure in Northern Ireland rose steadily from 0.4 per cent in 1994 to 0.6 per cent in 2004. These figures are the highest in the UK and compare very favourably to the EU and OECD figures as well. The figures reflect strong government policies to develop higher education R&D in both regions. Similar policies have been introduced in Ireland, notably the formation of the Science Foundation Ireland in 2000 and the Programme for Research in Third Level Institutions. However, Ireland started with a very low level of expenditure in 1994 and it is only recently that the absolute investments in HERD started to outpace economic growth. This resulted in a sharp rise in the HERD as a percentage of GNP in 2004, bringing it on par with UK and international averages.

Finally, spending in government research institutes and laboratories (GOVERD) in both Northern Ireland and Ireland, has been well below UK and international levels, and relatively stable as a percentage of GNP/GDP both in Ireland and Northern Ireland. There are only a few significant public research institutes, notably in the area of agriculture. This stands in contrast to many other European countries and regions where these types of research institutes are significant, notably in the areas of defence, health and education (O'Malley et al. 2006). In contrast, compared to the other tow regions and internationally, Scotland is characterised by very high levels of government expenditure in R&D.

There are no comparable R&D expenditure figures on NUTS III and county level. What can be said is that the research intensity in the Border Region of Ireland and the four Scottish regions under review is likely to be extremely low. These regions contain a very small proportion of high technology companies, higher education and government research institutions of Ireland and Scotland (see CIRCA Group, 2006)[7].

Students in Science/Technical Engineering

[7] CIRCA Group (2006), Audit of Innovation in the BMW Region. Border, Midwest and Western Regional Assembly

Another important input for the innovation process is the pool of research-trained labour in the workforce. A commonly used indicator is the proportion of degree level qualifications in science and engineering. Table 13 shows that Ireland, Scotland and the UK compare favourably to the European Union average. The share of science and engineering graduates in Ireland (29 per cent) is actually among the highest in the European Union (Eurostat, Statistics in Focus, 2005). Northern Ireland scores rather poorly on this indicator with a share of 24 per cent of total graduates. It is important to note however that, due to differences in educational systems, the figures are not completely comparable. Countries apply different definitions of third-level education and include different educational programmes in science and engineering. For example, the OECD uses a slightly different methodology for calculating the share of degrees in science and engineering. In the OECD rating, Ireland scores just below the level of the EU-15 and well below the UK level in 2002. (OECD, Science and Technology Scoreboard, 2005). In addition, the indicator has its limitations as a measure for R&D activity or innovation. Notably, Ireland and Scotland have a relatively large, foreign-owned, industrial sector. Although employing many workers with a degree in science and engineering, most of these are employed in production functions and a small proportion of their time will be taken up by R&D/Innovation related activities. This holds for both primary degree level graduates as well as for a large proportion of the Masters / Ph.D level graduates.

Table 13: Science and Engineering graduates as a percentage of total graduates 2001/2002[8]

Ireland	29
UK	27
Northern Ireland (2004/2005)	24
Scotland	28
EU 15	26

Source: Ireland, UK, EU: Eurostat (2005), Statistics in Focus; Northern Ireland: Department for Employment and Learning (NI), Statistical Bulletin 2006. Scotland: Higher Education Statistics Agency.

Patents

Another, again imperfect, indicator for R&D output and innovation is the number of patents granted. On the national level, countries can be compared on the basis the number of patents granted per million population by the European Patents Office. Table 14 presents these figures for 2001 for selected countries. Clearly both the UK and Ireland perform poorly compared to the high achievers in Europe. The level of patents granted from the UK is 77% lower then the German level while the level of Ireland is 86% lower.

[8] For Northern Ireland and Scotland, Science and Engineering comprises Biological Sciences, Veterinary Science, Physical Sciences, Mathematical Science, Information Technology, Engineering and Technology. Graduate data for Northern Ireland include HND/DipHE level undergraduates but exclude all other undergraduate level graduates

There are not EPO figures on a sub-national level. Instead we can compare patents granted from regions by the patent offices in Ireland and the UK. The figures for 2003 and 2004 are presented in Table 15. The figures change little from year to year. With 11 and 32 patents per million of population, Northern Ireland and Scotland score well below the UK average of 63 per million in 2004. Ireland performs slightly better than the UK. However this international comparison comes with a serious health warning. The figures are a poor indicator of relative knowledge creation for at least two reasons. First, the national figures are influenced by particularities of the respective national patents regimes. Secondly, many of the patents granted by the national patent offices will never be filed in other jurisdictions.

Table 14: Patents granted from selected countries per million population toe EPO 2001

Germany	99
Sweden	84
Netherlands	66
Finland	65
France	46
Denmark	46
Austria	47
Belgium	35
US Origin	30
UK	**23**
Italy	21
Ireland	**14**
Spain	4
Portugal	1

Source: Forfas (2005), Research and Development in Ireland 2005

Table 15: Patent granted from selected regions per million population to national patent office

	2003	2004
Northern Ireland	8	11
Scotland	36	32
UK	61	63
Ireland*	83	78

Source: Ireland: Irish patents Office Annual report 2004 and CSO, Population Estimates; Scotland, Northern Ireland and UK: The Patent Office, Annual Report and Accounts 2004/2005 and ONS, Population Estimates

Note: *Irish figure only relates to patents granted to patentees or proprietors from the Republic of Ireland

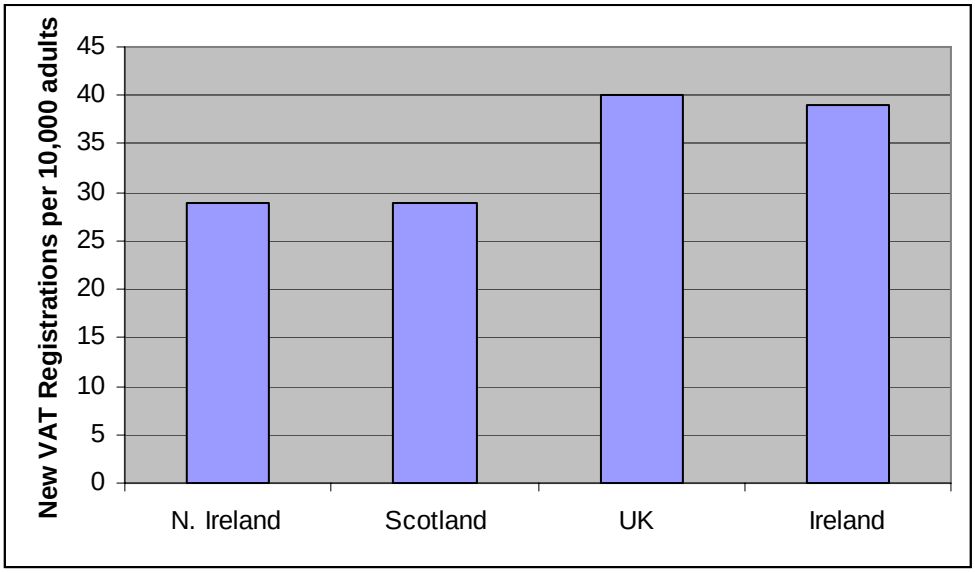
9. Enterprise and Entrepreneurship

VAT registration levels

Enterprise levels and entrepreneurial activity can be measured in terms of VAT registrations. Using comparable VAT data for 2003 shows (figure 20) that while

entrepreneurial activity rates in Northern Ireland and Scotland are similar when measured against adult population levels, the rates for both of these countries are well below the averages for the UK and Ireland.

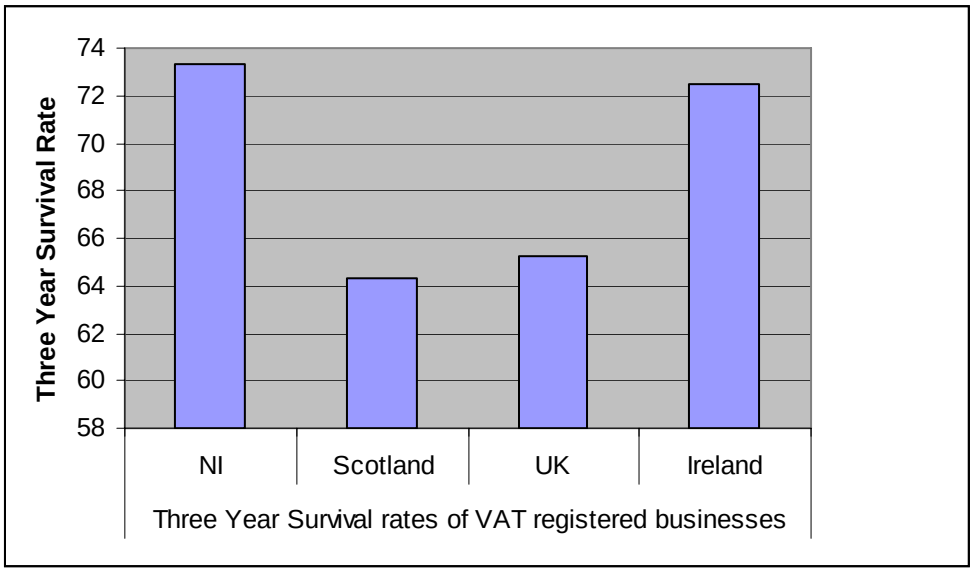
Figure 20: Additional VAT registration per 10,000 adults (2003)



Sources: Small Business Service, DTI, Revenue Commissioners, Ireland.

The durability of VAT registration is a useful measure of business sustainability. When considering the survival rates of newly registered firms, Northern Ireland and Ireland compare very favourably with Scotland and the UK (Table 21) with both having more firms continuing in existence and being registered after three years of trading.

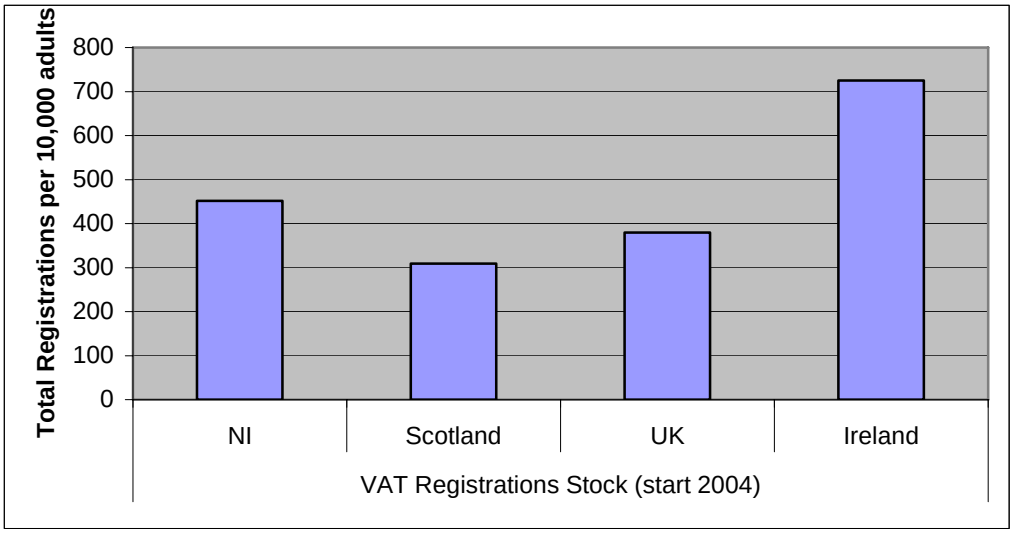
Figure 21: Three Year Survival rates of VAT registered businesses – Average rate between 1993-1999



Sources: Small Business Service, DTI, Revenue Commissioners, Ireland.

The new activity and failures can be viewed in the context of the stock of existing businesses registered for VAT. Figure 22 indicates that in proportion to the adult population, Ireland and Northern Ireland have higher levels of registered businesses than Scotland and the UK. Ireland has a particularly high level at over twice the Scottish level.

Figure 22: VAT registration total stock (2004) per 10,000 adults



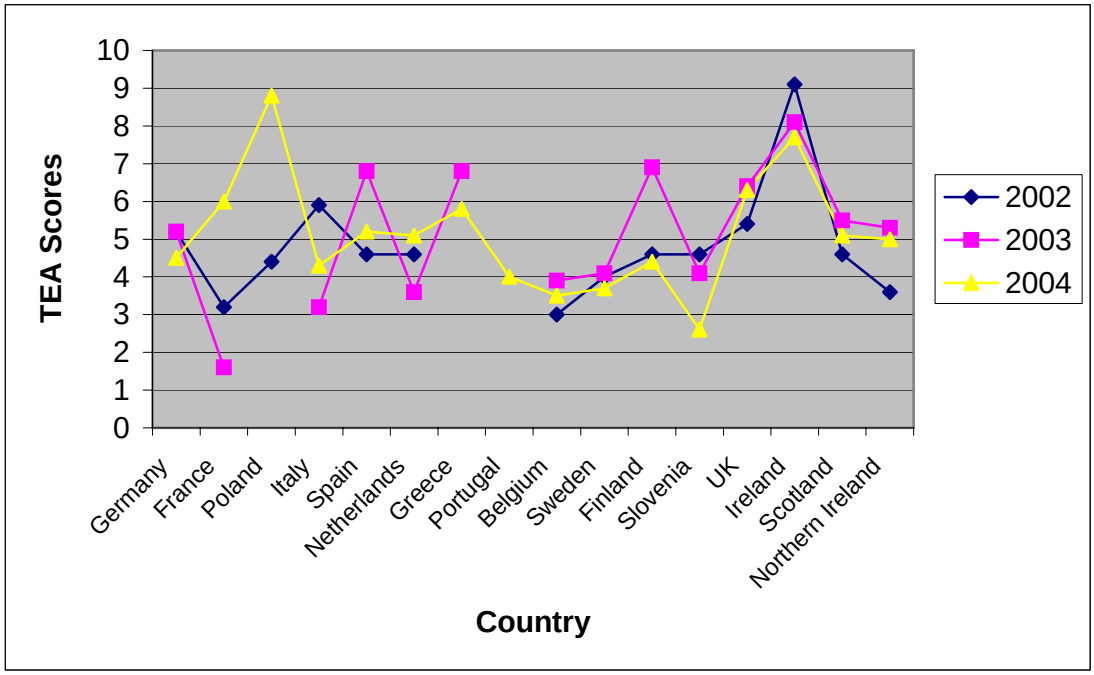
Sources: Small Business Service, DTI, Revenue Commissioners, Ireland.

Entrepreneurial Activity

Measures of the extent of entrepreneurial activity are provided by the Global Entrepreneurship Monitor (GEM), which since 2000 has provided an annual measure of entrepreneurial activity for a growing list of countries.[9] The GEM indicators contained in the various national reports provide a useful international comparative measure of entrepreneurial performance. The GEM scores for entrepreneurial activities provide important baseline and comparative data for measuring entrepreneurial performance within the British Isles. The reports for 2004 cover 34 countries worldwide and provide the most recent international comparative results. The total entrepreneurial activity (TEA) of the EU countries that participated in the 2004 surveys is presented in the Figure 23 below.

[9] The GEM reports a set of harmonized measures of entrepreneurial activity. Specifically, GEM considers that national economic growth is the result of two parallel sets of interrelated activities, those associated with established firms, and those related directly to the entrepreneurial process. The GEM 2004 data set is based on the following types of data collection. Representative samples of randomly selected adults, groups ranging in size from 1,000 to almost 27,000 individuals and standardized national data are obtained from international data sources such as World Bank, International Monetary Fund and United Nations.

Figure 23: Total Entrepreneurial Activity (TEA) by Country, 2002-04



Source: www.**gem**consortium.org/

Total Entrepreneurial Activity Index (TEA)

The Total Entrepreneurial Activity Index (TEA) provided by the Global Entrepreneurship Monitor (GEM) provides an annual measure of the levels of 'early stage' entrepreneurial activity between countries.[10] TEA is the proportion of individuals in the working age population who are actively trying to start their own business, including self-employment, or running their own business for less than 42 months old (i.e. new firms).

The TEA for Northern Ireland is 5.0%. This is similar to the rate for Scotland (5.1%) but below the rate for Ireland, which stands at 7.7%. This means that one in 20 adults (aged 18-64) in Northern Ireland and Scotland are engaged in 'early stage entrepreneurial activity' compared with one in 13 for Ireland. Based on wider comparisons, Northern Ireland is low on the UK table of entrepreneurial activity, where it ranks 9th out of the 12 UK NUTS II regions, and in the middle of the 16 European countries participating in the GEM survey.

[10] It should be noted that the data measures numbers and rates of personal activity rather than number and rates of firms and organisations involved in entrepreneurial activity. It is possible, for example, that an average of two entrepreneurs could be involved in each firm in a particular country so that its entrepreneurial performance as measured by firms would be only half that presented in the GEM scores.

Table 16: TEA scores 2001-2004

	TEA 2001	TEA 2002	TEA 2003	TEA 2004
N. Ireland		3.6%	5.0%	5.0 %
Scotland	5.1%	4.6%	5.5%	5.1%
Ireland	12.2%	9.1%	8.1%	7.7%
UK	7.8%	5.4%	6.4%	6.3%
Europe (14)			5.6%	5.1%
Global GEM*	8.9%	6.7%	7.3%	6.7%

* Comprises 17 countries that participated in all GEM surveys
Source: www.**gem**consortium.org/2004

Levels of 'Early Stage' Entrepreneurial Activity

It is important to distinguish between long established entrepreneurs and those engaged in new entrepreneurial enterprises. The GEM report data are disaggregated by ***early stage*** (recent and incipient) and ***established*** (existing) entrepreneurial activitie. It should be noted that category of recently established entrepreneurs overlaps in both of these classifications.

- Early stage entrepreneurs comprise new firms (i.e. in existence for more than 42 months) and proposed start-up enterprises (i.e. incipient or nascent entrepreneurial activity).
- Established (or existing) entrepreneurs consist of both new firm owners (i.e. in existence for less than 42 months) and owner /managers of long-established business enterprises (i.e. in existence for more than 42 months).

Table 17: Early stage entrepreneurs and TEA scores 2004

Early stage entrepreneurs	**Northern Ireland**	**Ireland**	**Scotland**	**UK**	**EU**	**USA**
Total Number	52,000	193,000	161,00	2,349,000	14,520,000	20,783,000
- New firms	26,600	90,000	69,500	1,161,400	6,545,000	8,830,000
- Nascent firms	24,400	103,000	91,500	1,187,600	7,975,000	11,953,000
TEA (% of adult population)	5.01%	7.70%	5.1%	6.25%	5.29%	11.33%

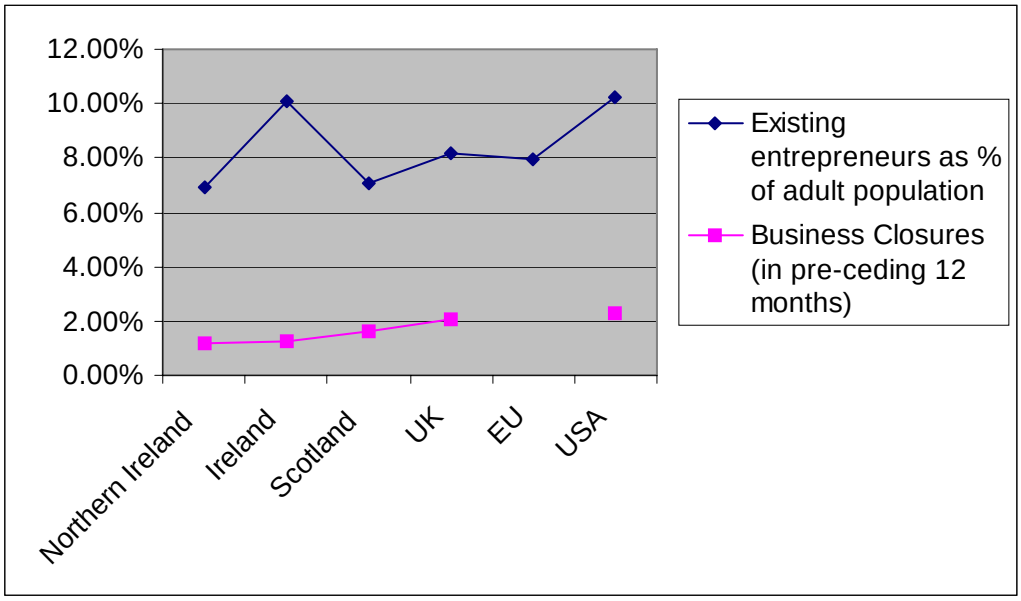
Source: www.**gem**consortium.org/2004

Levels of 'Established' Entrepreneurial Activity

TEA is a measure of potentiality rather than direct impact. It does not contain information about surviving activities versus enterprise closures (churn rates) and therefore needs to be complemented by additional data to provide a more complete picture of the actual outturns or entrepreneurial impact.

Long-standing and new entrepreneurs provide a measure of current or existing entrepreneurial activity. The category of established (existing) entrepreneur is a good baseline indicator of the sustainability performance of a country in that it highlights the entrepreneurial platform on which new activities build together with the durability of its entrepreneurial activity over time. According to the GEM surveys (see summary at Table 18), the proportion of owner / managers of established (existing) businesses in Northern Ireland (6.94%) and Scotland (7.1%) is lower than the UK average and falls far below the proportions for Ireland (10.10%) and the USA (10.26%). Northern Ireland and Ireland have the lowest closure (failure) rates. This constitutes an interesting contrast in the context of the British Isles – the countries with the highest and lowest levels of existing entrepreneurial activity have similar low rates of failure.

Figure 24: Established (existing) entrepreneurs and closures 2004



Source: www.**gem**consortium.org/2004

Table 18: Entrepreneurs in established and new firms 2004

Type of Owner / Manager	Northern Ireland	Ireland	Scotland	UK	EU	USA
- Established firm Entrepreneurs	44,400	163,000	155,000	1,920,600	14,771,000	9,990,000
- New firm Entrepreneurs	26,600	90,000	69,500	1,161,400	6,545,000	8,830,000
Total established & new firms Entrepreneurs	71,000	253,000	224,500	3,082,000	21,316,000	18,820,000
Existing entrep-reneurs as % of adult population	6.94%	10.10%	7.1%	8.20%	7.98%	10.26%
Business Closures	1.2%	1.26%	1.6%	2.04%		2.25%

(in pre-ceding 12 months)						

Source: www.**gem**consortium.org/2004

10. Networks

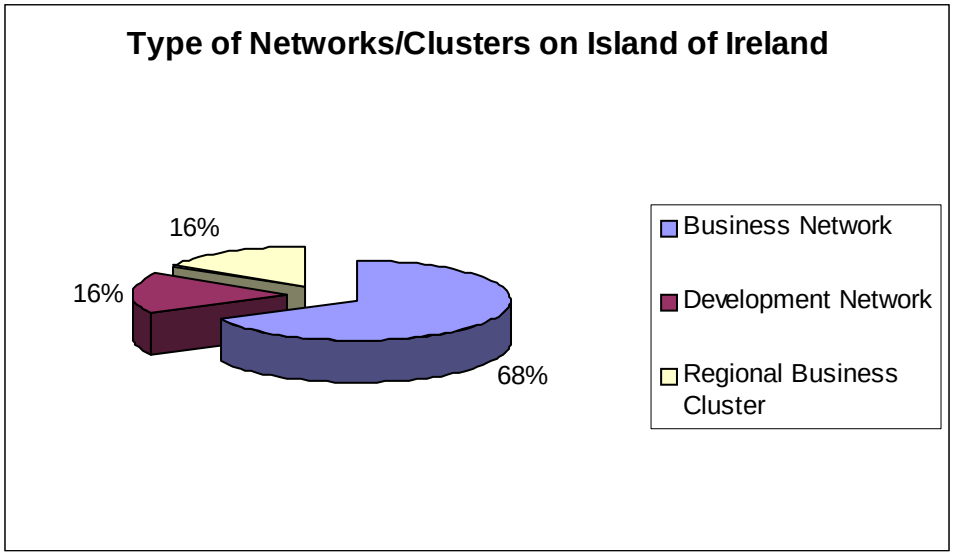
Enterprise and entrepreneurial opportunities are increasingly being linked to network capacity and activity. As a result of globalisation, increased mobility and better communication systems, the marketplace is becoming increasingly competitive. Collaboration, whether local, cross-border or international, allows firms to be adaptable and responsive to market demands. According to the report, *Business Networks on the Island of Ireland* (2005), "Networks and clusters help firms to achieve critical mass and economies of scale and compete in larger, more diverse and more competitive markets than they could if they were to continue to act alone" (p.4). Through involvement in networks, either formal or informal, firms can concentrate on developing their core competencies and building connections with specialised suppliers and partners.

Networks on the Island of Ireland

In 2005, a report commissioned by Inter*Trade*Ireland identified 110 networks and clusters on the Island of Ireland (see Figure 25). These included business networks, development networks and regional business clusters.[11] The vast majority of these were less than five years old, indicating that this is a recent phenomenon, and had been developed using the bottom-up approach (i.e. they were business-led).

[11] Business networks were defined as firms collaborating for specific purposes/objectives that would result in enhanced competitive advantage. Development networks are generally informal in nature and involve firms associating with other firms around exchange of information or sharing of services. Regional business clusters are geographically concentrated groups of interconnected companies or institutions (often cross-sectoral in make-up), which are motivated by broader regional and/or national economic development goals.

Figure 25: Type of networks and clusters identified on Island of Ireland (as % of total number)

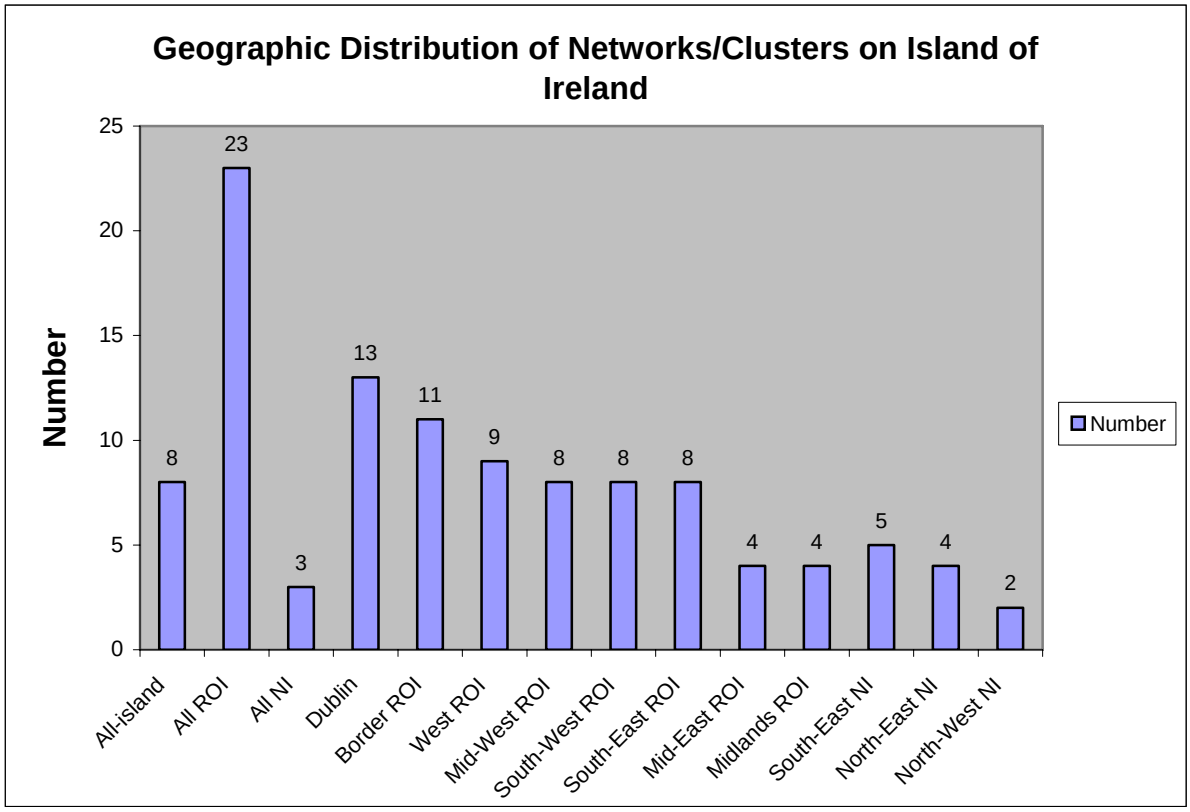


Source: Hunt, M. Doyle, G. McDermott, D & McCormack, P. (2005): *Business Networks on the Island of Ireland*, Inter*Trade*Ireland, Newry.

The establishment of networks and clusters has been, for the most part, concentrated around the ICT, food, manufacturing, general services and agriculture/horticulture sectors. While the firms themselves have been acknowledged as the main drivers in the establishment of networks, particularly the business networks, state agencies and local economic development agencies are also recognised as having a role to play.

The geographic distribution of the networks and clusters identified on the island of Ireland by Hunt et al. (2005) highlight that the majority of networks tend to be regional in nature (62%) while only 7% are all-island or cross-border in nature (see Figure 26). There is a greater emphasis in Ireland on being involved in networks and clusters than in Northern Ireland, and this is attributed to the recent economic boom experienced by the Irish economy and the necessity for firms to increase their competitiveness in order to maximise their benefits.

Figure 26: Geographic distribution of networks and clusters on the Island of Ireland



Source: Hunt, M. Doyle, G. McDermott, D & McCormack, P. (2005): *Business Networks on the Island of Ireland*, Inter*Trade*Ireland, Newry.

The tendency to date for networks and clusters to concentrate within regions can be attributed to the relative newness of this phenomenon and, as such, the 'cautious' nature of firms in entering such collaborative ventures. The lower number of networks and clusters operating in Northern Ireland or on a cross-border basis can be attributed to an unsettled political past of the region and the subsequent low level of investment in the region and slow growth of the economy. One would expect that given the greater political stability and ensuing growth in the region's economy, the number of networks and clusters will increase over the coming years (ESRI, 2003)[12].

Outside the business networks, other networks are created through funding programmes such as Interreg IIIA Programme focusing on Ireland/Northern Ireland, the PEACE Programme, and the Co-operation Ireland fund. These networks generally tend to comprise local authorities, community and voluntary sector organisations and local development agencies.

Networks between Island of Ireland and Scotland

[12] ESRI (2003): *Survey of Business Links on the Island of Ireland*, Inter*Trade*Ireland, Newry.

Networks between the island of Ireland and Scotland generally tend to be between Northern Ireland and Scotland. These are focused on transport, education, language (i.e. Ulster-Scots), and telecommunications infrastructure. Increasingly, both formal and informal links are being established between firms and institutions in Ireland and Scotland, particularly around education and culture. However, no data has been sourced which gives quantifiable data on the number and types of networks that exist between Ireland, Northern Ireland and Scotland.

11. Transport infrastructure and access

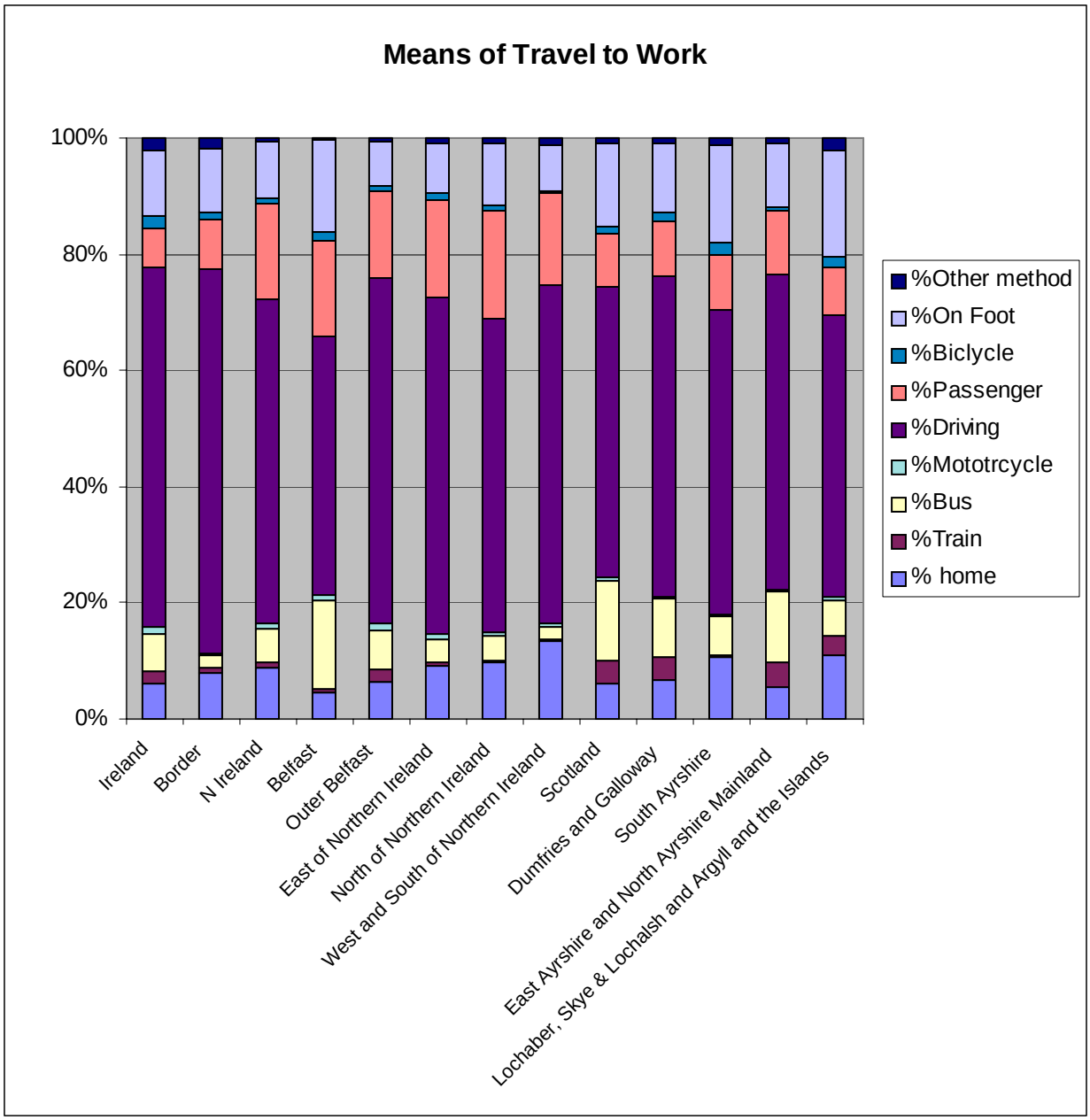
European Context

Infrastructure refers to the physical and organisational structures that are necessary for a region or enterprise to operate. The role of infrastructure in promoting competitiveness and economic growth within a region is well recognised. Poor infrastructure leads to congestion delays, reduced productivity and increased costs, as well as discouraging inward investment from firms outside the region.
Maps 1 and 2 in Appendix 2 summarise the European situation in relation to basic transport infrastructure supply in the context of facilitating potential territorial cohesion and network collaboration. The road infrastructure maps clearly illustrate the both the low flows of traffic and limited stock of high-grade (motorway) infrastructure in Ireland, Northern Ireland and West Scotland relative to other territories in Europe. Given that the density of rail network capacity for the island of Ireland is amongst the lowest in the European territory, the deficiencies in surface transport infrastructure and connectivity to the European economic heartland is a major challenge for both Northern Ireland and Scotland.

Means of Travel to Work

The census figures for 2001/02 show that there is a strong reliance on road transportation for travel to work, with relatively low rates of people walking or cycling to work or using public transport. Scotland as a whole has the highest rate of public transport use (17.8%). This rate is lower in all three Scottish NUTS III areas, particularly so in South Ayrshire and Lochaber et al. where rural public transport provision is poor. Similar low rates are evident in the Border region in which only 3% use either train or bus to travel to work, and in East, North, and West and South regions of Northern Ireland, the West and South being the lowest of any area at 2.7%. Both Belfast and Outer Belfast score above the Northern Irish average (6.9%), particularly Belfast (15.9%) due to the cities well developed bus and rail network. In all cases, with the exception of Lochaber et al., over 60% of people travel to work by motorbike or car. For the Border region and the Northern Irish regions (with the exception of Belfast) between 73% - 76% drive to work or are passengers. Clearly in more rural areas there is a large deficit in public transport and therefore an over-reliance on driving.

Figure 27: Means of travel to work



Rail infrastructure and access

The rail network in Scotland is larger than in Ireland and Northern Ireland (Table 18). Rail systems in Ireland have declined considerably in coverage since partition in 1923 and the growth in motor traffic during the 1950's and 60s. In Scotland the rail network has faired better and is likely to experience increases in coverage with the proposed reopening of rail lines in the central belt and Borders. The period 1997/8 saw an increase of 33km of line. In Ireland coverage in terms of stations and entry/exit points to the system in the Border region are low, in comparison areas in County Down, Fermanagh and Londonderry are better served. Northern Ireland Railways (NIR) consists of a relatively small network; putting it into context it is important to note that Northern Ireland has one of the lowest rail densities in Europe when compared as route miles per million population (NIR Strategic Review, 2005).

Current data shows operating route track of 340 km, with the majority of activity focusing in counties such as, Antrim, Down, Derry and Armagh. Iarnrod Eireann have 1919km of operating track in the Republic of Ireland of which approximately 99km are located in the six border county areas (Table 19).

Table 18: Rail infrastructure - lines open for traffic (km): 1995 and 2002

	In operation		Electrified		Rail network per 1,000 sq kms	
	1995	2002	1995	2002	1995	2002
Great Britain	16.7	16.7	5.2	5.2	71	71
United Kindgom	17.0	17.0	5.2	5.2	70	70
Scotland [13]		2.7		0.6	-	-
Northern Ireland	0.3	0.3	-	-	21	21
Ireland	1.9	1.9	-	0.1	28	27

Source: http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats_041506.pdf

Table 19: Railways in the border region

Ireland	Number of Stations	Length of Railway	Northern Ireland	Number of Stations	Length of Railway
Cavan	0		**Down**	13	NA
Donegal	0		**Armagh**	3	NA
Leitrim	1	13km	**Tyrone**	0	NA
Louth	2	46km	**Fermanagh**	0	NA
Monaghan	0		**London/derry**	3	NA
Sligo	3	40km	*Antrim*	40	
Border	6	99km			

Map 3 in Appendix shows the distribution of railways on the island of Ireland and highlights graphically the glaring absence of railway infrastructure in the North West corner of the island. This deficiency creates an additional reliance on roads based transport in this part of the island - a dependance that is not accompanied by compensatory roads infrastructure (see below).

Roads provision and access

Unclassified roads in the west of Scotland accounts for the largest proportion of all roads (40.02%), followed by C Class (21%), B Class II (18%), A Class I (13%), and Motorways (1%) this is a reflection of the rurally remote geography of parts of this area (Table 20). Access to the motorway trunk road network in the west of Scotland is low with only Dumfries and Galloway being served with a motorway and

[13] Rail Lines open for traffic (km) (2004-2005).

a more substantial share of the trunk road network. In terms of regional accessibility and impacts on journey times in the region this could have serious impacts on local economies and their future development. Although the paucity of data can make comparisons between regions difficult, Northern Ireland compares favourably with the west of Scotland in terms of the density of the trunk road and motorway network.

The Department of Regional Development (DRD) Roads Service is the sole road authority in Northern Ireland, responsible for approximately 24,930 kilometres of public roads (DRD, 2005). Unclassified roads accounted for the largest proportion of all roads (60.02%), followed by Class III (18.86%), Class II (11.55%), Class I (8.48%), and Motorways (0.46%). In terms of the urban rural spilt of roads location in NI, 20% of road lengths are considered as being urban with the remaining 80% classed as rural (DRD, 2005) (Table 21). Lack of data does not permit an inter-regional comparison within Northern Ireland. However, evidence from the Regional Development Strategy for Northern Ireland indicates that the west of Northern Ireland has lower levels of provision in terms of the motorway network. This is despite a travel culture where commuting distances from the west of Northern Ireland are quite extensive in order to access the economy of the Belfast Metropolitan area.

In the Republic of Ireland the National Roads Authority was formally established as an independent statutory body under the Roads Act, 1993, with effect from 1 January 1994. The Authority's primary function, under the Roads Act 1993, is 'to secure the provision of a safe and efficient network of national roads'. For this purpose, it has overall responsibility for planning and supervision of construction and maintenance works on these roads. With the exception of Louth other areas in the Border Region have poor access to the motorway and primary road network, although the regional road network in this region is extensive (Table 22). Direct comparisons with other areas in NI and the west of Scotland are difficult due to the different road classification systems in operation and the availability of data.

Motor car availability

Levels of car ownership across regions of the UK are continuing to grow. In both Scotland and Northern Ireland just over 40% of households have 1 car available to them (Table 23 and 24). Evidence from other data sources such as the National Travel Survey for Great Britain also identify this trend and suggest an ongoing movement into multiple car ownership amongst many households. In addition to this, in Scotland and Northern Ireland as well as other parts of Great Britain, an increasing proportion for low income families are now abandoning public transport and moving into car ownership.

Table 23: Car Ownership Scotland 2003

	% of Households
No Car	33
1 car	45
2 car	19
3 or more	3
1 or more	67
2 or more	22

Source: http://www.scotland.gov.uk/stats/bulletins/00373-12.asp - Statistical Bulletin TRN/2004/6 Household Transport in 2003: some Scottish Household survey results

Table 24: Car Ownership Northern Ireland 2001-2004 (%)

	Households – 1 car	**Households – 2 car or more**	**Total Households**
2003-2004	43	31	74
2002-2003	45	28	74
2001-2002	46	27	74

Source: http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/sectionhomepage/dft_transstats_page.hcsp

Approximately 30% of households in Northern Ireland do not own a car. This figure is more significant in the main city areas where car ownership is lower than in other predominantly rural areas. Of the 70% owning cars, approximately 26% of households own two or more cars [14], with 43% owning only one car (DRD, 2005). The amount of households owning one car has decreased slightly (3%) over a three-year period (2001-2004) while over the same period the number of households with two or more cars has increased by 4% (DRD, 2005).

In the Republic of Ireland, 18% of households in the Border Counties do not own a car While 42% of households in these areas own a car (Table 25). This level of single car ownership is comparable to that found for NI and Scotland nationally but is lower than that found in the more rural areas of Northern Ireland.

[14] Includes cars and light vans.

Table 25: Car Ownership Republic of Ireland 2002

	Households - 1 Car	Households - 2 Cars or more	Total Households not having a car	Total Households
Cavan	7,673	7,201	3,282	18,156
Donegal	20,558	14,022	9,539	44,119
Leitrim	3,983	3,332	1,685	9,000
Louth	14,474	10,805	8,074	33,353
Monaghan	7,029	6,516	3,038	16,583
Sligo	8,224	7,057	4,227	19,508
Border	61,941	48,933	29,845	140,719
% of Border	44.02	35	21.21	
State	523,827	478,660	277,130	1,279,617
% of state	40.94	37	21.66	

Source: Ireland, CSO, Census2002.

New Vehicles Licensed, 1996-2002

The number of vehicles on the road in Northern Ireland and the Republic of Ireland continues to rise. Table 26 illustrates the notable increases year on year for the period 1996 to 2002. Over the period between 1996 and 2002 the number of new cars registered for the first time each year increased quite markedly in both Northern Ireland and Ireland. New registrations reached a peak in 2000 in Ireland when 274,990 new vehicles were registered compared with a low of 133,964 in 1996. Comparatively, Northern Ireland's annual new vehicle registrations increased from 103,880 in 1992 to a peak of 124,869 in 2001 (CSO, 2003). All type of vehicles expressed an increase in new licensing except for 'Other' category in Northern Ireland.

Table 26: New Vehicle Registrations by body type Ireland and Northern Ireland: 1996-2002

REPUBLIC OF IRELAND					
Year	**Private Car**	**Motor Cycle**	**Goods Vehicle**	**Other**	**Total**
1996	109,333	2,412	16,445	5,744	133,964
1997	125,818	2,717	18,895	5,656	153,086
1998	138,538	3,117	23,811	7,058	172,524
1999	170,322	4,955	30,066	8,257	213,600
2000	225,269	6,871	33,606	9,244	274,990
2001	160,908	6,919	30,622	8,992	207,441
2002	150,485	5,596	28,412	9,250	193,743
NORTHERN IRELAND					
Year	**Private Car**	**Motor Cycle**	**Goods Vehicle**	**Other**	**Total**
1996	87,614	2,927	11,088	2,251	103,880
1997	93,870	3,565	12,523	2,338	112,296
1998	100,947	4,447	14,234	1,674	121,302

1999	99,490	5,415	15,173	1,699	121,777
2000	95,018	6,099	16,635	2,017	119,769
2001	98,789	5,678	18,352	2,050	124,869
2002	93,866	5,699	16,214	1,865	117,644

Sources: Ireland, Central Statistics Office; Driver and Vehicle Licensing Northern Ireland

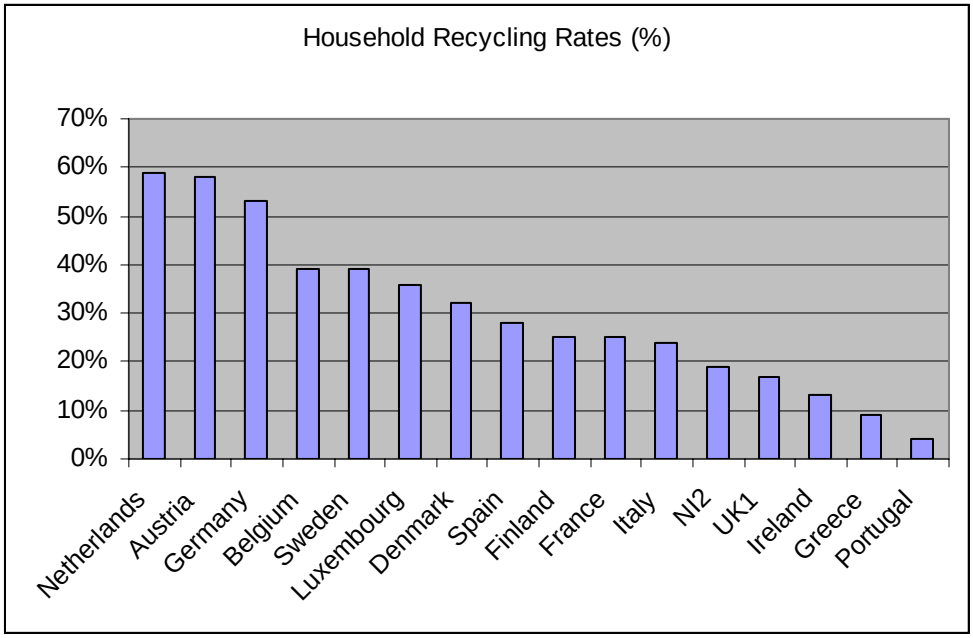
In Scotland, over a ten-year period the number of vehicles licensed has increased 29%, from 1.9 million to 2.4 million. However, Western Scotland account for 7.6% of all vehicles licensed and 8.5% of all newly licensed vehicles. Vehicle ownership per 1,000 population is lower in Scotland, 409, than in Great Britain as a whole, 465 (table 27). New vehicle registrations are high in all areas of west of Scotland and reflect the wider national trend (table 28).

12. Other infrastructure

Waste management

Historically the UK and Ireland have depended on landfill as the main route for waste disposal. Household waste outputs vary considerably across both Northern Ireland and Ireland (see Map 1 Appendix 3). Comparable figures for the EU15 highlight that the UK, Northern Ireland and Ireland have low household recycling rates relative to the other EU countries, with only Greece and Portugal having lower rates than Ireland (Figure 28).

Figure 28: Household Recycling Rates for the EU15, 2001

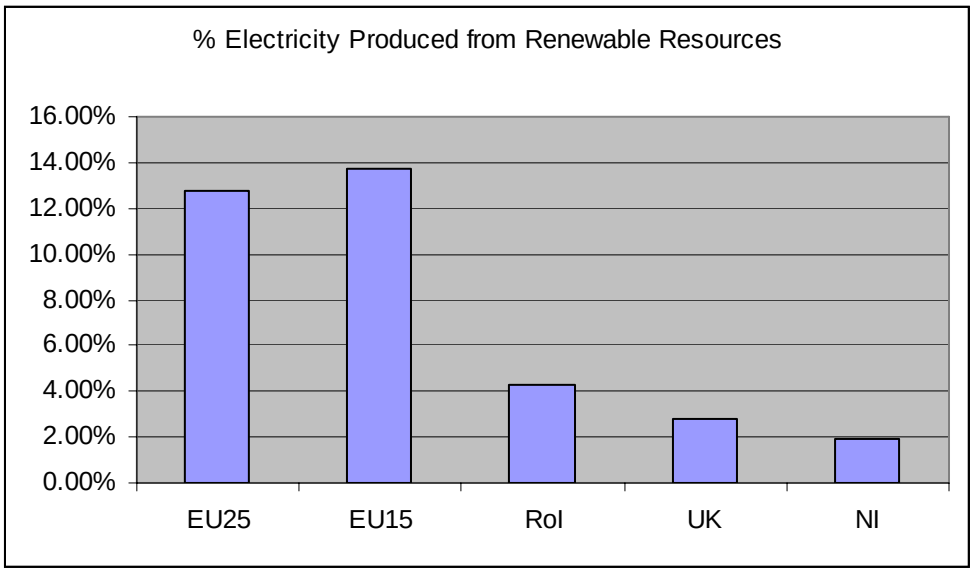


Source: www.foe.co.uk; www.letsrecycle.com

Renewable Energy (Electricity)

Northern Ireland has the lowest percentage share of electricity produced from renewable energy sources (Figure 29) relative to the EU25 and EU15.

Figure 29: Share of Electricity produced from renewable energy sources in total electricity consumption, 2003

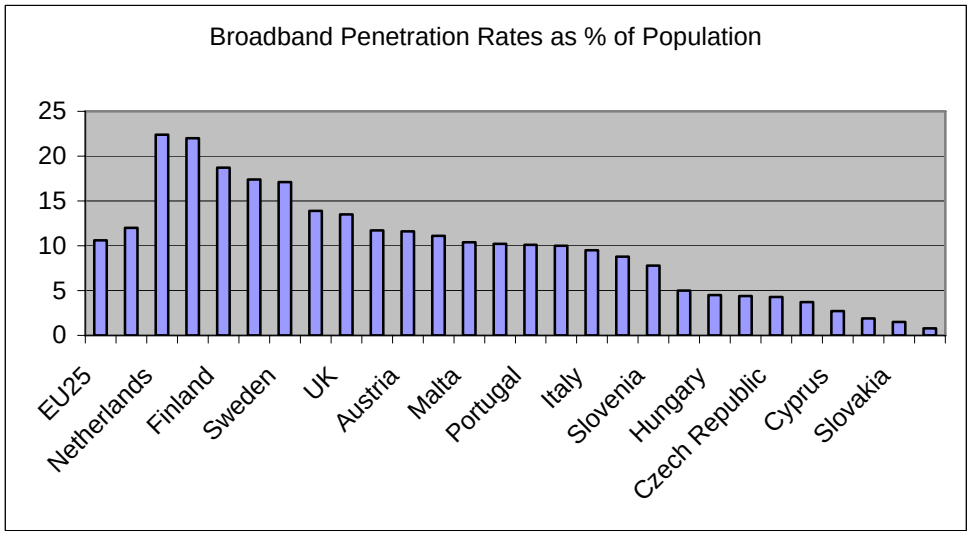


Source: Eurostat; www.restats.org.uk/statistics_regional

Broadband availability and penetration

In terms of technological infrastructure, Northern Ireland has achieved 100% broadband availability. This is unique to Europe. With the infrastructure in place, broadband take-up has now assumed greater importance, with the demand for broadband increasing dramatically.

Figure 30: Broadband Penetration Rates in EU, 2005



Source: Eurostat; www.internetworldstats.com/eu/ie/htm

However, within the wider context, comparative broadband penetration rates show that Northern Ireland broadband rate is significantly below the rate for the UK and the EU15 average. It is currently only slightly below the rate for the EU25 average, and is significantly above the Republic of Ireland's rate of 4.4% of the population (Figure 30).

13. Natural Environment and Hazards Exposure

The attractiveness and potential for development of any territory is related directly to its land use. Ireland, Northern Ireland and West Scotland have high quality natural landscapes. The most extensive natural areas in the British Isles are concentrated in the Highlands of Scotland, followed by Scotland and West Wales and then the two territories on the island of Ireland (see Map 1, Appendix 4).

Hazards are defined as unexpected or uncontrollable events of unusual magnitude that threaten natural environments, human activities or human health. They can be subdivided into natural hazards (floods, storms, earthquakes) or technological hazards (e.g. oil leakages or radioactive contamination). A combined indicator map for hazard exposure using a range of both types of hazards has been produced by ESPON for the European territory (see Map 2, Appendix 4). It indicates the West Scotland has above average rank for hazards exposure across a combined aggregate of seven indicators. Northern Ireland and the Southern and Eastern Region of Ireland were allocated an average risk score in the study.

14. Summary Review

Table 29: Review Indicators

Indicator	Ireland	N. Ireland	Scotland
Population growth	***Strength:*** Strong growth contributing to demand side of the economy ***Weakness***: Border countries variable growth with some experiencing low rate of growth. ***Weakness***: potentially larger dependency if unemployment increases	***Weakness:*** Slower rate of population growth ***Weakness***: in terms of out-flows of educated young persons ***Weakness:*** population loss from Belfast (though declining)	***Weakness:*** population decline ***Weakness***: higher dependency ratio in long-term
Dependency ratio	***Opportunity:*** lower dependency ratio creates an environment for wealth creation ***Threat:*** high levels of consumer expenditure and sustainability ***Weakness:*** higher in border countries	***Weakness:*** higher levels of dependency stifles economic growth and places burden on economically active	***Weakness*****:** high level of people over 65 and low per cent under 15 which applies to both the country as a whole and Western Scotland
Productivity	***Strength:*** high productivity above EU average ***Weakness:*** variation regionally notably below EU average for border counties ***Threat:*** inflation productivity figures vulnerable to competition from other cities/regions.	***Weakness:*** lower productivity levels ***Opportunity:*** productivity growth rates in Belfast	***Weakness:*** low productivity rates from Highlands and Islands ***Opportunity:*** above EU average growth rates in SW Scotland
Employment	***Weakness:*** employment rate below Lisbon target with low employment rate in border counties ***Opportunity:*** growth in female	***Weakness:*** employment rate below Lisbon target and variation in these rates ***Opportunity:*** higher percent of population under 15 and will	***Strength:*** relatively higher participation rates. Highest level of female employment rates

	participation rates but lower in border counties	enter the work force in future years could provide labour market gains	
Unemployment	***Strength:*** declining unemployment rate below EU 15 average ***Threat:*** movement of employers to lower wage economies	***Strength:*** declining unemployment rate below EU 15 average. ***Weakness:*** higher rate of long-term unemployed and differences by gender and religious groups	***Strength:*** declining unemployment rate below EU 15 average but higher than NI and RI.
Earnings	***Strength:*** higher earnings level ***Threat:*** possible inflation	***Weakness:*** average earnings below UK level	***Weakness:*** average earnings below UK level
Educational attainment	***Strength:*** growing rate of third level participation ***Weakness***: lower rate of third-level trained population in border counties ***Opportunity:*** high percentage of students	***Strength:*** growing rate of third level participation ***Weakness:*** higher rate of no qualifications. ***Weakness:*** lower rate of third-level trained population with impact on knowledge-based economy ***Threat:*** threat of continuing brain drain from Border Counties and NI.	***Strength:*** highest level of people trained to third-level qualification with Dumfries and Lochaber the highest areas ***Weakness***: higher rate of no qualifications ***Weakness:*** Scottish NUTSIII area lower percentage of students
Apprenticeships	***Strengths:*** innovative schemes designed to develop apprenticeships and the skills base	***Strengths:*** innovative schemes designed to develop apprenticeships and the skills base	***Strengths:*** Similar schemes as operating in NI.
Retaining graduates	***Opportunity***: retaining graduates is central to a region's economic performance and reflected in policy documents	***Opportunity:*** retaining graduates is central to a region's economic performance	***Opportunity:*** retaining graduates is central to a region's economic performance
Labour markets	***Strength:*** diversified labour market ***Weakness:*** border countries have high	***Strength:*** diversified labour market ***Weakness:*** decline of manufacturing	***Strength:*** diversified labour market ***Threat:*** high numbers employed

	percent in agricultural employment, also high rates of manufacturing employment	sector in Belfast and outer Belfast. ***Threat***: high percentage employed in the public sector	in tourism & defence sectors
R&D input indicators	***Strengths:*** A very high proportion of degree level qualifications in science and engineering ***Weakness:*** low levels of overall expenditure on R&D, trailing well below EU target figure. Low levels of patents granted ***Opportunity:*** recent government policies leading to a sharp rise in R&D expenditure in the higher education sector	***Strengths:*** high level of R&D expenditure in the higher education sector ***Weakness:*** low levels of overall expenditure on R&D, trailing well below EU target figure. Particularly low business expenditure levels. Low levels of patents granted ***Opportunity:*** government policies further increasing the levels of R&D expenditure in the higher education sector	***Strengths:*** very high levels of R&D expenditure in the higher education and government sector. A high proportion of degree level qualifications in science and engineering ***Weakness:*** low levels of overall expenditure on R&D, trailing well below EU target figure. Low levels of patents granted ***Opportunity:*** government policies are further increasing the levels of R&D expenditure in the higher education sector
Science and technology graduates	***Opportunity:*** a high percentage of graduates	***Weakness:*** lower percentage of graduates	***Opportunity:*** a high percentage of graduates
Entrepreneurial capacity	***Strength:*** high levels of existing and new entrepreneurial activity and low recent closure rates **Opportunity**: *high level of early stage (new and nascent) entrepreneurs.*	***Strength:*** below UK and EU average recent closure rates. ***Weakness:*** below UK and EU average rate of established entrepreneurs ***Threat:*** low levels of early stage entrepreneurs. ***Opportunity:*** lower than UK and EU rates of early stage entrepreneurs	***Strength:*** below UK and EU average recent closure rates – lowest levels. Otherwise, similar rates and patterns as N. Ireland
Networks	***Strength:*** high levels of networking in place	***Weakness:*** lower presence of networks than in	***Opportunity:*** increasing numbers of networks (formal

	Opportunity: still at early stage in roll-out growing recognition of key function in achieving economies of scale & critical mass.	Ireland ***Threat:*** political situation and perceived barriers to establishing cross-border networks (e.g. currency, tax, etc.).	and informal) discernible with pro-active stance.
Transport infrastructure and access	***Weakness:*** poor rural transport in border region and over-reliance on the car ***Threat***: continued under-investment in public transport	***Weakness:*** poor rural transport, notably in the west and south, and over-reliance on the car ***Threat***: continued under-investment in public transport	***Weakness:*** poor rural transport and over-reliance on the car ***Threat***: continued under-investment in public transport
Other key infrastructure	***Weakness:*** limited broadband backbone infrastructure, penetration, and linkages with Northern Ireland and Britain/EU. Very poor coverage in border region particularly in north west area ***Opportunity***: prospects for improved capacity to promote Lisbon Agenda potential (i.e. 'Knowledge-related business / jobs) by linking with N. Ireland / Britain ***Threat:*** continued under-investment by government and private business	***Strength:*** excellent broadband backbone infrastructure, penetration, and linkages with West Scotland ***Weakness:*** Poorest coverage in western border region and inadequate cross-border linkages with Ireland, particularly in north west area **Opportunity:** *capacity to capitalise on Lisbon Agenda potential through promotion of ICT 'Knowledge-related business linking east-west connectivity and north-south markets*	***Strength:*** strong broadband backbone infrastructure, penetration, and linkages with East Scotland and Britain ***Opportunity:*** to extend linkages / markets etc.to Ireland via N. Ireland connection
Natural environment, environmental management and risk containment	***Strength:*** high quality natural environment ***Opportunity:*** scope to capitalise on management / usage / jobs potential in line with Gothenburg Agenda sustainability principles.	***Strength:*** high quality natural environment ***Opportunity:*** scope to capitalise on management / usage / jobs potential in line with Gothenburg Agenda sustainability principles.	***Strength:*** very high quality natural environment ***Opportunity:*** scope to capitalise on management / usage / jobs potential in line with Gothenburg Agenda sustainability principles.

The above review matrix (table 29) provides an overview of what can be considered to be the key indicators. The overall picture suggests large elements of commonality between the border region of Ireland, Northern Ireland and in particular the regions to the north/west/south of the province and western Scotland, excluding Belfast. While there has been some important changes in these lead indicators it is clear that a lot more could be achieved by the encouragement of innovation and development of knowledge base-economies. This will require significant spend on developing the physical and communications infrastructure to improve access, ICT facilities, rural-urban linkages and offset the deficit side of the three regions are characterized by structural weaknesses. This weakness is apparent across a number of indicators notably dependency ratios, productivity levels, employment issues, earnings, R&D activities. Hence, opportunities exist to raise the profile through development support focused on the skills base, innovation and entrepreneurship. In particular, initiatives targeted at innovation through R&D and support for business development and entrepreneurship in small firms engaged in start-up activities linked to the new knowledge-based and environment-sustainability sectors of the economy can play a significant role in capitalising on available potential. These areas of the newly emerging economy have high growth and employment potential and are underpinned by the EU through the Lisbon and Gothenburg Accords. Any policy and funding package will also need to combine an emphasis on social issues designed to address matters dealing with on the one hand an ageing population base but also in the case of Northern Ireland a high proportion of the population aged below 15 that will be entering the work-force over the next 3 to 5 years.

It is important to stress that total reliance for policy issues should not be focused on the above indicators alone and that wider factors such as cultural heritage and quality of life are important. Thus, developing creative cultural resources and management of cultural heritage provide opportunities for collaboration and innovation in relation to sustainable development along with those linked to the natural environment (new energy sources, coastal and marine activities, etc.).

The above commentary has excluded the city of Belfast, which although sharing some of the characteristics of the above indicators, in other respects is rather different. Indeed, one of the strengths of Belfast is the city's strong performance on the productivity indicator, just narrowly below that for Dublin and the East and South of Ireland in spite of the city being at the forefront of the terrorism campaign for two decades plus, community divisions and the lack of the favourable corporation tax regime enjoyed in Ireland. The productivity figures for Belfast point to potential significant opportunities for the city in capturing the benefits of enhanced cooperation and economic growth between Northern Ireland, the border counties of Ireland and the west coast of Scotland. Belfast City Council has been strongly advocating the growth of Belfast as the regional driver for Northern Ireland. Increased cooperation on a cross-boundary basis with an emphasis on innovation can enhance the city further coupled with the major development projects either taking place or proposed. Belfast being the focus of infrastructure network and positioned on the Belfast-Dublin corridor could reap the rewards of being a key player in an enhanced regional role incorporating linkages and networks with western Scotland and the border counties. The diffusion effects from Belfast that are currently being experienced 20-30 miles out

from the city (e.g. house price growth, population change) would almost certainly be further enhanced.

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Against the background analysis summarised above it is possible to identify broad areas of potential collaboration for future Interreg programmes that will be consistent with national, local, regional needs and whilst also complying with recent developments in the EU. The latter includes the Lisbon and Gothenburg Agenda and associated moves towards territorial cohesion through improved and integrated spatial planning and development. The three different regions for which data have been collected in this report have differing types and levels of potential. For planning and development purposes, potential is the capacity which they possess for development arising from their endowment of natural resources, population, labour, economic and social capital and location relative to business opportunities and markets. It is evident that the three jurisdictions could benefit significantly from collaborations that optimise local and regional potential by offsetting their individual weaknesses and complementing or building upon their respective strengths. Collaborative projects for mutual benefit will require closer links to be forged between the three jurisdictions to enable them to capitalise on their combined potential and to build the joined-up critical mass required to achieve mutual gain in the new European territorial and economic system.

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Table 30 below outlines a range of potential project options under possible headings that recognise explicitly the vital role for increased transnational and cross-border cooperation. They include:

- Transport infrastructure improvements or measures to foster cooperation that will lead to a much greater level of critical mass in the context of polycentric networks or new urban-rural relationships;
- Innovative efforts to create and / or sustain business and employment opportunities afforded by the new communications and associated technologies. There needs to be a strong emphasis on nurturing a communication structures to facilitate both formal and informal knowledge exchanges, and to maximise the potential of local resources, and promote innovative enterprise;
- Creative management and use of the natural / built environment and heritage.

Obviously, success in any of these areas will involve selecting projects that harness the relevant collective attributes of each regions population (size, structure, levels of education etc.) and their associated resources. Appropriate resources could include education infrastructure, the mix and clustering of different types of labour pools in niche sectors, transport links to other regions and countries, and informal networks of people and enterprise that provide the scale or critical mass to sustain or support development.

Table 30: Illustrative Examples of Potential Project Areas
(Source: Appendix 5, *Spatial Strategies on the Island of Ireland: Development of a Framework for Collaborative Action* to be released by Inter*Trade*Ireland on June 1, 2006).

Criteria (Category & Purpose)	Potential Project Areas (Indicative priorities from Europe)
Socio-economic	
• To Harness Development Potential	• Encouraging entrepreneurship focused on all-island SMEs, tourism, culture and trade. • Achieving sustainable competitive efficiencies and life quality improvements through shared wider use of infrastructures and facilities such as water, waste, energy systems as well as health and education. • Wide-ranging integration of knowledge-relevant policies, such as the promotion of innovation, education, vocational training and further training, research and technology development, into spatial development policies, especially in remote or densely populated areas.
• Diffusion of Innovation and Knowledge	• Securing island-wide access to knowledge-relevant infrastructure taking account of the socio-economic potential of modern SMEs as motors of sustainable economic development. • Fostering networking among companies and the rapid diffusion of innovations, particularly through regional institutions that can promote innovations. • Supporting the establishment of innovation centres as well as co-operation between higher education and applied R&D bodies and the private sector, particularly in economically weak areas.
• Balanced Spatial Development	• Promoting integrated spatial development strategies sensitive to economic, social and environmental diversity. • Reducing isolation and enhancing integration through improved access to transport, information and communication networks and other services.
• Dynamic, Attractive & Competitive Cities / Urbanised Regions based on New Urban-Rural Relationship	• Promoting integrated spatial development strategies for regions on the island within the framework of transnational and crossborder co-operation, including corresponding rural areas and their small cities and towns.

• Polycentric Development Model: A Basis for Mutual Benefits through Better Economic Leverage and Accessibility	• Use of the potential for renewable energy in urban and rural areas, taking into account local and regional conditions. • Exploitation of the development potential of environmentally friendly tourism. • Promoting indigenous development, diverse and productive rural areas, and wise management of the urban ecosystem. • Securing sustainable agriculture, application of environmental measures and diversification of agrarian land utilisation. • Promotion of co-operation between towns and countryside aiming at strengthening functional regions. • Promotion and support of partnership-based cooperation between small and medium-sized towns at a national and transnational level through joint projects and the mutual exchange of experience. • Promotion of company networks between small and medium-sized enterprises in the towns and countryside. • Strengthening small and medium-sized towns in rural areas as focal points for regional development and promotion of their networking.
<u>Infrastructure / Service Provision & Management</u> • Efficient and Sustainable Use of Infrastructures	• Coordinated and integrated infrastructure planning and management for avoiding inefficient investments (e.g. superfluous parallel development of transport infrastructure) and securing the most efficient use of existing transport infrastructure. • Improving transport links of peripheral and ultra-peripheral regions, both within the island and the EU taking into account air transport and the further development of corresponding infrastructure facilities.
• Integrated Approach to Infrastructure and Knowledge	• Improving of access to and use of tele-communication facilities and the design of tariffs in accordance with the provision of "universal services" in sparsely populated areas. • Better co-ordination of spatial development policy and land use planning with transport and telecommunications planning.

	• Development of packages of measures which stimulate supply and demand for improving regional access and the use of information and communication technologies.
Natural and Cultural Landscapes and Heritage	
• Natural and Cultural Heritage as a Development asset	• Preparation of integrated spatial development strategies for protected areas, environmentally sensitive areas and areas of high biodiversity such as coastal areas, mountain areas and wetlands; balancing protection and development on the basis of territorial and environmental impact assessments and involving the partners concerned. • Development of strategies at regional and transnational levels for risk management in disaster prone areas, particularly in coastal regions.
• Preservation & Development of the Natural Heritage (including Water Resource Management)	• Promotion of transnational and interregional cooperation for the application of integrated strategies for the management of water resources, including larger ground water reserves in areas prone to drought and flooding. • Preservation and restoration of large wetlands which are endangered by excessive water extraction or by the diversion of inlets.
• Creative Management of Cultural Landscapes / Heritage	• Preservation and creative development of cultural landscapes with special historical, aesthetical and ecological importance. • Enhancement of the value of cultural landscapes within the framework of integrated spatial development strategies. • Development of integrated strategies for the protection of cultural heritage which is endangered or decaying, including the development of instruments for assessing risk factors and for managing critical situations. • Increasing awareness of the contribution of spatial development policy to the cultural heritage of future generations.

WIDE TABLES

(Landscape Format)

Table 1: Population change, dependency ratio and total fertility rate

	NUTS Level		Population 1996/91	Population 2001/02	Population % change	Dependency Ratio	Total Fertility Rate
EU(25)						48.9	1.46
EU(15)						49.7	1.5
Ireland	National +1		3,626,087 (96)	3,917,203	8.03	47.00	1.97
S&E		2	2660897	2879009	8.2		
BMW		2	965,190	1,038,194	7.56	53	
Border		3	407,295	432,534	6.2	54	
Midlands		3	205,542	225,363	9.64	53	
West		3	352,353	380,297	7.93	52	
Cavan			52944	56546	6.8	58	
Donegal			129,994	137,575	5.83	56	
Leitrim			25,057	25,799	2.96	59	
Louth			92,166	101,821	10.48	49	
Monaghan			51,313	52,593	2.49	53	
Sligo			55,821	58,200	4.26	51	
N Ireland	National +2		1,577,836 (91)	1685267	6.8	64.30	1.77
Belfast		3	279237	277391	-0.66	-.64.81	
Outer Belfast		3	338874	369159	8.9	63.64	
East of Northern Ireland		3	361816	396943	9.7	63.11	
North of Northern Ireland		3	250504	274878	9.7	63.76	
West and South of Northern Ireland		3	347405	366896	5.61	66.32	
Scotland	National +2		4,998,567(91)	5,062,011	1.26	54.11	1.48
Dumfries and Galloway		3	112658	112097	-0.50	56.18	
South Ayrshire		3	147805	147765	-0.03	58.10	
East Ayrshire and North Ayrshire Mainland		3	254856	250994	-1.52	52.95	
Lochaber, Skye & Lochalsh and Argyll and the Islands		3	127563	127240	-0.25	55.96	

Table 2: Births, deaths and natural growth

	Ireland			Northern Ireland			Scotland		
	births	deaths	natural growth	births	deaths	natural growth	births	deaths	natural growth
1996	50,655	31,723	18,932	24382	15218	9164	59,296	60,654	-1,358
1997	52,775	31,581	21,194	24087	14971	9116	59,440	59,494	-54
1998	53,969	31,563	22,406	23668	14993	8675	57,319	59,164	-1,845
1999	53,924	32,608	21,316	22957	15663	7294	55,147	60,281	-5,134
2000	54,789	31,391	23,398	21512	14903	6609	53,076	57,799	-4,723
2001	57,854	30,212	27,642	21962	14513	7449	52,527	57,382	-4,855
2002	60,503	29,683	30,820	21385	14568	6817	51,270	58,103	-6,833
total	384,469	218,761	165,708	159,953	104,829	55,124	388,075	412,877	-24,802

Table 3: Dependent Population

	ROI		NI		Scot	
	pop	%	pop	%	pop	%
0- 4 years	277,630	7.09	115238	6.84	276892	5.47
5- 9 "	264,090	6.74	175202	10.40	307264	6.07
10-14 "	285,708	7.29	107616	6.39	388256	7.67
65-69 years	133,474	3.41				
70-74 "	112,129	2.86	161379	9.58	445963	8.81
75-79 "	89,815	2.29				
80-84 "	58,857	1.50			270311	5.34
85 years and over	41,726	1.07	100132	5.94	88585	1.75
Dep Population	1,263,429	32.25	659567	39.14	1777271	35.11
Non Dep	2,653,774	67.75	1025700	60.86	3284740	64.89
Dep Ratio	0.48		0.64		0.54	
Total Population	3,917,203		1685267		5062011	

Table 5: Percentage of unemployment by religion in Northern Ireland

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Male P	10.4	9.3	10.1	11.1	10.9	10.1	9.8	5.5	5.4	5.6	6	4.7
Male RC	20.5	22.9	24.2	23.1	22.1	20	15.4	16	12.6	10.4	9.3	9.9
Female P	6.3	5.6	7.6	7.2	5.6	5.5	5.3	4.9	5.5	4.3	4.2	3.9
Female RC	9.2	11.9	10.3	10.6	7.8	10.4	9.4	6.9	7.6	6.9	8.2	6.1
Both sexes P	8.6	7.8	9.1	9.4	8.6	8.1	7.8	5.3	5.4	5	5.2	4.3
Both sexes RC	16	18.4	18.4	18.1	16.1	15.9	12.8	12.2	10.4	8.8	8.8	8.3

Source: NISRA (2002) - http://www.nisra.gov.uk/statistics/themes/Labour.html

Table 6: Earnings

	2001	2002	2003	2004	2005
Ireland					
Industrial: Manufacturing Industries	456.97	483.02	511.78	534.24	557.58
Construction: Skilled Operatives	681.08	759.16	786.95	820.62	879.46
Construction: Unskilled and Semi-skilled Operatives	580.62	632.53	649.15	676.46	717.78
Banking, Insurance and Building Societies	658.1	686.91	698.16	737.52	769.47
Total Public Sector (Excl Health)		704.27	734.86	797.03	844.08
Northern Ireland					
Mean Weekly pay - Gross (£)	381	396	411	431	452
Euro	554.736	576.576	598.416	627.536	658.112
Scotland					
Gross average weekly earnings (£)	411.1	434.6	446.1		
Euro	598.5616	632.7776	649.5216		
UK					
Gross average weekly earnings (£)	449.7	472.1	487.1	498.6	517.0
Euro	654.7632	687.3776	709.2176	725.9616	752.752

Source: CSO - Industrial Earnings and Hours Worked; Annual Survey of Hours and Earnings, Office for National Statistics

Table 7: Educational attainment

	% no qualifications	% Highest A	% Highest B	% Highest C	% Highest D
Ireland	17.87	18.30	23.44	8.11	12.83
Border	24.04	20.70	21.07	7.41	8.89
Cavan	25.85	20.37	21.16	7.53	7.64
Donegal	27.78	20.94	18.59	6.77	8.35
Leitrim	23.79	20.13	22.87	7.13	8.83
Louth	21.11	21.39	22.79	8.11	9.64
Monaghan	23.91	23.07	20.43	6.58	7.78
Sligo	18.98	17.41	23.48	8.41	11.05
N Ireland	41.64	17.23	25.34	10.93	4.87
Belfast	41.82	14.76	24.20	12.24	6.97
Outer Belfast	36.14	18.21	26.94	13.04	5.68
East of Northern Ireland	41.62	18.19	25.95	10.32	3.92
North of Northern Ireland	45.25	17.04	24.11	9.37	4.23
West and South of Northern Ireland	44.50	17.19	24.82	9.57	3.92
Scotland	33.23	24.69	15.65	6.95	19.47
Dumfries and Galloway	33.00	23.81	15.46	7.38	20.35
South Ayrshire	39.68	25.51	13.24	5.16	16.40
East Ayrshire and North Ayrshire Mainland	39.20	25.93	14.44	6.79	13.63
Lochaber, Skye & Lochalsh and Argyll and the Islands	30.79	24.38	16.75	5.92	22.15

	Ireland	Northern Ireland	Scotland
No Qualifications	Primary (including no formal education)	The term 'No qualifications' describes persons without any qualifications	No qualifications or qualifications outwith these groups
Highest A	Lower Secondary	Level 1 : GCSE (grades D-G), CSE (grades 2-5), 1-4 CSEs (grade 1), 1-4 GCSEs (grades A-C), 1-4 'O' level passes, NVQ Level 1, GNVQ Foundation or equivalents	*Group 1: 'O' Grade, Standard Grade, Intermediate 1, Intermediate 2, City and Guilds Craft, SVQ level 1 or 2, or equivalent*
Highest B	Upper Secondary	Level 2 : 5+ CSEs (grade 1), 5+ GCSEs (grades A-C), 5+ 'O' level passes, Senior Certificate, 1 'A' level, 1-3 AS levels, Advanced Senior Certificate, NVQ level 2, GNVQ Intermediate or equivalents and Level 3 : 2+ 'A' levels, 4+ AS levels, NVQ level 3, GNVQ Advanced or equivalents	*Group 2: Higher grade, CSYS ONC, OND, City and Guilds Advanced Craft, RSA Advanced Diploma, SVQ level 3 or equivalent*
Highest C	Third Level – Non Degree	Level 4 : First Degree, NVQ level 4, HNC, HND or equivalents	*Group 3: HND, HNC RSA Higher Diploma, SVQ level 4 or 5 or equivalent.*
Highest D	Third Level – Degree or Higher	Level 5 : Higher Degree, NVQ level 5 or equivalents.	*Group 4: First Degree, Higher degree, Professional Qualification.*

(Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland)

Table 8: Gross Expenditure on R&D as a percentage of economic output (GDP)

Geography	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ireland (GNP)	1.40		1.48		1.43		1.32		1.35		1.43
Ireland (GDP)	1.26		1.31	1.43	1.25	1.99	1.13	1.17%	1.10	1.12	1.20
N Ireland	0.99		1.04		1.09		1.23		1.36		1.18
Scotland				1.16	1.29	1.33	1.39	1.55	1.73	1.53	
UK	2.06	1.97	1.90	1.82	1.81	1.85	1.85	1.90	1.83	1.89	
EU25	1.72	1.84	1.82	1.82	1.82	1.86	1.88	1.92	1.93	1.95	
OECD	2.07		2.11	2.21	2.15		2.23	2.33	2.25	2.24	2.24

Source: OECD in Figures (various years); Eurostat, Statistical Yearbook 2005; Forfas (2005) R&D in Ireland; O'Malley et al. (2006); Scottish Executive (2004), Business Expenditure on Research and Development in Scotland

Table 9: Business expenditure on R&D as a percentage of economic output (GDP)

Geography	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ireland (GNP)	0.98	1.01	1.05	1.04	1.03	1.02	0.95	0.95	0.93		0.93
Ireland (GDP)	0.88		0.93	0.91	0.90	0.87	0.81	0.8	0.76		0.77
N Ireland	0.54		0.57		0.57		0.68		0.78		0.53
Scotland				0.42	0.49	0.53	0.51	0.65	0.77	0.58	
UK				1.18		1.25		1.24	1.24		
EU	1.06		1.06		1.08	1.19	1.15	1.17	1.17		1.17
OECD	1.39	1.44	1.44	1.48	1.48	1.53	1.56	1.58	1.53		1.51

Source: OECD in Figures (various years); Eurostat, Statistical Yearbook 2005; Forfas (2005) R&D in Ireland; O'Malley et al. (2006); Scottish Executive (2004), Business Expenditure on Research and Development in Scotland

Table 10: Higher Education expenditure on R&D as a percentage of economic output (GDP)

Geography	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ireland (GNP)	0.29		0.30		0.30		0.27		0.30		0.40
Ireland (GDP)	0.26		0.26	0.27	0.26		0.23	0.26	0.25		0.33
N Ireland	0.4		0.42		0.47		0.5		0.53		0.6
Scotland				0.51	0.52	0.54	0.56	0.63	0.68	0.64	
UK				0.37				0.41		0.40	0.40
EU25	0.36		0.36	0.38	0.37		0.38		0.41	0.40	0.43
OECD	0.37		0.37	0.37	0.37		0.38	0.40	0.41	0.42	0.43

Source: OECD in Figures (various years); Eurostat, Statistical Yearbook 2005; Forfas (2005) R&D in Ireland; O'Malley et al. (2006); Scottish Executive (2004), Business Expenditure on Research and Development in Scotland

Table 11: Government expenditure on R&D as a percentage of economic output (GDP)

Geography	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Ireland (GNP)	0.14	0.13	0.12	0.11	0.10	0.08	0.11	0.11	0.12	0.11	0.11
Ireland (GDP)	0.12		0.11		0.09		0.09		0.10		0.09
N Ireland	0.05		0.05		0.05		0.05		0.05		0.05
Scotland				0.23	0.28	0.26	0.31	0.28	0.28	0.30	
UK											
EU25	0.30		0.28		0.27		0.25		0.25		0.25
OECD	0.26		0.25		0.24		0.23		0.25		0.25

Source: OECD in Figures (various years); Eurostat, Statistical Yearbook 2005; Forfas (2005) R&D in Ireland; O'Malley et al. (2006); Scottish Executive (2004), Business Expenditure on Research and Development in Scotland

Table 19: Means of travel to work in Ireland, Northern Ireland and Scotland and travel to school/college in Ireland (%)

	% home	%Train	%Bus	%Motorcycle	%Driving	%Passenger	%Biclycle	%On Foot	%Other method
Ireland	6.1	2.0	6.6	1.1	62.0	6.8	2.1	11.3	2.0
Border	7.9	0.9	2.1	0.5	66.0	8.7	1.1	11.0	1.8
N Ireland	8.8	0.9	6.0	0.8	55.9	29.3	0.9	9.7	0.7
Belfast	4.5	0.6	15.3	0.9	44.6	16.4	1.4	15.9	0.4
Outer Belfast	6.5	2.1	6.7	1.1	59.5	14.9	0.9	7.8	0.5
East of Northern Ireland	9.3	0.6	4.0	0.9	58.1	17.0	0.9	8.9	0.8
North of Northern Ireland	9.6	0.3	4.3	0.6	54.1	18.7	0.7	10.8	0.9
West and South of Northern Ireland	13.3	0.3	2.4	0.4	58.3	15.8	0.4	7.9	1.2
Scotland	6.1	3.9	14.0	0.5	50.0	9.1	1.4	14.1	1.0
Dumfries and Galloway	6.6	4.2	9.9	0.5	55.2	9.4	1.4	12.0	1.0
South Ayrshire	10.6	0.5	6.5	0.5	52.4	9.3	2.1	17.0	1.1
East Ayrshire and North Ayrshire Mainland	5.5	4.4	12.0	0.4	54.4	10.8	0.8	11.1	0.8
Lochaber, Skye & Lochalsh and Argyll and the Islands	11.1	3.3	6.0	0.5	48.4	8.4	1.6	18.4	2.1

Source: Census of Population data - 2002 for Ireland and 2001 for Northern Ireland and Scotland

Table 20: Public road lengths in South West Scotland (as at 1 April) by council area and class, 2004 [1]

Council	Trunk				Local Authority					Total
	Motorway	Motorway slips	A Roads	Total	A Roads	B Roads	C Roads	Unclassified	Total	
Length (km)										
Argyll & Bute	-	-	231	231	549	619	431	709	2,309	2,540
Dumfries & Galloway	61	15	286	362	494	733	1,175	1,714	4,116	4,478
East Ayrshire	-	-	58	58	115	193	211	588	1,107	1,165
North Ayrshire	-	-	66	66	147	141	164	543	996	1,062
South Ayrshire	-	-	93	93	107	206	232	604	1,149	1,242
Sub total	61	15	734	810	1412	1892	2213	4158	9677	10487
Percentage	1%	0%	7%	8%	13%	18%	21%	40%	92%	100%
Scottish Total	**383**	**156**	**2,893**	**3,432**	**7,418**	**7,438**	**10,325**	**25,930**	**51,111**	**54,543**
										percentages
Argyll & Bute	-	-	8.0	6.7	7.4	8.3	4.2	2.7	4.5	4.7
Dumfries & Galloway	15.9	9.6	9.9	10.5	6.7	9.9	11.4	6.6	8.1	8.2
East Ayrshire	-	-	2.0	1.7	1.6	2.6	2.0	2.3	2.2	2.1
North Ayrshire	-	-	2.3	1.9	2.0	1.9	1.6	2.1	1.9	1.9
South Ayrshire	-	-	3.2	2.7	1.4	2.8	2.2	2.3	2.2	2.3
Sub total	15.9	9.6	25.4	23.5	19.1	25.5	21.4	16	18.9	19.2
Scottish Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 21: Northern Ireland public road lengths by type of road 2005

Northern Ireland Roads	000 km	%
Motorways	0.11	0.46
Class I Dual Carriageway	0.16	0.63
Class I Single Carriageway	2.11	8.48
Class II	2.88	11.55
Class III	4.70	18.86
Unclassified	14.95	60.02
Total	24.93	100.00

Table 22: Republic of Ireland public road lengths by type of road 2005

Length KM	Cavan	Donegal	Leitrim	Louth	Monaghan	Sligo	*Total*
Motorway				29.1			29.1
National Primary		5.83		2.1		8.15	16.08
National Secondary	126.45	299.92	56.48	91.84	105.93	146.03	826.65
Regional Roads	404.82	692.32	329.97	226.47	291.19	213.17	2157.94
Local Roads - Primary	741.36	2085.49	644.67	451.30	548.53	612.72	5084.07
Local Roads - Secondary	1335.66	2058.95	560.12	468.34	574.30	948.10	5945.47
Local Roads - Tertiary	398.61	1251.23	518.65	189.56	983.93	724.88	4066.86

Table 27: Motor vehicles registered for the first time with related stock and ownership information: 2004 [15]

Region	All vehicles			All cars: 2004				
	All vehicles licensed: 1994 (thousands)	New vehicle registrations: 2004 (thousands)	Currently licensed vehicles: 2004 (thousands)	New Registrations (thousands)	Currently licensed (thousands)	Currently licensed per 1,000 [1] population	New registrations per 1,000 [1] population	Average vehicle age (years) [2]
England	21,638.6	2,785.6	27,392.9	2,272.5	22,921.4	458	45	6.5
Wales	1,176.8	127.7	1,616.9	102.1	1,357.0	460	35	6.7
Scotland	1,900.0	262.8	2,448.2	217.5	2,076.5	409	43	5.7
Great Britain	25,231.3	3,185.4	32,258.9	2,599.1	27,028.1	465	45	6.5

1 Using mid-2004 Population estimates.

2 Nominal: Vehicles registered at any time in 2004 are counted as age 0.5 year at the end of 2004 vehicles registered in 2003 are counted as age 1.5 at the end of 2004.

[15] http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_610429.pdf

Table 28: Vehicles licensed at 31 December 2004 by Council and taxation group ('000s)[16], West of Scotland.

	Private and light goods		Motor-cycles	Public transport	Goods	Crown and Exempt	Other vehicles	All vehicles		
	Body type cars	Other vehicles						Total	of which body type cars	of which company cars
Dumfries & Galloway	64.8	8.3	2.4	0.2	1.4	9.6	0.4	87.0	68.7	3.7
East Ayrshire	44.8	4.6	1.2	0.2	0.7	5.0	0.2	56.6	48.3	2.4
Eilean Siar *	11.0	2.2	0.3	0.1	0.3	1.1	0.1	15.0	11.4	0.4
North Ayrshire	49.7	4.1	1.5	0.2	0.7	4.7	0.1	61.1	53.5	2.4
South Ayrshire	47.1	3.8	1.2	0.5	0.5	3.8	0.1	57.1	49.7	2.3
Sub total	217.4	23	6.6	1.2	3.6	24.2	0.9	276.8	231.6	11.2
Percentage	11%	11%	12%	10%	11%	13%	9%	11%	11%	8%
Scotland	1,957.2	201.2	54.0	11.5	31.4	182.7	10.3	2,448.2	2,076.5	145.2

[16] http://www.scotland.gov.uk/Publications/2005/08/25100154/02191