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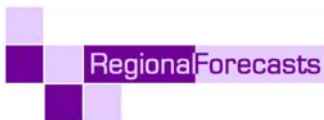


Department for
**Employment
and Learning**
www.delni.gov.uk

Research Report

Occupation Forecasts and Replacement Demand Analysis for Northern Ireland 2005-2015

***Occupation Forecasts and
Replacement Demand
Analysis for Northern Ireland
2005-2015***
May 2006



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Technical note:

The estimates in this survey are largely based on the Labour Force Survey. This is a sample survey with considerable variability from year to year. Three year averages have been used to smooth the volatile LFS data. The large level of detail required for flows between occupations in a replacement demand analysis prevents the full use of the Northern Ireland LFS due to its small sample size. However, the NI LFS is used to estimate overall leaving rates for employment as a whole. Differences between individual occupations have been estimated using figures from the UK LFS scaled to match NI totals.

We believe that this approach gives a reasonable approximation to future levels of job vacancies by occupation and skill.

i Forward

Regional Forecasts Limited (RFL) has produced, for the first time, detailed occupation forecasts and replacement demand estimates for Northern Ireland. This work has been conducted as part of DEL's Research Agenda.

The findings in this report are based on a robust methodology and understanding of the Northern Ireland economy and present the most likely trend in future labour market performance based on the available evidence.

Northern Ireland's impressive job creation record is well documented, with record employee levels following 19 years of consecutive growth in employee jobs – the longest uninterrupted period of growth in the UK. During this time, the majority of occupations have expanded. The largest recorded expansions over the last ten years, were in sales occupations, corporate managers and caring personal service occupations as the economy moves from the 'factory' to the 'office'.

The recent growth trends in occupations are generally expected to continue over the forecast period although growth will be slower than in the recent past. The main reasons for the projected slowdown in growth are the end of rapid growth in retail employment after a period in which Northern Ireland caught up with national trends following earlier periods of low investment during the 'troubles'. A second factor is an anticipated slowdown in public expenditure and hence slower growth in public sector employment.

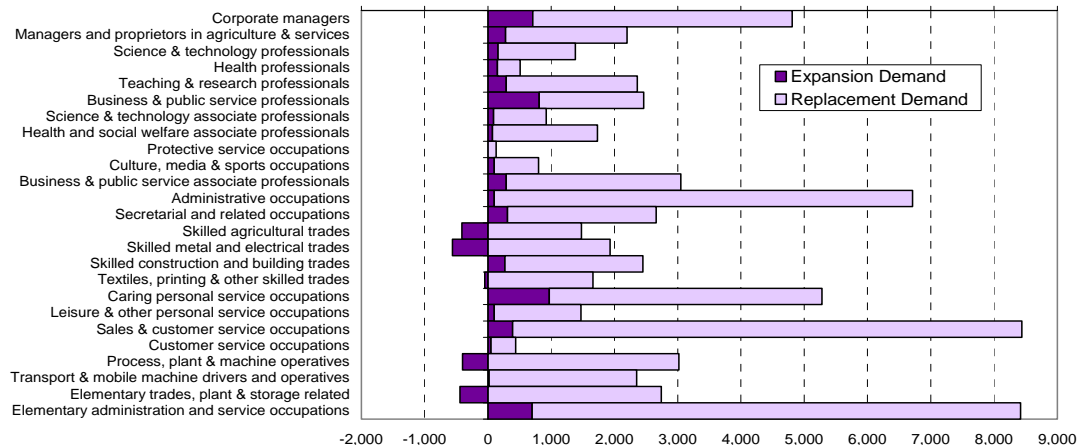
Table i.1: Forecast changes in broad occupations, 2005-2015

	Employees		Self Employed		Total Employed	
	Change (000's)	Annual average % change	Change (000's)	Annual average % change	Change (000's)	Annual average % change
Managers & Senior officials	9.3	1.5	1.5	0.7	10.8	1.3
Professional	12.1	1.5	3.4	2.3	15.5	1.6
Associate prof & technical	4.9	0.6	1.2	1.4	6.1	0.7
Administrative & Secretarial	4.2	0.4	0.3	1.3	4.5	0.5
Skilled trades	-6.1	-0.9	-2.1	-0.5	-8.2	-0.8
Personal service	10.7	2.0	1.0	1.4	11.8	1.9
Sales & customer service	4.5	0.8	0.4	1.1	4.9	0.8
Process, plant & machine	-4.1	-0.9	0.0	0.0	-4.2	-0.7
Elementary	3.3	0.4	-0.5	-1.3	2.8	0.3
Total	38.8	0.6	5.1	0.5	43.9	0.6

While occupation forecasts provide estimates of the numbers of people likely to be employed in each occupation they do not provide an indication of the wider need for employers to recruit in order to replace people lost through migration, retirement or through career changes. **Replacement demand** estimates build upon the occupation forecasts to examine these issues and provide projections of the requirements for the replacement of employees in each occupation over time.

It is immediately clear from the chart below that replacement demand dwarfs expansion demand. Over the period 2005-2015 replacement demand is projected to be just over 63,500 people per annum, compared with less than 4,000 per annum generated through expansion demand. Added together, these two figures (total requirement) mean that 67,500 people per annum are expected to be required to fill all posts created across all occupations.

Chart i.1: Expansion demand and replacement demand in Northern Ireland, annual averages, 2005-2015



In all occupations that show negative expansion demand (i.e. an overall decline in employment numbers), positive replacement demand is sufficient to result in a positive total requirement. This off-setting effect is particularly evident in skilled metal and electrical trades which are forecast to contract more than any other occupation. Replacement demand will however, create just under 2,000 openings per annum resulting in an average net requirement of around 1,400 people per annum. This shows that labour turnover creates employment opportunities even in contracting sectors.

The replacement demand analysis is a useful exercise in assessing how many vacancies are likely to be created through retirements, people migrating, becoming unemployed or leaving one occupation for another. Knowing this, the key question is ‘where will the labour come from?’ Recent increases in in-migration suggest that this is clearly a growing feature. Replacement demand is an important first step towards the development of a demand and supply model of Northern Ireland’s labour market.

1 Introduction

- 1.1 As part of the Department for Employment and Learning's (DEL) research agenda, RFL were commissioned to provide **occupational forecasts** and undertake **replacement demand forecasts** for Northern Ireland. The chief potential benefit to DEL of these forecasts is that they provide a framework within which DEL's Skills Strategy can be viewed. They do this partly through acting as an early warning system for potential changes in Northern Ireland's occupational structure. They also provide a measure of the scale of likely job vacancies in each occupation caused by labour turnover as well as by the expansion or contraction of demand for particular occupations.
- 1.2 These forecasts are based on a new model of the Northern Ireland economy developed by Regional Forecasts which provides annual employment projections for 24 separate occupation groups for each year until 2015. The forecasts have been updated for this report in line with the Oxford Economic Forecasting's Autumn 2005 macro-economic projections for the UK and RFL's Autumn 2005 economic projections for all UK regions.
- 1.3 To enhance the system further, and assist DEL in planning training needs, Regional Forecasts have developed 'replacement demand' forecasts for Northern Ireland. **Replacement demand is a measure of the likely requirement for employees in each occupation over time and is driven by factors such as retirements, people temporarily leaving the labour force, inter-occupational movements and migration.** Added to the expansion or contraction of demand for each occupation this provides estimates of the likely number of vacancies between 2005 and 2015 for each occupation.

Occupation forecasts

- 1.4 This is the first time that forecasts for 24 occupation groups have been produced specifically for Northern Ireland¹. While forecasting is not an exact science forecasts do provide a consistent and informed guide to the most likely future path of employment in Northern Ireland. The forecasts presented in this report provide a baseline for what is likely to happen if policy remains substantially unchanged for the economy. If any changes in Northern Ireland's occupation structure are identified, DEL's Skills Strategy can thus be tailored accordingly.

Replacement demand

- 1.5 Occupation forecasts only partially depict future labour requirements as they measure only the expansion or contraction in the number of employed people in each occupation. They do not include labour turnover i.e. people moving to

¹ Although RFL produce occupation forecasts for each of the UK regions in the bi-annual regional economic outlook, the figures presented in this report differ due to the fact that they measure numbers of people and not jobs (an individual can have more than one job). Occupation forecasts for the self employed are also produced specifically for this report. The methodology employed to generate occupation forecasts is discussed in section 2 and annex 1.

another occupation or into unemployment or inactivity. Nor do they include permanent losses to the labour force due to retirement or migration. Trends in total employment in an occupation are not thus a good guide to the number and nature of job openings created each year. Information on the likely future level of job turnover in each occupation provides a valuable addition to knowledge on likely trends in total numbers in each occupation. For those concerned with the design and delivery of skills policy, job turnover is as important as change in overall numbers.

- 1.6 Replacement demand is increasingly used in examining the scale of needs due to both expansion and turnover². The results of the analysis presented in chapter 3 show that vacancies created by people retiring, moving to another occupation, migrating or moving into unemployment or inactivity dwarf the vacancies created through an occupation's expansion. In fact, even in occupations where a decline is projected, replacement demand is usually larger than the decline.
- 1.7 A further useful addition to the replacement demand analysis is an analysis of qualification requirements. The replacement demand analysis is taken a step further through estimating the requirements for people at different skill levels. The benefit of this research to the Department is that it will provide an early indication of the future likely requirement for broad qualification levels within Northern Ireland and assist the Department in deciding the focus of future training policy.

Alternate futures – implications for replacement demand

- 1.8 RFL do not produce margins of errors for forecast results as these would be difficult in a multi-tiered system. The hierarchy of models (presented in chapter 3) means that occupation forecasts in NI depend among other things upon UK forecasts for population (which in turn depends on migration and the labour market) and sectoral employment. A change in any of these variables will therefore cascade through our models to produce revised occupation forecasts. Our models are thus best viewed as the most likely path for the economy based on current evidence.
- 1.9 However, to establish some 'margins of change' the replacement demand results are reproduced in Chapter 5 of this report under two alternate futures. The 'high' scenario assumes that migration into Northern Ireland is considerably higher than has been the case historically while the 'low' scenario dampens the prospects for key export sectors and assumes weaker public sector employment prospects than our central forecasts.

² See Willems & De Grip (1993) *Forecasting replacement demand by occupation and education*, Shah & Burke (2001) *Occupational replacement demand in Australia* and the Institute for Employment Research bulletins 60 & 73 for further information on replacement demand.

Filling vacancies

- 1.10 Replacement demand analysis identifies the scale of vacancies likely to be created in an occupation but does not provide estimates of sources of labour for inflows into occupations. Chapter 4 of this report suggests that forecasting which group (migrants, students etc) fills the vacancies is a complex issue as the labour market categories would all need to be dynamically modelled. It is our view that modelling the supply of people to fill vacancies would be a valuable addition to the replacement demand analysis and would provide the Department with a more powerful tool in helping to targeting policy delivery.
- 1.11 This report produces estimates only of the demand for occupations and skills. Although we suggest how a supply side analysis might be developed, it is beyond the scope of this study to construct estimates of the sources of supply of labour to fill vacancies. However, RFL have been examining the options for development a model of education supply as part of a scoping paper commissioned under the EDF monitoring contract (to be delivered in February 2006). These options look at supply independently of demand and explore only total supply of skills in the population, not by occupation.
- 1.12 Development of a fully integrated demand and supply skills forecasting model would be the most helpful policy tool. This would however require both development time and considerable investment from the Department.

Structure of the report

- 1.13 This report is structured as follows;
- **Background:** this section provides some contextual information about the macro economic environment and population projections in Northern Ireland's
 - **Occupation forecasts:** this section briefly outlines the methodology used to produce occupation forecasts, assesses Northern Ireland's current occupation structure and presents the results of the forecasts.
 - **Replacement demand:** this section introduces replacement demand, defining key concepts and presenting the results of the analysis.
 - **Alternate futures – implications for replacement demand:** this section presents replacement demand results for two 'alternate futures' – a 'high' growth scenario based on increased in-migration to Northern Ireland and a 'low' growth scenario which dampens the prospects for key export sectors and assumes weaker public sector employment prospects than in the base forecasts
 - **Filling vacancies – towards a supply side:** this section discusses the potential of constructing a supply side model to assess where the vacancies identified in the replacement demand analysis could be filled from.
 - **Conclusion:** this section summarises the key issues arising from the research.
 - **Annex 1 - Generating occupation data:** this section presents a detailed account of the methodology and data used to compile occupation data and

details the conversion of the employee jobs data series into a measure of people in employment.

- **Annex 2 - Northern Ireland's actual and standardised occupations 1981-2005:** this section presents time line plots of Northern Ireland's actual employment in each occupation compared with the employment in each occupation that would occur if Northern Ireland shared the same proportions of each occupation within sectors as the UK in each year.
- **Annex 3 – Calculating replacement demand:** detailed information of the methodology and data sources used to produce the replacement demand analysis is presented in this annex.
- **Annex 4 - Differences in NI and UK occupation leaving rates:** Analysis of the Northern Ireland and UK LFS showing significant differences in turnover for occupations.
- **Annex 5 – Additional results:** This annex provides some additional tables referred to in the main body of the report.
- **Annex 6 – Occupational classification used in this report –** This annex provides details of the Standard Occupational Classification (SOC2000) used in this report. Examples of jobs within each occupation group are also provided.

2 Background

- 2.1 The current forecasts are from our Autumn 2005 forecast round. It should be noted that ongoing development work to improve the Northern Ireland Policy Simulation (NIPS) model, plus a scheduled update of our Global, UK and UK regional forecasts, will result in a revision to the projections in late spring 2006. The Department may thus wish to consider updating the replacement demand analysis at this time.
- 2.2 RFL do not produce margins of errors for forecast results as these would be difficult in a multi-tiered system. The hierarchy of models (presented in chapter 3) means that occupation forecasts in NI depend among other things upon UK forecasts for population (which in turn depends on migration and the labour market) and sectoral employment. A change in any of these variables will therefore cascade through our models to produce revised occupation forecasts. Our models are thus best viewed as the most likely path for the economy based on current evidence. However, to establish some ‘margins of change’ the replacement demand results are reproduced in Chapter 5 of this report under two alternate futures. The ‘high’ scenario assumes that migration into Northern Ireland is considerably higher than has been the case historically while the ‘low’ scenario dampens the prospects for key export sectors and assumes weaker public sector employment prospects than our central forecasts.

Macro environment

- 2.3 The Northern Ireland economy has been characterised by strong labour market growth since the early 1990’s but has made little progress on closing the wealth gap with the UK. The charts below show this. Employee growth has been much stronger in Northern Ireland than in the UK since the beginning of the 1990’s but GVA per head remains around 80% of the UK level. We expect these trends to continue in future.

Chart 2.1: GVA per head in NI, UK=100

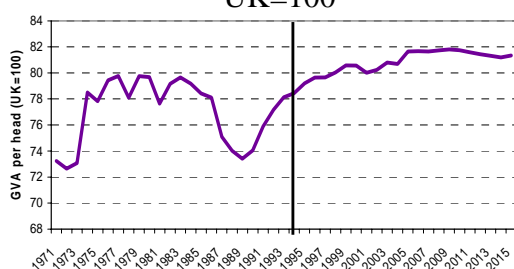
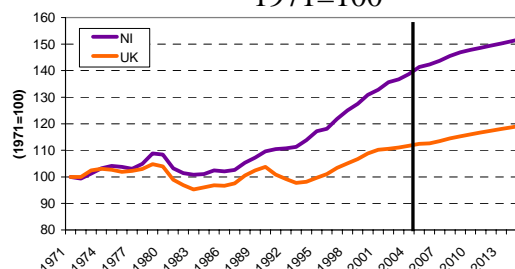


Chart 2.2: Employee growth, NI & UK, 1971=100



- 2.4 The strong growth in employment is partly due to ‘catch-up’ in retailing (as the multi national retails chains all expanded into Northern Ireland) and business services (the well documented increases in call centre employment), and partly due to growth in public services, particularly health. The impressive headline employee growth does however mask the marked decline in manufacturing

employment, although it should be noted that this decline was less severe in Northern Ireland than in the UK as a whole (table 2.1).

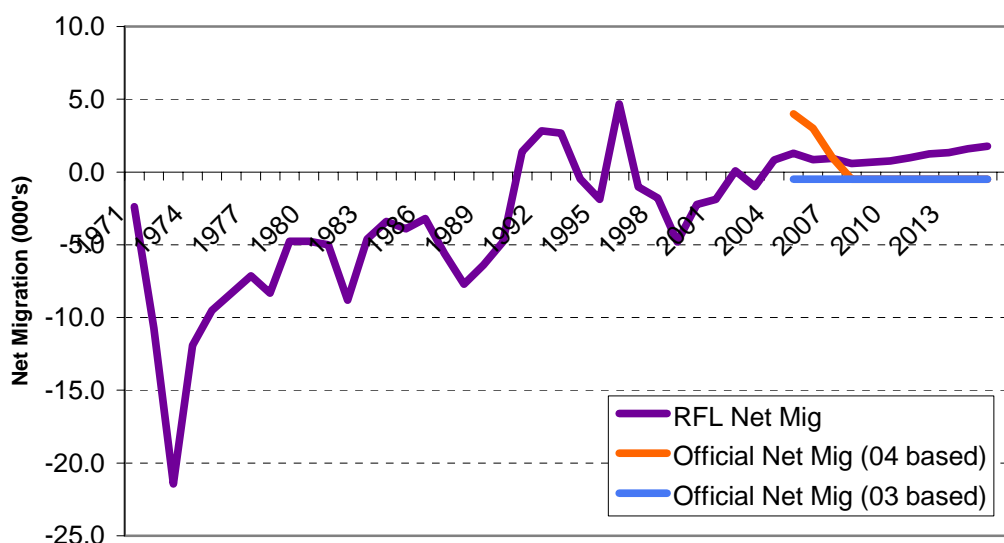
Table 2.1: Average annual % growth in employees by sector, Northern Ireland and UK, 1995-2005

	1995-2005 average annual growth	
	NI	UK
Agriculture	-1.6	-2.1
Extraction	0.3	-0.9
Electricity	-5.6	-3.5
Construction	4.6	3.3
Manufacturing	-1.8	-2.4
Distribution	3.1	1.3
Hotels	4.5	2.3
Transport & Comms	2.7	1.4
Financial intermediation	2.4	0.6
Business services	7.4	3.2
Public Admin	0.7	0.7
Education	1.4	2.0
Health	1.9	1.7
Other Services	1.5	2.6
Total	1.9	1.2

Population

2.5 The shift away from manufacturing towards service sector employment has increased the importance of population forecasts as a driver of the economy in our model. RFL does not use official population projections. Instead we use an equation of migration responding to factors such as house prices, wages, labour market performance and UK migration. The chart below shows three net migration projections. The flat line shows NISRA's official net migration projections based on 2003 mid year population estimates. These were the published projections available for RFL's Autumn 2005 forecast round. RFL felt that these projections were conservative given the large in-flows of international migration since EU enlargement and thus forecast stronger net inward migration than the official estimates (the dark line on the chart). The most recent NISRA projections have taken account of the estimated large increases in international in-migration and currently estimate a net inflow of 4,000 people in 2005.

Chart 2.3: Northern Ireland Net migration projections



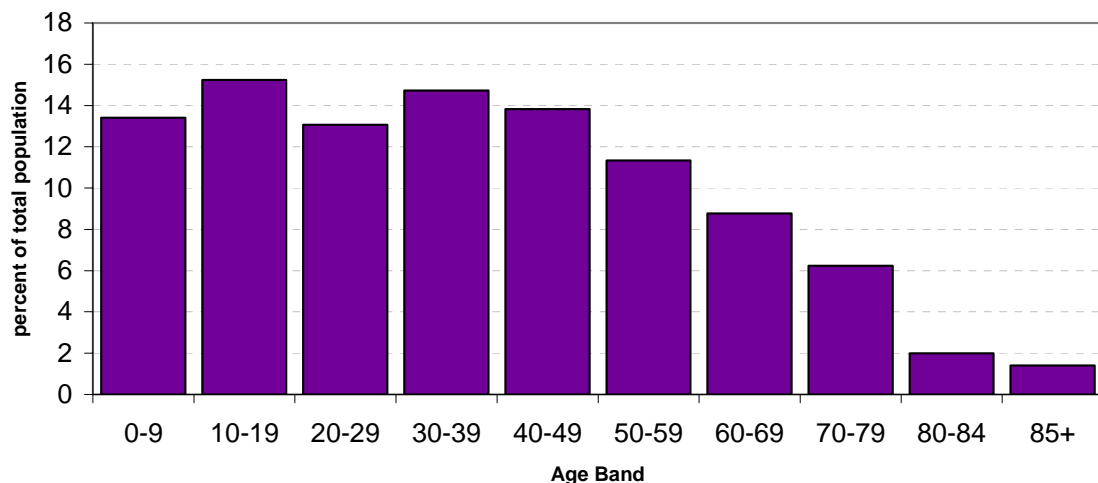
Source: RFL, NISRA

2.6 Migration data provides a substantial source of variation in population projections given the large scale revision to the official projections. In addition, the age profile of migrants, whether or not recent in-migrants prove to be permanent settlers in NI, and the family size of migrants all greatly affect the population forecast and structure. Several other risks to current population projections also exist. For example;

- Any increase in student provision could stem the flow of students leaving Northern Ireland to attend university, further altering the population structure
- The long term path in international migration is hard to predict – until now London has been the main entry point for in migrants who have then moved around the rest of the UK. The extent to which this pattern will continue is unknown.

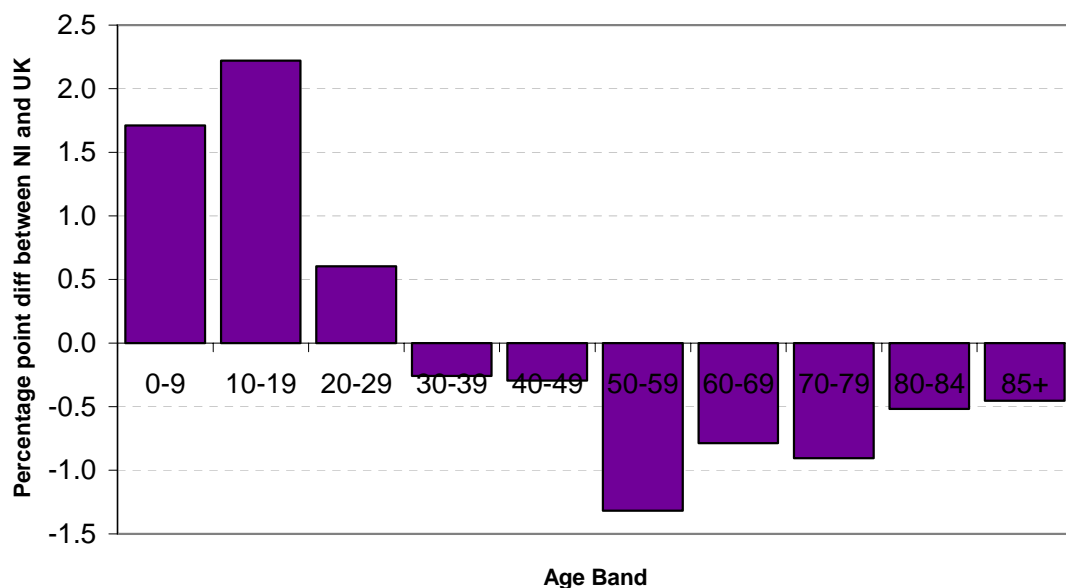
2.7 Nevertheless, at present NI's age structure is more heavily skewed towards young people. This is shown in charts 2.4 and 2.5 below. More than half of Northern Ireland's population are aged less than 40. Compared to the UK, Northern Ireland's has proportionately more people the under 30 and less people in every age band above 30.

Chart 2.4: Population structure in Northern Ireland 2004



Source: NISRA

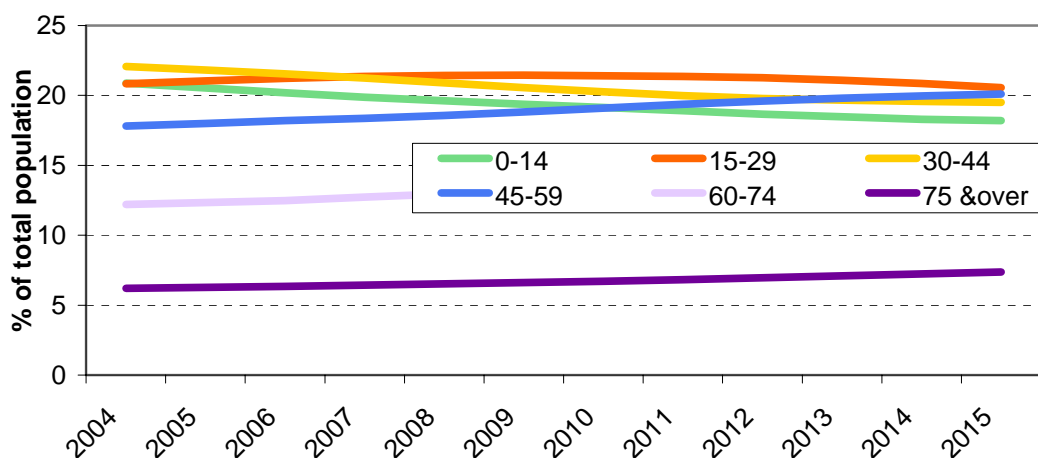
Chart 2.5: Differences between Northern Ireland and UK population structure



Source: NISRA, ONS

2.8 RFL produces forecasts for working age population and total population but does not currently produce population forecasts for different age bands. The chart below therefore uses NISRA's population projections by age band. These are likely to show a similar pattern to any age forecasts that we might produce ourselves, except that in our case net in-migration would be higher and hence the proportion of young adults would be slightly higher than in the NISRA projections. The declining proportion of young people is evident in the NISRA projections. By 2015, NISRA forecast that people under 15 will account for 18% of the population, down from 21% in 2005. The proportion of people over 45 will increase by 6%.

Chart 2.6: Official population projections by age broad age group

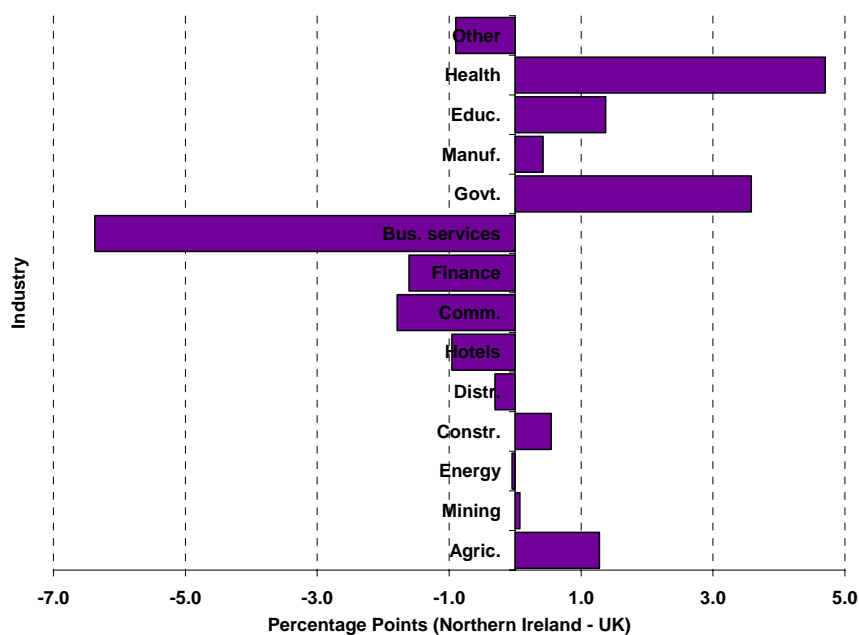


Source: NISRA

Northern Ireland employment structure

2.9 Chart 2.2 and table 2.1 showed Northern Ireland’s impressive employment growth since the early 1990’s. This section looks at the sectoral structure resulting from that growth. The chart below shows the difference between Northern Ireland’s employment structure and the UK’s. It is apparent that Northern Ireland remains more heavily dependent on the public sector and manufacturing than does the rest of the UK.

Chart 2.7: Difference in employment structure (Northern Ireland – UK) 2004



2.10 Although there is evidence of a shift from lower to higher value added private services, this is happening relatively slowly. Looking forward, the switch from manufacturing to private services employment is likely to continue although the slow down in consumer spending is likely to impact on the prospects for retail employment. In addition, there is little evidence to suggest that the public sector will decline in importance as a provider of employment.

2.11 The charts below present Northern Ireland employment³ by occupation. As might be expected given the sectoral balance, Northern Ireland has more employment in administrative and skilled trade occupations than the UK and fewer corporate managers.

³ To allow comparison with the UK, charts 2.9 and 2.10 present *jobs* not *people* in employment. At DEL's request, the occupation forecasts and replacement demand analysis presented throughout this report measure people in employment.

Chart 2.8: Northern Ireland’s occupation structure, numbers employed, 2005

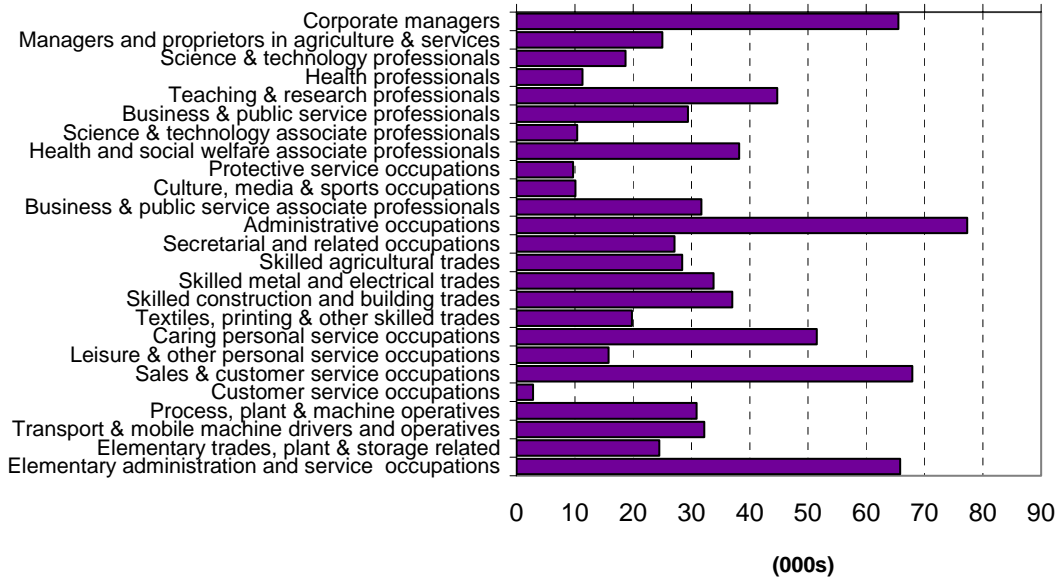
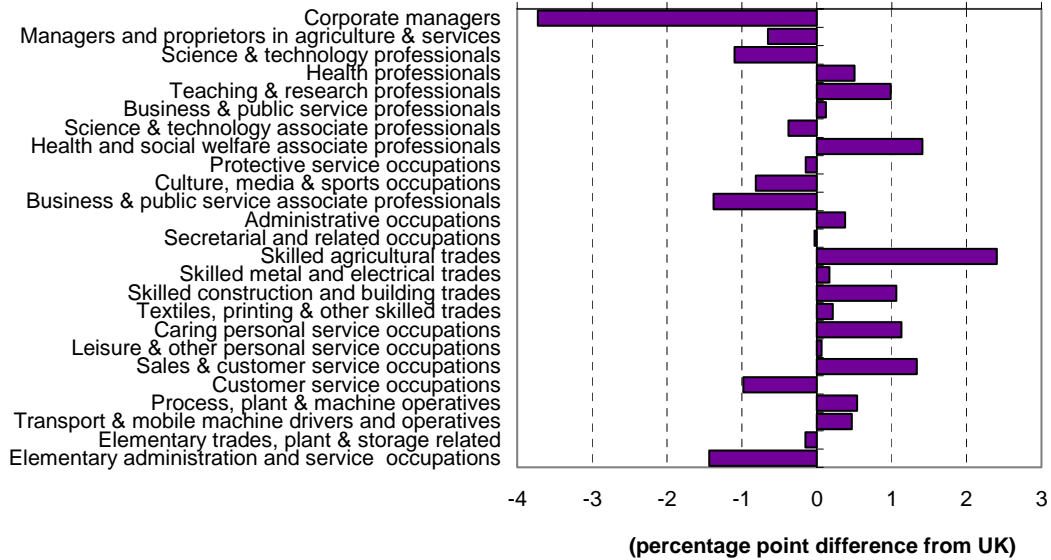
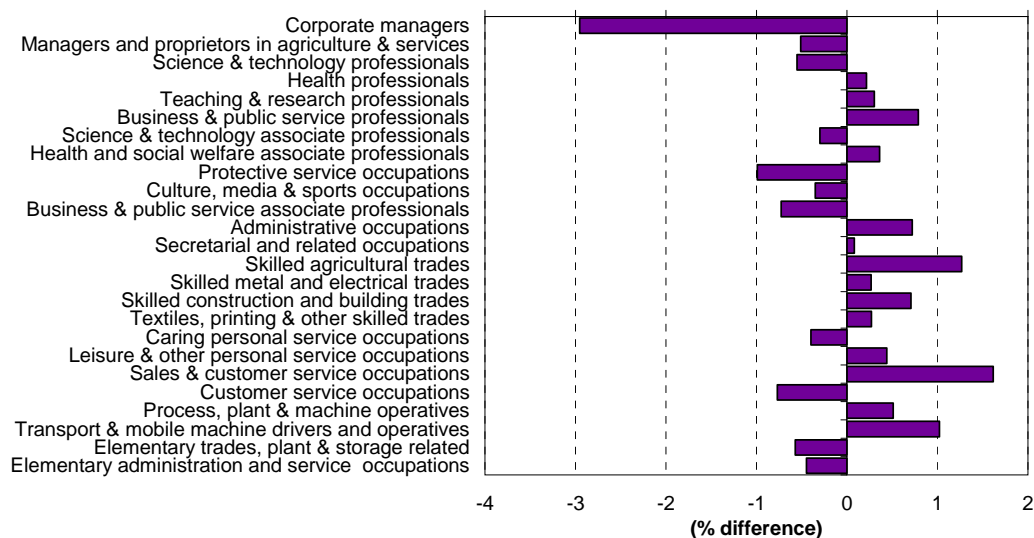


Chart 2.9: Difference in Northern Ireland and UK occupation structure



2.12 It was mentioned above that Northern Ireland’s high proportion of employment in administrative and skilled trade occupations was unsurprising given the sectoral structure of the Northern Ireland economy. The chart below shows the percentage point difference in Northern Ireland’s actual occupation structure and the standardised occupation structure.

Chart 2.10: Percentage point difference between Northern Ireland's actual and expected occupation structure, 2005



- Chart 2.10 shows the difference between Northern Ireland and the UK occupation structure which is due to occupational differences within each sector rather than differences in sectoral structure. For example, the proportion of corporate managers in employment is 3 percentage points lower than it would be if Northern Ireland shared the same occupation structure within each sector as the UK.
- The impact of differences in the importance of each sector between NI and the UK average can be measured by comparing charts 2.9 and 2.10. For instance, in NI corporate managers comprise 3.7% less of employment than in the UK as a whole (chart 2.9). Chart 2.10 tells us that almost 3% of this is due to lower proportions of corporate managers within sectors. The difference between these two figures, i.e. 0.7%, is due to differences between NI and the UK in the importance of individual sectors. In this case, NI has less employment in sectors that tend to employ most corporate managers. Hence, most of NI's shortfall of corporate managers is due to NI firms employing fewer corporate managers than other UK firms in the same sectors.
- Other notable occupations with lower concentrations of employment include culture, media and sports occupations, business and public service associate professionals, customer service occupations and elementary occupations. In most of these cases it is a lack of the occupations within sectors that causes NI's shortfall rather than a lack of sectors in which these occupations are well represented.
- There are several occupations in which Northern Ireland employment is more concentrated than the UK, such as skilled agricultural trades transport and mobile machine drivers and operatives and health associate professionals (e.g. nurses). Most of these differences are due to the larger size of the relevant sectors in NI.

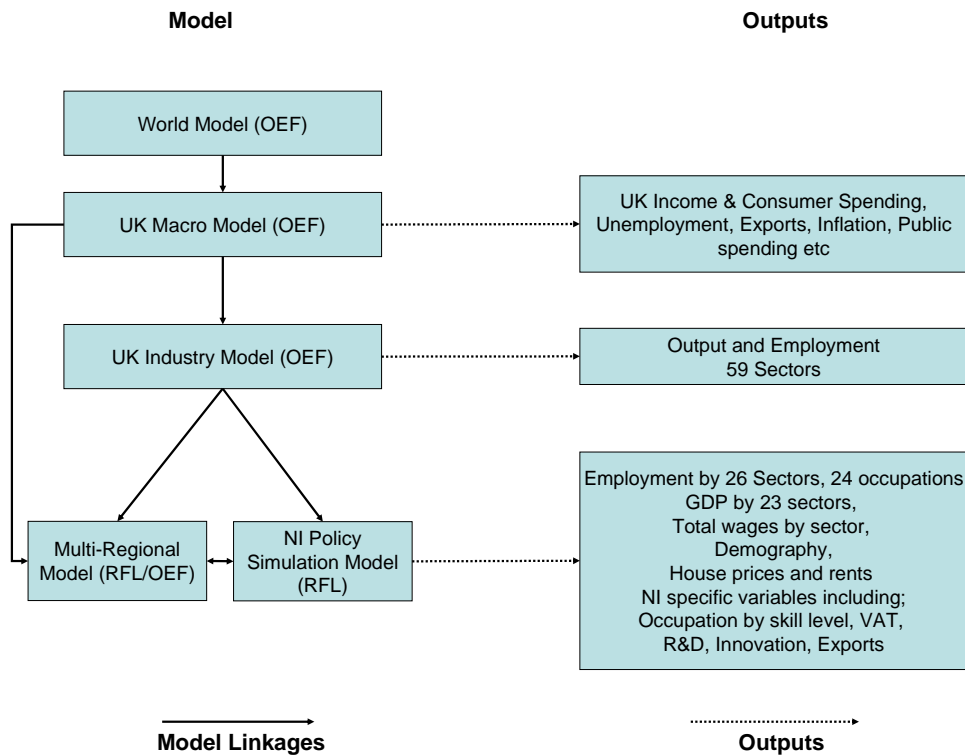
2.13 It is within the context of the recent NI economic performance outlined in this chapter that the remainder of this report presents occupation forecasts and replacement demand analysis.

3 Occupation forecasts

Context of the NIPS model

3.1 The occupation forecasts have been developed within the existing Northern Ireland Policy Simulation (NIPS) model⁴, recently developed by RFL to provide monitoring and forecasting of the Economic Development Forum targets for the Northern Ireland economy. This model is itself nested in the bi-annual UK Multi-Regional -Model produced by RFL / Oxford Economic Forecasting (OEF) and consequently the hierarchy of macro forecasts produced by OEF. The broad structure of these model interactions is set out in the figure below:

Figure 3.1: Hierarchy of forecast models



3.2 This hierarchy provides a robust framework for the occupation forecasts produced in this report and ensures that they are consistent with, and responsive to, changes in OEF’s macro and sectoral forecasts.

Methodology and data overview

3.3 RFL’s standard occupational forecasts, produced as an output of the regional forecast model are for total employment (employee jobs plus the self employed). As the employee data series measures jobs (of which people can have more than

⁴ The Leitch review of Skills presented UK occupation forecasts produced by Cambridge Econometrics. A comparison of these forecasts with RFL’s UK forecast of employment in broad occupation groups is presented in annex 6.

one) and self employment is a measure of people⁵, the forecasts for employment by occupation do not measure numbers of people in each occupation. It is rather closer to a measure of the number of jobs in each occupation.

- 3.4 As part of this project, the model has been developed⁶ so that the employment forecasts are estimates of numbers of people employed and self employed rather than the number of jobs. One drawback of this approach is that Northern Ireland's employment by occupation will not be comparable to other regions as their occupation forecasts remain based on employee jobs.
- 3.5 In brief, the method used to convert employee jobs into numbers of people employed is to adjust the numbers of part-time employees by the fraction required to equate employment estimates for 2001 with number of employed people recorded in the 2001 Census.
- 3.6 There are two data sources to draw upon for occupation employment data – the Census of Population and the Labour Force Survey. LFS data provides proportions of 25 occupations within 14 sectors for 2002 to 2005 (three year moving averages are used to smooth data volatility). Prior to 2002, Census information is used and inter census years are interpolated. We use University of Warwick Institute of Employment Research figures for 1971-91, and have constructed our data from census and LFS sources for 1991-2005.

Generating occupation forecasts

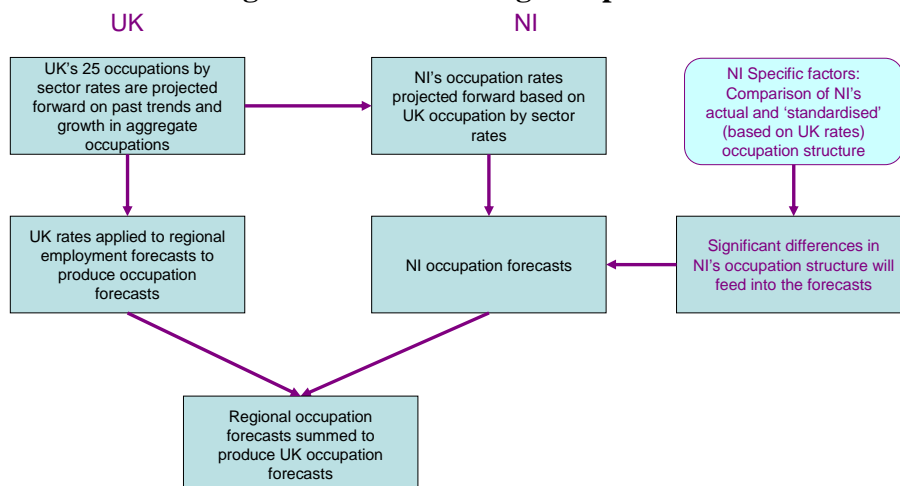
- 3.7 The steps taken to generate occupation forecasts are summarised in figure 3.2 and explained in greater detail in annex 1. The key issue to note from this figure is that projections for occupation proportions within each sector in Northern Ireland are initially based on growth in the UK's proportions within each sector. To assess how representative this initial estimate is likely to be for Northern Ireland, actual occupation data for Northern Ireland is compared to 'standardised'⁷ occupation estimates over the past based on UK occupation proportions within each sector. These comparisons are plotted in annex 2. Although the charts of NI's actual and standardised occupations in annex 2 contain some differences in the numbers within some occupations, we are most interested in the 'path' of each plot. If the actual and standardised occupations follow a similar path (rising and falling at similar times and by the same magnitude) then we feel it is sensible to apply UK growth rates to NI.
- 3.8 This analysis has two benefits. Firstly, it identifies the extent to which Northern Ireland's occupation employment is based on factors specific to Northern Ireland. Secondly, if the differences between actual and standardised occupation employment are shown to be large and diverging over time, then the Northern Ireland forecasts are adjusted to reflect this divergence in trend. The results of this analysis are summarised following a brief outline of Northern Ireland's current occupation structure.

⁵ A self employed jobs measure is available but it is not used in the regional forecast model.

⁶ A detailed description of the data used and the model development work undertaken to generate employment by occupation is provided in annex 1.

⁷ Standardised occupation data is calculated by applying UK occupation proportions by sector employment in each year to Northern Ireland's employment structure.

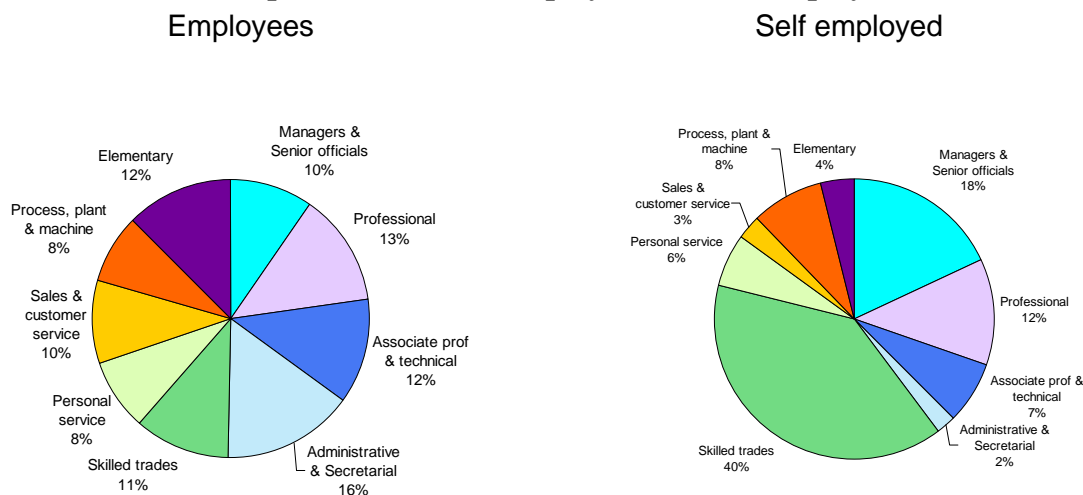
Figure 3.2: Forecasting occupations



Current occupation structure

3.9 Northern Ireland's broad (9 occupations) occupation structure is shown in chart 3.1⁸. The largest occupation group among employees is administrative and secretarial occupations, reflecting Northern Ireland's reliance on public sector employment. The structure of self employed occupations is significantly different than that for employees with 40% of the self employed in skilled trades occupations. There is also a much higher proportion of managers (18%) amongst the self employed.

Chart 3.1: Broad occupation structure, employees and self employment (2005)



3.10 Northern Ireland's reliance on public sector employment becomes even more apparent when the occupation structure is disaggregated into 25 occupation groups (charts 3.2 and 3.3), with administrative occupations, teaching occupations and elementary administration services contributing to roughly one quarter of the employee total. Again, the differences in the self employment

⁸ Data in this report measure numbers of people in employment, not employee jobs.

structure are evident with large proportions of the self employed in agricultural and construction activities.

Chart 3.2: Detailed occupation structure, employees (2005)

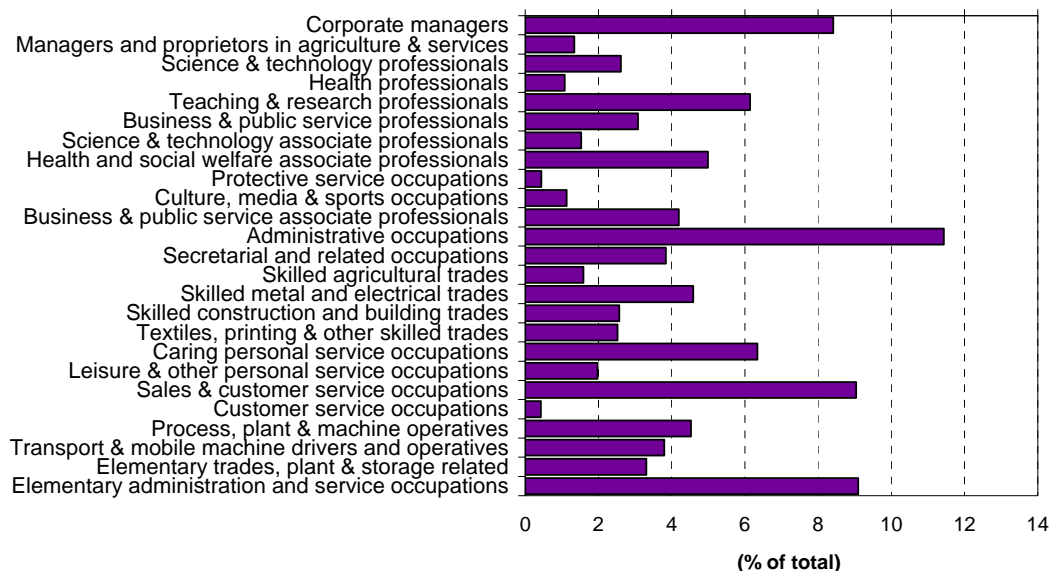
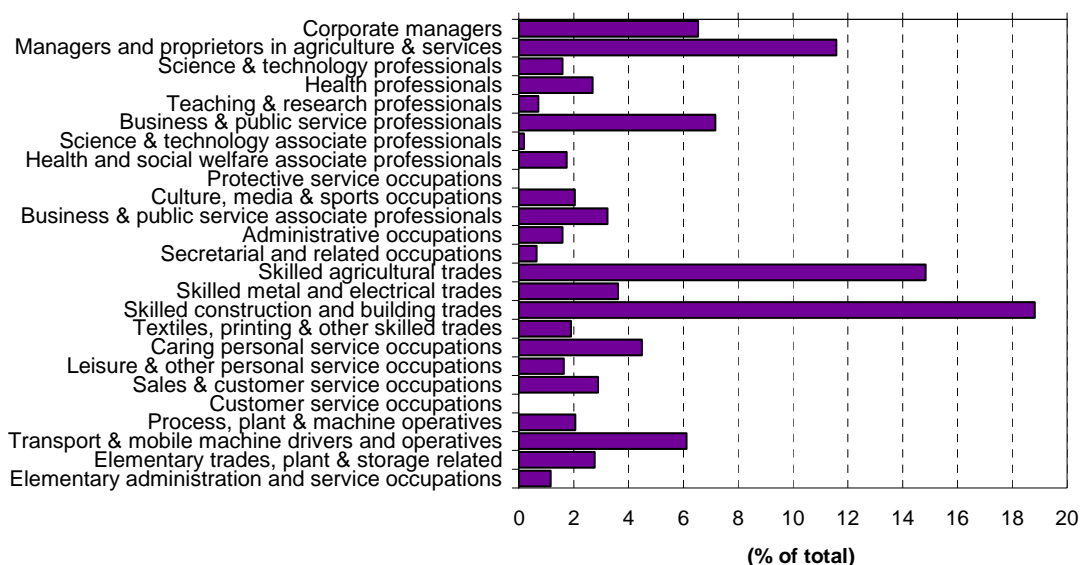


Chart 3.3: Detailed occupation structure, self employed (2005)



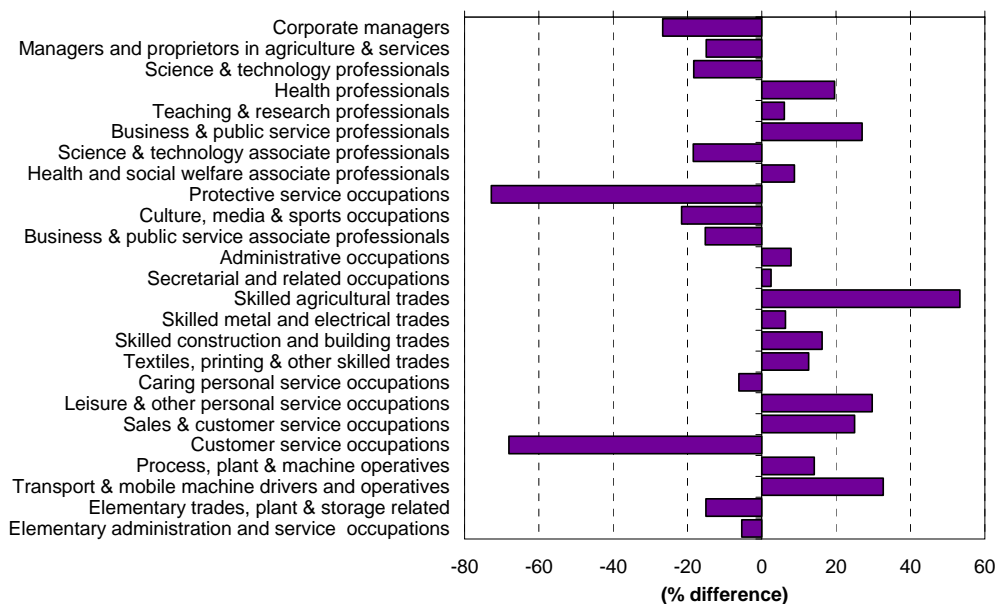
Actual and standardised occupations

3.11 In this section we examine how Northern Ireland’s occupational structure differs from that of the UK as a whole. This is done through measuring the gap between numbers in each Northern Ireland occupation and the numbers that would occur if Northern Ireland had the same occupation structure within sectors as the UK as a whole. We are thus using the observed mix of sectors in Northern Ireland and asking how the numbers in each Northern Ireland

occupation differs from that which would occur in each sector if Northern Ireland had the UK occupational proportions.

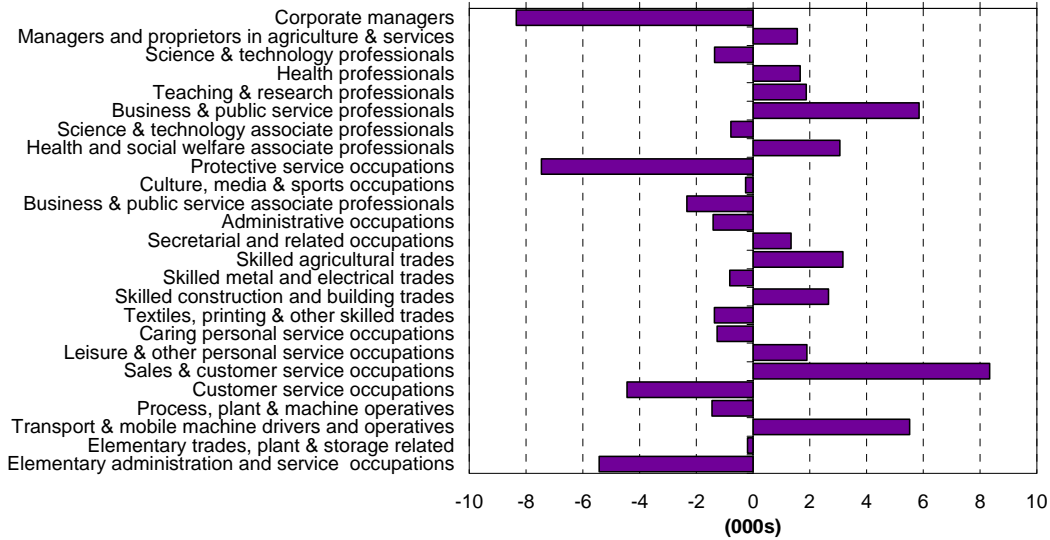
3.12 This analysis was discussed in chapter 2 but it is worth reintroducing it here as it is useful in assessing how realistic it is to use trends in UK occupation proportions to drive the forecasts of employment in occupations for Northern Ireland. The results are presented in chart 3.4 and 3.5. Time line plots of all Northern Ireland's actual and standardised occupations are presented in annex 2.

Chart 3.4: Percentage difference between actual and standardised occupations, total employed (2005)



- Corporate management is the most under represented occupation Northern Ireland (aside from protective service occupations and customer service occupations for which there are LFS data concerns, discussed below)
- The corporate managers occupation is almost 30% smaller than it would be if each Northern Ireland sector followed the UK occupation structure.
- Over the last decade, corporate managers have displayed strong growth in Northern Ireland. However, this growth is around 8,000 less than if Northern Ireland shared the UK's occupation proportions within each sector (chart 3.5).
- Other notable areas of under-representation include culture, media and sports occupations, business and public service associate professionals, customer service occupations and elementary occupations.
- There are several occupations in which Northern Ireland has a greater concentration than the UK, reflecting Northern Ireland's high relative concentrations of employment in the public sector, manufacturing and agriculture.
- For example, skilled agricultural trades is over represented by 50%, while transport and mobile machine drivers and operatives and business and public service professionals are over represented by more than 20% each.

Chart 3.5: Difference between changes in actual and standardised occupations, total employed (1995 - 2005)



3.13 The conclusion from this analysis is that applying the annual growth in UK occupation by sector rates is a sensible approach, as in most cases the observed differentials appear stable with little evidence of diverging trends (annex 2). This is not true however of protective and customer service occupations. The former includes the police and army, and the reform of the police in Northern Ireland and cutbacks in the army have caused declining numbers in Northern Ireland. This is not the whole story. The measured decline in annex 2 is too large to be plausible in the period since 2001. This is the period for which we use LFS data and the likelihood is that security staff in Northern Ireland deliberately mis-represent their true occupation. The corollary of this is that other occupations may be over-reported.

3.14 Northern Ireland’s lagging performance in customer service occupations is less easy to understand. This occupation includes call centres, in which Northern Ireland was under-represented until the paramilitary cease fires in 1997. The collapse in numbers since 2003 is not plausible and again may reflect misreporting of customer services as sales occupations. It is not apparent that the decline in either of these occupations represents a changing trend, rather a blip in the data. RFL will continue to monitor these occupations as new data becomes available.

Recent occupation changes

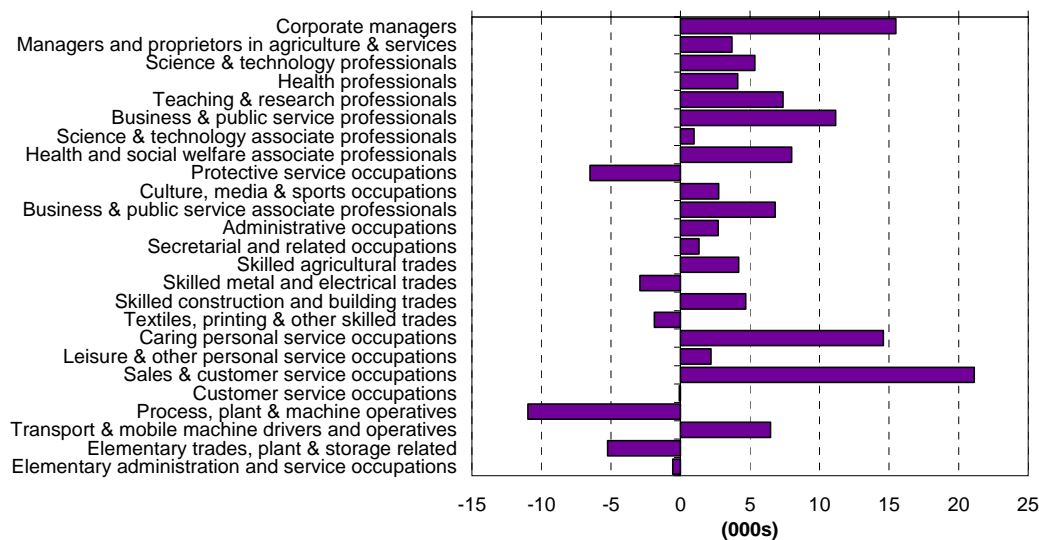
3.15 Northern Ireland’s impressive job creation record is well documented, with record employee levels following 19 years of consecutive growth in employee jobs – the longest uninterrupted period of growth in the UK. The charts below focus on the last ten years and show that the majority of occupations have expanded, both in employee and self employment terms. The largest recorded expansion over the last ten years, was in sales occupations (21,000), closely

Occupation forecasts and Replacement Demand in Northern Ireland

followed by corporate managers (15,500) and caring personal service occupations (14,500).

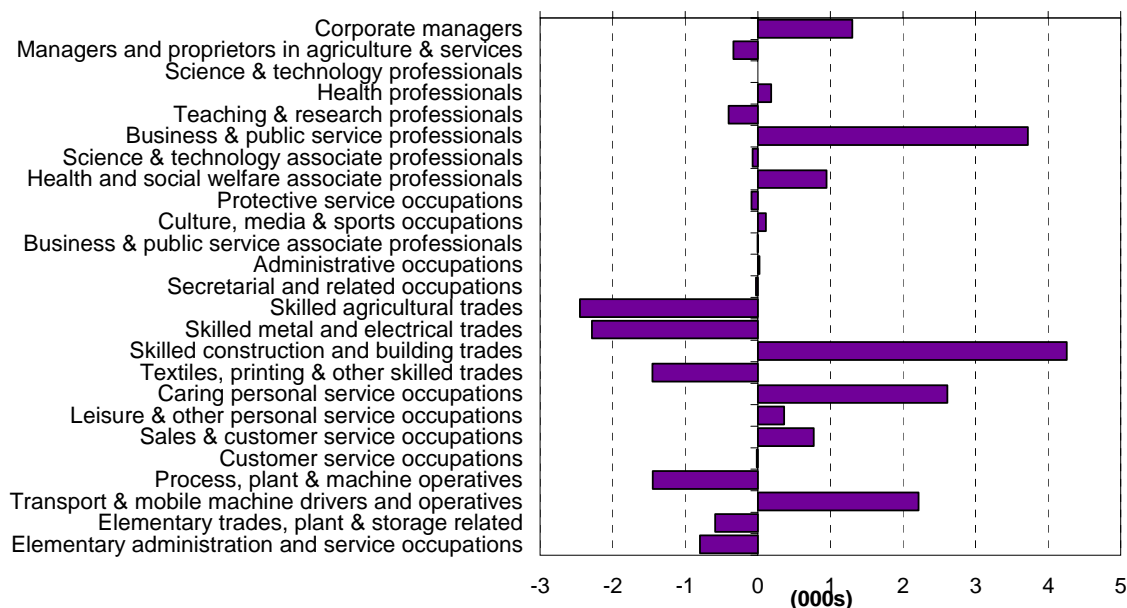
3.16 Not all occupations experienced growth in the last decade. The most notable job losses came in process, plant and machine operatives which lost 11,000. These patterns of expansion and contraction reflect the well established decline in manufacturing and the rise of the service sectors as a source of employment.

Chart 3.6: Change in employees 1995-2005



3.17 There were 10 occupations in self employment that experienced declines in the last decade compared to 7 in the employee analysis. The largest losses came in the skilled occupations such as skilled agricultural trades, skilled metal trades and textiles. On a more positive note there was enough expansion in other occupations to offset these losses. Skilled construction occupations increased by 4,300 people while business and public service professional occupations increased by 3,700.

Chart 3.7: Change in self employment 1995-2005



3.18 In percentage terms (table 3.1) total employment growth has averaged 1.5% per annum, chiefly driven by the expansion of employees, rather than the self employed. Business and public service professionals have experienced the fastest growth in total employment over the last decade (8.6% per annum). Caring and sales occupations have also enjoyed strong annual average growth since 1995. The largest decline has been in protective occupations, although almost all this decline occurred in 2001 and as mentioned, this is likely to reflect mis-recording of occupations as well as real declines.

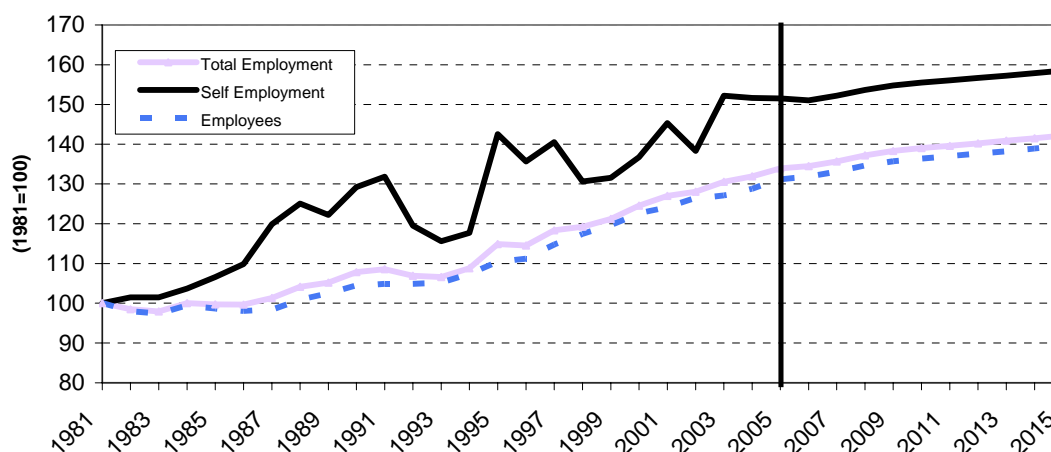
Table 3.1: Average annual growth in occupations (% per annum), 1995-2005

	Employees	Self Employed	Total Employment
Corporate managers	3.7	2.0	3.5
Managers and proprietors in agriculture & services	6.3	-0.3	1.8
Science & technology professionals	4.2	0.0	3.7
Health professionals	10.6	0.6	6.3
Teaching & research professionals	2.2	-4.1	2.1
Business & public service professionals	9.6	6.6	8.6
Science & technology associate professionals	1.1	-3.0	1.0
Health and social welfare associate professionals	3.1	7.0	3.3
Protective service occupations	-11.7	0.0	-11.8
Culture, media & sports occupations	5.3	0.5	3.9
Business & public service associate professionals	3.2	0.0	2.7
Administrative occupations	0.4	0.1	0.4
Secretarial and related occupations	0.6	-0.4	0.6
Skilled agricultural trades	5.9	-1.4	0.7
Skilled metal and electrical trades	-1.0	-4.4	-1.5
Skilled construction and building trades	3.7	2.3	2.9
Textiles, printing & other skilled trades	-1.2	-5.1	-1.7
Caring personal service occupations	4.9	7.8	5.2
Leisure & other personal service occupations	2.1	2.2	2.1
Sales & customer service occupations	5.0	2.8	4.9
Customer service occupations	-0.3	-16.4	-0.4
Process, plant & machine operatives	-3.3	-4.8	-3.4
Transport & mobile machine drivers and operatives	3.4	4.1	3.5
Elementary trades, plant & storage related occupations	-2.3	-1.7	-2.2
Elementary administration and service occupations	-0.1	-4.7	-0.2
Total	1.7	0.6	1.5

Occupation forecasts

3.19 The recent growth trends in occupations are generally expected to continue over the forecast period although growth will be slower than in the recent past. The main reasons for the projected slowdown in growth are the end of rapid growth in retail employment after a period in which Northern Ireland caught up with national trends following earlier periods of low investment during the ‘troubles’. A second factor is an anticipated slowdown in public expenditure and hence slower growth in public sector employment. Growth in total employment is expected to be driven by growth in both employees and self employment (chart 3.8).

Chart 3.8: Trends in employment, 1981-2015



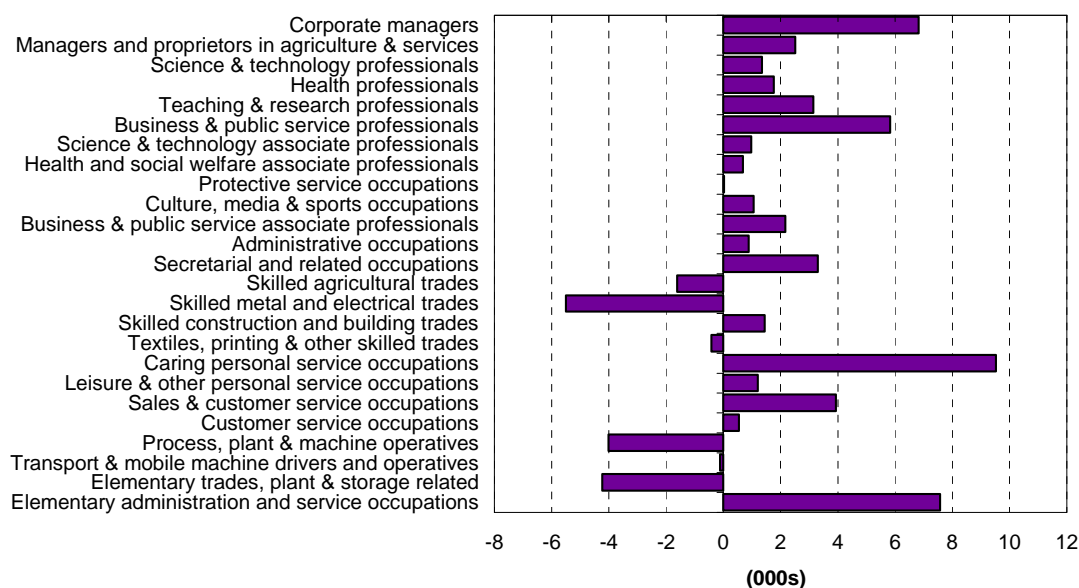
3.20 Professional occupations are expected to increase most - by 15,500 in total employment (table 3.2). Personal service occupations are also expected to show large increases as recent growth in child care and residential care for the elderly continues. Significant declines are again evident in the skilled trades occupations and process plant and machine occupations, reflecting the continuing shift away from lower value added manufacturing.

Table 3.2: Forecast changes in broad occupations, 2005-2015

	Employees		Self Employed		Total Employed	
	Change (000's)	Annual average % change	Change (000's)	Annual average % change	Change (000's)	Annual average % change
Managers & Senior officials	9.3	1.5	1.5	0.7	10.8	1.3
Professional	12.1	1.5	3.4	2.3	15.5	1.6
Associate prof & technical	5	1	1.2	1.4	6.1	1
Administrative & Secretarial	4.2	0.4	0.3	1.3	4.5	0.5
Skilled trades	-6.1	-0.9	-2.1	-0.5	-8.2	-0.8
Personal service	10.7	2.0	1.0	1.4	11.8	1.9
Sales & customer service	4.5	0.8	0.4	1.1	4.9	0.8
Process, plant & machine	-4.1	-0.9	0.0	0.0	-4.2	-0.7
Elementary	3.3	0.4	-0.5	-1.3	2.8	0.3
Total	38.8	0.6	5.1	0.5	43.9	0.6

3.21 The charts below show more detailed occupation forecasts for employees and the self employed respectively. Within the personal service occupations, caring occupations rather than leisure occupations are expected to create the vast majority of the extra jobs. In fact, caring occupations are forecast to grow by 10,000 employees and just over 1,000 self employed over the next decade.

Chart 3.9: Forecast change in employees, 2005-2015



3.22 Our forecasts also show larger increases in elementary administration and service occupations over the next decade than in the previous decade. This is largely due to our outlook for the hotels sector (where many of these occupations are located) which we project to grow faster in the medium term than in the recent past.

3.23 The changing sectoral pattern for employees in Northern Ireland’s private sector is away from low value added towards higher value added employment. This is reflected in significant predicted gains for both corporate managers and business professionals and predicted continued declines for the more manufacturing focused occupations such as skilled metal and electrical trades, elementary trades and process plant and machine trades.

3.24 The greatest source of potential growth in self employment is also in business and public service professional occupations which are expected to create over 5,000 jobs over the next decade. Conversely, skilled agricultural occupations are forecast to decline by around the same amount. It should be noted however that the small sample size available for self employment by occupations increases the margin of error. Care should be taken in drawing conclusions from the self employment occupation forecasts.

