Annex D: Existing Skills Forecasting Research and Explanation of Replacement Demand

Critique of Existing Skills Forecasting Research

	Ireland	NI
Research	**ESRI 'Current Trends in Occupational Employment and Forecasts for 2010 and 2020'**	**Regional Forecasts 'Occupation Forecasts and Replacement Demand Analysis for NI 2005-2015'**
Research coverage	**Objective:** Examines and forecasts the changing pattern of occupations and identifies variations in skill requirements across broad occupational areas of the economy. 'Tomorrow's Skills: Towards a National Skills Strategy' contains forecasts from this report. **Time period:** Longer-term forecasts spanning from 2005-2020. **Key results presented:** ■ Employment by nine NACE 1 industry sectors. ■ Employment by 18 ISCO 88 (or ISCO 88 compatible) occupations. ■ Expansion and net replacement demand by 18 ISCO 88 occupations (2005-2010 and 2005-2020) (replacement demand forecasts are considered tentative and to be treated with caution). ■ Employment by 10 ISCO 88 occupations by 5 education levels (2000, 2005, 2010 and 2020) – stock based measure of education demand.	**Objective:** Provides occupation and replacement demand forecasts to form a framework within which DEL's Skill Strategy can be viewed. Total net requirement figures produced are 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. Replacement demand analysis is taken a step further through estimating the requirement for people at different skill levels. **Time period:** Forecasts spanning from 2005-2015. **Key results presented:** ■ Employment by SIC 03 section industry sectors. ■ Employment by 24 SOC 2000 occupations and broad occupations. ■ Expansion and total replacement demand by 24 SOC 2000 occupations (2005-2015) (net replacement demand, subtracting joiners from other occupations, is available for the whole economy though was not presented in detail in the report). ■ Total requirement (expansion and replacement demand) by highest qualification level 0-5 (2005-2015) – flow based measure of qualification demand.

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Methodology	Essentially an extension of the forecasts in the joint FÁS/ESRI Manpower Forecasting publication series. The occupation forecasts are based on sectoral employment projections derived from the December 2005 ESRI Medium-Term Review (MTR). The MTR macro forecasts (which normally include high and low growth scenarios) are based on a range of assumptions related to the world and domestic economy. (Given the openness of the South's economy, developments in the global economy, particularly in the US, exerts a significant influence). Note that the MTR employment forecasts by industry are not projections for demand for labour – rather they are projections based on equilibrium between supply and demand. Demand for labour is based on output and differentials in labour costs relative to other countries. Supply is based on working-age population changes (including migration) and labour market participation. Overall employment is then determined by relative equilibrium wages which affects competitiveness of Ireland's industries and output growth (recently labour supply has become 'less elastic). The MTR macro forecasts used are the high growth scenario up to 2010 (assumes US economy continues to grow strongly) and the low growth scenario between 2010 and 2020 [which is based on a gradual US adjustment towards balanced fiscal and external accounts (closing of current account deficit), which has knock-on impacts to the South's economic growth]. Adjustment in the US would immediately be felt in the South's exporting high-tech manufacturing firms, followed by an even larger domestic demand impact on non-tradable sectors such as construction and services.	Forecasts were based on a new model of the NI economy (NI_PS) which provides annual employment projections for 24 separate occupation groups. Forecasts are in line with Oxford Economics' Autumn 2005 UK macro and regional outlook. NI_PS monitors and forecasts the Economic Development Forum targets for the NI economy and is nested within Oxford Economics' UK region al and macro models and consequently the hierarchy of Oxford Economics' suite of global models (global factors therefore factor down to NI, similar to the links to world economy assumptions in the ESRI macro model). Occupations measure the number of people in employment, as specifically requested by DEL. The method used to convert jobs into people is to adjust the numbers of part-time employees by the fraction required to equate employment estimates for 2001 with the number of people recorded in employment in the 2001 Census. Occupation forecasts within each sector in NI are initially based on growth in the UK's proportions within each sector. Total replacement demand includes leavers to migration, retirement, inactivity/unemployment and other occupations (this excludes leavers to death and leavers to other sectors but to the same occupation). Net replacement demand includes joiners from other occupations. The LFS is the key data source for replacement demand analysis. Due to the small NI sample size, UK LFS data is used and smoothed over 3 years. The UK figures are however scaled to reflect the difference between NI and UK job leaving rates for all occupations taken together.

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Research	**ESRI 'Current Trends in Occupational Employment and Forecasts for 2010 and 2020'**	**Regional Forecasts 'Occupation Forecasts and Replacement Demand Analysis for NI 2005-2015'**
Methodology (cont.../)	Occupational profiles within industry sectors are estimated from the Census of Population and QNHS and projected based on past trends and expectations as to the likely development of occupations over the forecast period. Expansion demand is net change in employment stock. Net replacement demand estimates are based on occupational attrition ratios from 'Estimating Labour Force Flows, Job Openings and Human Resource Requirements, 1990-2005'. The attrition ratios are all-inclusive in order to reflect exits from the labour force due to retirement, death, emigration and leavers to unemployment/inactivity, as well as inter-occupational movements. The attrition ratios, now somewhat out-dated, were estimated using LFS data 1990-1997. (These ratios are certainly worth updating given the decline in emigration and recent influx of migrants to Ireland, and difference between NI and Ireland replacement demand rates according to the two reports). Past educational profiles for the period 1999-2005 for occupational groups were analysed and projected to 2020, mainly on the basis of linear or logarithmic forecasting methods. Projected profiles were then applied to the forecast numbers employed in each occupational group.	Total requirement figures are applied to a matrix of occupations by highest qualification to produce an estimate of the likely skill requirement over the forecast period. The matrix is generated using the UK LFS. Rather than use the current qualification structure of all employed people (the approach used by ESRI for stock forecasts/expansion demand), the analysis uses data only for those people who were in not in employment one year ago/ new entrants.

Replacement Demand Explanation

Replacement demand is an attempt to estimate workforce occupation and skill needs (demand) against which current and planned education outputs and migrant numbers can be compared (supply). It estimates the number of people required in each occupation and skill category to replace net leavers. In other words it is a tool to model the dynamics and complexity of modern labour markets.

People will be coming into new jobs or into jobs vacated by people who leave jobs in the sector to move into such things as retirement, unemployment or inactivity. Another group of people leave their existing job or else change their occupation within the firm.

The net requirement for workforce skills at economy-wide level is the sum of:

■ The increase (or decrease) in employment stock (known as expansion demand); and

■ Plus the number of jobs vacated by those leaving employment to (1) retirement; (2) death; (3) unemployment/inactivity; (4) out migration, minus the number of people joining employment from unemployment/inactivity (net replacement demand).

The residual net requirement here is joiners from education (schools, FE colleges, universities etc.) and joiners from in migration. Breaking down the total net requirement into these two components and annualising provides important targets against which to measure education outputs and migrant numbers, particularly under points-based migration systems. In this sense replacement demand estimates are more useful for policy than change in stock figures from expansion demand.

At economy-wide level, movers to other occupations (usually referred to as occupational mobility) and sectors (sectoral mobility) are not always considered separately because inflows may balance the outflow e.g. if a worker up skills through lifelong learning or training and is promoted. Such balancing is however unlikely to occur for individual occupations (usually leaving rates are higher for lower occupational levels and joining rates higher for higher grade occupations as people move for promotion opportunities) and sectors. This has important implications for overall skill demand as it tends to increase need for lower qualifications and reduce need for higher qualifications compared to what expansion demand suggests. A good illustration of replacement demand is manufacturing which while declining in employment often still has a positive net need for workers due to retirees and people leaving to other sectors and occupations.

On a cautionary note however, it is important to know that precise estimation of these various flows is complex, and is often difficult to carry out.