

Annex A:

Technical Data Matching

As explained in the introduction chapter, there have to date been limited initiatives to combine economic data on a North-South basis. There are of course good reasons why North-South economic data have not been aggregated to all-island level. These include:

- From a pure demand perspective all-island policy collaboration and close integration of the two economies are only a relatively recent phenomenon and the creation of All-Island economic data would not have been required to the same extent by governments, researchers and businesses in both jurisdictions as it is now.
- From a technical perspective concerns about data interoperability have rightly held back statisticians from simply adding together data across both jurisdictions. In fact this cautious stance is preferable as the deficiencies of merged but incomparable North-South datasets would discredit the process of developing all-island data.
- **Reporting latest data and forecasts:** Considerable amounts of data related to this research had already been collected and kindly provided by government statisticians North and South. However this exercise was undertaken some 6-9 months before the time of writing this report and through the course of this research some of these data have been revised and data for more recent periods have been published. Given the understandable preference to present the most current up-to-date picture, the most recent data have been collected. The latest Oxford Economics NI, Ireland and international forecasts are provided in the report (July 2008).
- **International comparators:** In order to benchmark Northern Ireland, Ireland and the all-island economy, international comparisons are provided throughout the report. The choice of international comparison countries is based on a mix of European and non-European industrialised economies both large and small and one emerging economy, China.

Data sources and North-South similarities/differences

Table A.1 below sets out the main data sources in each jurisdiction for each indicator presented in the main report. Indicators are listed in the order they are presented. The focus here is only on official historical/actual data sources and not forecasts. Comparability of forecasting research is dealt with in Annex D.

Note also that this annex does not include sources for international comparator data or a discussion of data similarities/differences. The latter is not necessary as only directly comparable international data are presented in the main report.

Table A.1 includes a column on classification of data comparability. This classification is based on the ‘Atlas of the Island of Ireland’ categories of datasets that can be exactly or 99 per cent matched, aligned so they broadly match, part-matched and are worthy of including for context and datasets that have no equivalent. By and large the conclusions on data comparability are generally consistent with Forfás/DEL’s original classification. An additional column is included in Table A.1 to identify ‘notes of caution’ with using data – see details at the bottom of Table A.1 on these notes.

The key messages from Table A.1 are that:

- North-South data for half of the indicators already match exactly and can be summed together to produce at all-island figures;
- A number of key other indicators can be aligned to match and aggregate – GDP/GVA, occupations and highest education attainment/qualification levels of the working-age population and persons in employment;
- A number of other indicators part-match and provide an informative North-South comparison, if not quite matching sufficiently at this stage for aggregating at all-island level; and
- Some other indicators do not yet have equivalent datasets or methodologies to collect the data.

Table A.1: Key North-South data sources and classification of comparability

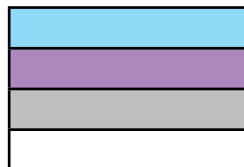
Indicator	Date source		Classification of comparability	Note of caution
	Ireland	Northern Ireland	Oxford Economics	
Economic context				
Total population	CSO	NISRA	Exactly (or 99%) matched	
Net migration	CSO	NISRA	Exactly (or 99%) matched	
Natural increase (births and deaths)	CSO	NISRA	Exactly (or 99%) matched	
Population by age band	CSO	NISRA	Exactly (or 99%) matched	
Population by gender	CSO	NISRA	Exactly (or 99%) matched	
GDP at current market prices	CSO	ONS Regional Accounts and Oxford Economics	Aligned to match	*
GDP/GVA at constant market prices	CSO	ONS Regional Accounts and Oxford Economics	Aligned to match	
VAT registrations	Irish Revenue Commissioners	BERR	Exactly (or 99%) matched	*

Indicator	Data source		Classification of comparability	Note of caution
	Ireland	Northern Ireland	Oxford Economics	
Entrepreneurial activity	GEM	GEM	Exactly (or 99%) matched	
Innovation	Forfás Community Innovation Survey	DETI Innovation Survey	Exactly (or 99%) matched	*
Skills/labour market context				
Total employment	CSO QNHS	DETI LFS	Exactly (or 99%) matched	
Working-age employment rate	CSO QNHS	DETI LFS	Exactly (or 99%) matched	
Unemployment rate	CSO QNHS	DETI LFS	Exactly (or 99%) matched	
Economically inactive rate	CSO QNHS	DETI LFS	Part-matched	*
Working-age by highest education attainment/qualification	CSO QNHS	DETI LFS	Aligned to match	
Earnings	CSO National Employment Survey	DETI Annual Survey of Hours and Earnings (ASHE)	Exactly (or 99%) matched	
Earnings (recent graduates)	HEA	HESA	Exactly (or 99%) matched	
Programme for International Student Assessment (PISA)	OECD	OECD	Exactly (or 99%) matched	
School leaver highest education attainment	ESRI School Leavers' Survey	DENI Annual School Leavers' Survey	Part-matched	*
School leaver highest education destination	ESRI School Leavers' Survey	DENI Annual School Leavers' Survey	Part-matched	*
Demand for skills				
Employment by industry	CSO QNHS	DETI LFS	Exactly (or 99%) matched	
Employment by occupation	CSO QNHS	DETI LFS	Aligned to match	
Employment by highest education attainment/qualification	CSO QNHS	DETI LFS	Aligned to match	
Vacancies (total)	FÁS, Irish Times and Irishjobs.ie	DEL	Part-matched	*
Vacancies (hard-to-fill)	FÁS/ESRI	DEL NI Skills Monitoring Survey	Part-matched	*

Indicator	Date source		Classification of comparability	Note of caution
	Ireland	Northern Ireland	Oxford Economics	
Skill shortages	Qualitative only from FÁS/EGFSN	DEL NI Skills Monitoring Survey	No equivalent dataset	
Skill gaps	None	DEL NI Skills Monitoring Survey	No equivalent dataset	
Utilisation of skills	None	NI Skills at Work	No equivalent dataset	
Generic skills/soft skills/cross cutting skills	None	NI Skills at Work	No equivalent dataset	

Classification colour coding:

- Exactly (or 99%) matched
- Aligned to match
- Part-matched
- No equivalent dataset



Explanation of note of caution:

- GDP at current market prices: GDP versus GNP.
- VAT registrations: Differences in VAT turnover thresholds.
- Innovation: Potential differences in response rates across the jurisdictions which may reduce representativeness of samples.
- Economically inactive rate: Exclude females 60-64 from Northern Ireland economically inactive – included for Ireland.
- School leaver highest education attainment: North-South education attainment levels are not wholly comparable at the level of detail provided.
- School leaver highest education destination: Although North-South destinations are broadly comparable, the difference in timing of the respective surveys mean that destination results are not directly comparable. The Ireland survey is normally undertaken 12-18 months after students leave school (though the most recent one was 20-24 months after.) The NI survey is normally taken 6 months after the student leave school.
- Vacancies (total and hard-to-fill): Based on different occupation classifications (SOC 1990 and SOC 2000).

Table A.2 summarises the main similarities and differences between North-South data for each indicator. Key differences worthy of note, which are the focus of the matching data section next, are:

- GDP data not available for NI, nor is a constant price GVA at basic price series;
- Different occupation classification – Ireland’s employment data by occupation from the QNHS are classified by SOC 1990 and NI occupation data, since 2001, are classified by the more recent SOC 2000 classification; and
- Different education attainment/qualification classification of working-age population and persons in employment.

Table A.2: Key North-South data similarities and differences

Indicator	Similarities	Differences
Economic context		
Total population	<p>Annual estimates refer to broadly the same point during the year – Ireland (April); NI (June).</p> <p>Linked to Census population figures.</p>	<p>CSO count all persons present on day of Census in Ireland; in NI NISRA count usually resident population.</p> <p>This is a minor difference – the magnitude of the difference has been investigated and is very small, and CSO are moving to the same definition as NISRA from 2007 onwards.</p>
Net migration	<p>Annual gross flows counted up to broadly same point in year – Ireland (April); NI (June).</p> <p>Methodologies use broadly same sources such as health registrations and passenger surveys.</p>	
Natural increase (births and deaths)	<p>Annual births and deaths counted up to broadly same point in year – Ireland (April); NI (June).</p> <p>Methodologies use broadly same sources (returns to local registrars).</p>	<p>CSO include births to non-resident mothers; NISRA exclude births to non-resident mothers. This is a minor difference – the number of births to non-resident mothers in Ireland is assumed to be small.</p>
Population by age band	See total population.	See total population.
Population by gender	See total population.	See total population.
GDP at current market prices	Nominal GVA data available in both jurisdictions.	<p>GDP data not available for NI, only GVA, as regional indirect tax minus subsidies data are not available at regional level.</p> <p>Ireland GDP measured in Euro, NI GVA measured in £ sterling.</p> <p>Ireland's GVA/GDP includes substantial expatriated profit element (approximately 15 per cent of GDP).</p> <p>Purchasing power parity (PPP) differences were not considered as part of this study.</p>
GDP/GVA at constant market prices		<p>NI constant price GVA data (used to calculate economic growth of NI economy) not available from ONS Regional Accounts, only current price data. Oxford Economics estimate a constant price GVA series for NI using UK industry deflators.</p>

Indicator	Similarities	Differences
VAT registrations	Data available across jurisdictions for VAT registered business stock, new registrations and de-registrations.	Ireland and NI have different VAT turnover thresholds which, based on the recommendation of the Irish Revenue Commissioners, would make comparisons misleading. NI VAT turnover threshold is £67k from April 2008 (previously £64k in April 2007 and £61k previously). Ireland threshold is €35k for businesses supplying services and €70k for companies supplying goods.
Entrepreneurial activity	Data for both jurisdictions from Global Enterprise Monitor (GEM) based on the same methodological approach, applying the same definitions and available for the same year.	
Innovation	Data collected using the same EU-wide approach and applying the same definitions (Community Innovation Survey).	
FDI	Not immediately available in both jurisdictions.	
Labour market and skills context		
Total employment	The two sources (QNHS and LFS) use the same ILO definition of employment, measure people in employment as opposed to jobs and the data presented are not seasonally adjusted. Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring).	NI LFS has a smaller sample size than the QNHS which makes its estimates more volatile.
Working-age employment rate	Assume a comparable working-age definition consistent with Eurostat (male and female 15-64).	Strictly speaking NI working-age definition is males 16-64 and females 16-59 although the UK working-age may change in future with an increase in the age of retirement.
Economically inactive rate	Number of economically inactive in both jurisdictions calculated as working-age population minus working-age employed and unemployed. Denominator for inactivity rate in both jurisdictions is working-age population. Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring).	Use the typical working-age definition for NI as in the author's view, including inactive females aged 60-64 for would over-estimate economic inactivity in NI.
Working-age by highest education attainment/qualification	Based on comparable sources (QNHS and LFS) and refers to highest education attainment/qualification level. Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring).	Different education attainment/qualification classification (though can be aligned to ISCED categories).

Indicator	Similarities	Differences
Earnings	Data available in both jurisdictions for median gross weekly wages of full-time and part-time jobs for the same year and across the same range of sectors.	Ireland wages measured in Euro, NI wages measured in £ sterling (can be easily converted to a common currency). Purchasing power parity (PPP) differences were not considered as part of this study.
Graduate earnings	Data available for the same year and for comparable levels of tertiary attainment.	HEA Graduate Survey undertaken 9 months after graduation; HESA First Destination Leaver Survey undertaken 6 months after graduation (this is not considered to be a significant difference as a high proportion of pay rises are unlikely between months 6 and 9 of the first year of graduate employment).
Programme for International Student Assessment (PISA)	Data collected using the same international approach, applying the same definitions and producing the same set of results. Results available for the same year.	
School leaver highest education attainment and destination	Destination categories match closely (further study, employment etc.). Results available for the same year.	Different education attainment levels (insufficient attainment detail is published to match). Although North-South destinations are broadly comparable, the difference in timing of the respective surveys mean that destination results are not directly comparable. Ireland's survey is normally undertaken 12-18 months after students leave school (though the most recent one was 20-24 months after). The NI survey is undertaken 6 months after students leave.
Demand for skills		
Employment by industry	The two sources (QNHS and LFS) use the same ILO definition of employment. Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring). Industrial classification in both jurisdictions is different (Ireland – NACE and NI – SIC) but an EC regulation was made in 1990 to ensure that SIC 2003 follows NACE exactly up to 4-digit level (where necessary and helpful, SIC adds an extra 5th digit of detail but 5-digit employment data are not of interest to this study).	NI LFS has a smaller sample size which makes estimates more volatile.

Indicator	Similarities	Differences
Employment by occupation	<p>The two sources (QNHS and LFS) use the same ILO definition of employment.</p> <p>Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring).</p>	<p>Occupation classification in two jurisdictions is different (Ireland – SOC 1990 and NI – SOC 2000) According to the ONS, though the SOC 2000 classification still has a similar number of major groups, there have been considerable changes which means that it is not possible to make a meaningful comparison. (The main features of the revision included: a tighter definition of managerial occupations; overhaul of computing and related occupations; introduction of specific occupations associated with the environment and conservation; changes linked to the upgrading of skills but de-skilling of manufacturing processes; and recognition of the development of customer service occupations and emergence of remote service provision through the operation of call centres) The main priority of the revised classification was to bring it up-to-date to reflect changes in society, industry and occupations. Backcasting is difficult because it is not meaningful to apply a classification with new occupations to data for a time period which did not have these new occupations.</p> <p>SOC 1990 and 2000 occupations can however be aligned (provided sufficient detail is available) using the ONS and CSO SOC to ISCO 88 mapping frameworks.</p>
Employment by highest education attainment/qualification	<p>Based on comparable sources (QNHS and LFS) and refers to highest education attainment/qualification level.</p> <p>Annual estimates refer to broadly same point in year – Ireland (Q2); NI (Spring).</p>	<p>Different education attainment/qualification classification (though can be aligned to ISCED categories).</p>
Vacancies (total)	<p>Data available for same year and FÁS & DEL sources and methodologies are broadly comparable.</p>	<p>Different occupational classification for comparing vacancies by occupation (SOC 1990 and SOC 2000).</p>
Vacancies (hard-to-fill)	<p>Data available for same year and FÁS/ ESRI & DEL NI Skills Monitoring survey sources and methodologies are broadly comparable.</p>	<p>Different occupational classification for comparing vacancies by occupation (SOC 1990 and SOC 2000).</p>

Indicator	Similarities	Differences
Skill shortages		Not immediately available for both jurisdictions.
Labour shortages		Not immediately available for both jurisdictions.
Skill gaps		Not immediately available for both jurisdictions.
Utilisation of skills		Not immediately available for both jurisdictions.
Generic skills/soft skills/cross cutting skills		Not immediately available for both jurisdictions.

Methodology to Match North-South data

As outlined above, the three main areas where it has been necessary to align data to ensure matching are as follows. (2) and (3) are particularly critical to this work.

1. NI GDP and constant price GVA series;
2. Occupations; and
3. Highest education attainment/qualification level.

(1) NI GDP and constant price GVA series

Since the European System of Accounts (ESA 95) was introduced, GDP at market prices has become the primary measure of the value of economic output and for international comparisons, and is also a key indicator for identifying regions eligible for EU structural funding support.

GDP at market prices is available for Ireland but not NI. This is because a breakdown of UK indirect taxes and subsidies is not available regionally, and understandably so. (GDP at market prices is equal to GVA at basic prices plus indirect taxes minus subsidies).

While GVA at basic prices/factor cost is available for both jurisdictions, it is considered preferable to estimate a more internationally comparable All-Island figure (GDP at market prices). It is possible to estimate GDP at market prices for NI by following Eurostat's approach to pro-rata, using population shares, the value of national indirect taxes minus subsidies across the 12 UK regions¹². This is the approach adopted in this study although this may over-estimate NI's GDP per head as it will likely allocate too much of southern England's indirect taxes and not deduct enough of NI's subsidies. Common currency figures are easily calculated using ECB average year exchange rates. Producing PPP GDP figures, which could be done using UK and Ireland PPP ratios from Eurostat, is beyond the scope of this study.

One additional issue worth flagging up in relation to GDP is the large difference between Ireland's GDP and GNP due to the large net negative outflows of net factor income of approximately €25bn in 2006 or 15 per cent of GDP. These flows largely represent repatriation of profits overseas which strictly

¹² Eurostat Regional Yearbook 2007, pg 31 (Methodological notes).

speaking, are not part of the wealth of Irish residents. Chapter 2 shows that GDP per head in Ireland is over 50 per cent higher than the comparative NI figure in common currency terms. If Ireland GNP per head is compared to NI GDP per head, the difference falls to 35 per cent. GDP is used at market price figures for NI and Ireland as it is not possible to estimate GNP for NI¹³, which while not strictly measuring national wealth, does measure national output.

Oxford Economics' constant price GVA series for NI is used to measure rates of economic growth. This is calculated using ONS Regional Accounts current price GVA data by sector, deflated by the respective UK industry deflators.

(2) Occupations

As stated in Table A.2, occupation classifications in the two jurisdictions differ. Ireland's QNHS is still based on SOC 1990 while NI's LFS made the transition to SOC 2000 in 2001.

Although the SOC 2000 classification still has a similar number of major groups, there have been considerable changes which make a meaningful direct comparison between SOC 1990 and SOC 2000 not possible. Table A.2 should be referred back to for the detailed differences. However it is possible to align both SOC 1990 and SOC 2000 occupations to a common classification – ISCO 88 (International Standard Classification of Occupations). ISCO 88 is also the occupation classification used in the CEDEFOP work on 'Future skill needs in Europe', which means in future it would technically be possible to compare All-Island occupation forecasts to this work. The individual approaches taken to align Ireland and NI occupation data are explained below.

- **Ireland** – starting with 3-digit SOC 1990 occupation data from the QNHS, convert to 3-digit ISCO 88 occupations using CSO's SOC 1990-ISCO 88 harmonisation framework kindly provided by Kieran Walsh (and further aggregate ISCO 88 occupations to 2-digit and 1-digit level).
- **Northern Ireland** – ONS' Occupational Information Unit kindly provided a mapping framework to align 4-digit SOC 2000 occupations into 4-digit ISCO 88 occupations. The only remaining problem is that NI LFS occupation data, due to its limited sample size and disclosure thresholds, is in its most detailed form only available for a limited number of 3-digit occupations averaged over a three-year period. 2001 Census occupation data are however available by 4-digit level and was kindly obtained by DEL. To circumvent the lack of detail in the LFS, the share of 4-digit SOC 2000 occupations in each 2-digit SOC 2000 occupation, for which LFS data are available annually, was estimated from the Census and these shares were held constant from 2001 onwards to estimate an annual series of 4-digit SOC 2000 occupations. The estimates were cross-checked with the limited 3-digit LFS data to identify if any adjustments to the 'constant share' approach were necessary. It was positive to find few discrepancies so no adjustments were made. As for Ireland's occupations, NI ISCO 88 4-digit occupations were aggregated to 3-digit, 2-digit and 1-digit level. This means that it was possible to develop a highly detailed 3-digit All-Island occupation dataset.

¹³ UK net factor income is a much smaller share of GDP, ranging from 0.2 per cent to 0.8 per cent in recent years so it is unlikely that GDP would differ significantly from GNP in NI if GNP could be estimated.

3-digit ISCO 88 occupation data for the All-Island, Ireland and NI is presented below.

Table A.3: All-Island 3-digit ISCO 88 occupations (2001-2007, 000's)

	Code	2001	2002	2003	2004	2005	2006	2007
Armed forces	100	10	11	10	10	10	9	12
Legislators and senior government officials	111	3	5	5	8	5	5	4
Senior officials of special-interest organisations	114	2	2	3	2	1	2	2
Directors and chief executives	121	3	5	2	13	8	12	11
Production and operations managers	122	281	286	288	280	274	271	273
Other specialist managers	123	77	79	78	74	82	82	88
Managers of small enterprises	131	8	6	7	6	3	7	6
Physicists, chemists and related professionals	211	5	5	5	5	6	6	6
Mathematicians, statisticians and related professionals	212	1	1	1	2	2	1	2
Computing professionals	213	30	33	31	34	31	30	31
Architects, engineers and related professionals	214	45	47	49	54	56	58	65
Life science professionals	221	4	4	4	6	6	5	6
Health professionals (except nursing)	222	21	19	23	26	32	24	26
Nursing and midwifery professionals	223	44	49	51	52	53	55	55
College, university and higher education teaching professionals	231	16	19	18	17	20	20	20
Secondary education teaching professionals	232	38	44	42	39	45	46	43
Primary and pre-primary education teaching professionals	233	36	41	39	40	40	44	42
Special education teaching professionals	234	1	1	2	1	1	1	1
Other teaching professionals	235	17	20	19	22	23	23	22
Business professionals	241	33	40	40	49	46	53	51
Legal professionals	242	11	11	12	13	12	15	16
Archivists, librarians and related information professionals	243	4	3	3	5	4	2	4

	Code	2001	2002	2003	2004	2005	2006	2007
Social science and related professionals	244	6	10	8	12	12	14	15
Writers and creative or performing artists	245	14	13	13	14	16	16	16
Religious professionals	246	6	7	7	8	7	7	8
Public service administrative professionals	247	13	13	13	13	14	13	12
Physical and engineering science technicians	311	30	31	28	32	30	30	32
Computer associate professionals	312	2	2	2	2	2	2	3
Optical and electronic equipment operators	313	4	4	5	4	7	5	5
Ship and aircraft controllers and technicians	314	0	0	3	3	1	2	2
Safety and quality inspectors	315	2	3	4	4	4	4	4
Life science technicians and related associate professionals	321	0	0	0	0	0	0	0
Health associate professionals (except nursing)	322	13	15	13	14	14	16	19
Nursing and midwifery associate professionals	323	21	26	25	22	21	24	26
Primary education teaching associate professionals	331	0	0	0	0	0	0	0
Pre-primary education teaching associate professionals	332	3	4	4	5	7	7	9
Special education teaching associate professionals	333	0	0	0	0	0	0	0
Other teaching associate professionals	334	3	3	4	4	4	5	3
Finance and sales associate professionals	341	64	63	70	74	75	80	75
Business services agents and trade brokers	342	0	0	0	1	2	1	2
Administrative associate professionals	343	4	3	7	5	5	4	5
Customs, tax and related government associate professionals	344	2	1	1	1	1	1	1
Police inspectors and detectives	345	0	0	0	0	0	0	0

	Code	2001	2002	2003	2004	2005	2006	2007
Social work associate professionals	346	12	15	16	11	12	14	15
Artistic, entertainment and sports associate professionals	347	17	21	19	19	27	26	25
Religious associate professionals	348	0	0	0	0	0	0	0
Secretaries and keyboard-operating clerks	411	61	60	58	58	65	67	55
Numerical clerks	412	37	40	40	42	44	42	46
Material-recording and transport clerks	413	22	23	20	23	22	24	26
Library, mail and related clerks	414	24	23	24	20	21	24	22
Other office clerks	419	111	126	130	124	123	133	146
Cashiers, tellers and related clerks	421	40	39	42	44	45	44	46
Client information clerks	422	27	28	27	28	28	30	31
Travel attendants and related workers	511	7	4	5	4	3	5	5
Housekeeping and restaurant services workers	512	92	93	102	91	96	105	114
Personal care and related workers	513	85	83	93	87	102	112	118
Other personal services workers	514	21	18	23	24	24	27	29
Protective services workers	516	26	29	29	31	31	32	37
Fashion and other models	521	0	0	0	0	0	0	0
Shop, stall and market salespersons and demonstrators	522	141	140	152	152	168	171	182
Market gardeners and crop growers	611	14	14	14	14	17	16	15
Animal producers and related workers	612	0	0	0	0	0	0	0
Crop and animal producers	613	14	21	17	20	31	16	21
Forestry and related workers	614	2	1	2	0	1	2	2
Fishery workers, hunters and trappers	615	3	4	3	3	3	2	3
Miners, shotfirers, stone cutters and carvers	711	0	0	1	0	1	2	2
Building frame and related trades workers	712	91	84	101	104	119	126	132
Building finishers and related trades workers	713	70	67	75	74	86	99	93
Painters, building structure cleaners and related trades workers	714	17	15	17	14	18	18	20

	Code	2001	2002	2003	2004	2005	2006	2007
Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	721	22	22	23	20	22	23	23
Blacksmiths, tool-makers and related trades workers	722	3	3	3	3	3	3	2
Machinery mechanics and fitters	723	55	53	56	50	53	56	56
Electrical and electronic equipment mechanics and fitters	724	20	20	21	19	18	20	21
Precision workers in metal and related materials	731	1	2	1	0	2	3	2
Potters, glass-makers and related trades workers	732	2	3	3	3	2	1	0
Handicraft workers in wood, textile, leather and related materials	733	3	3	4	4	3	3	3
Craft printing and related trades workers	734	9	8	6	7	7	8	9
Food processing and related trades workers	741	14	13	13	12	12	14	11
Wood treaters, cabinet-makers and related trades workers	742	7	7	6	5	4	6	5
Textile, garment and related trades workers	743	6	5	5	3	3	3	3
Pelt, leather and shoemaking trades workers	744	0	0	0	0	0	0	0
Mining and mineral-processing-plant operators	811	0	0	0	0	0	0	1
Metal-processing plant operators	812	3	2	1	2	2	2	1
Glass, ceramics and related plant operators	813	2	2	1	1	1	1	1
Wood-processing- and papermaking-plant operators	814	3	3	2	1	1	1	1
Chemical-processing-plant operators	815	13	14	14	11	10	10	10
Power-production and related plant operators	816	8	7	8	6	6	8	6
Industrial robot operators	817	0	0	0	0	0	0	0
Metal- and mineral-products machine operators	821	11	14	15	13	13	14	13

	Code	2001	2002	2003	2004	2005	2006	2007
Chemical-products machine operators	822	1	1	0	0	0	1	2
Rubber- and plastic-products machine operators	823	8	6	4	3	5	4	4
Wood-products machine operators	824	3	2	2	2	1	1	1
Printing-, binding- and paper-products machine operators	825	1	0	1	1	0	0	0
Textile-, fur- and leather-products machine operators	826	16	14	11	9	8	8	8
Food and related products machine operators	827	21	22	22	16	21	21	22
Assemblers	828	43	33	27	22	22	20	20
Other machine operators not elsewhere classified	829	6	6	6	5	6	6	7
Locomotive engine drivers and related workers	831	0	0	0	0	0	0	0
Motor vehicle drivers	832	85	90	85	90	95	97	101
Agricultural and other mobile plant operators	833	23	22	22	23	24	24	25
Ships' deck crews and related workers	834	0	0	0	0	1	0	0
Street vendors and related workers	911	8	7	7	5	6	6	5
Shoe cleaning and other street services elementary occupations	912	0	0	0	0	0	0	0
Domestic and related helpers, cleaners and launderers	913	69	68	74	65	75	77	86
Building caretakers, window and related cleaners	914	12	10	10	10	9	9	10
Messengers, porters, doorkeepers and related workers	915	23	23	26	21	24	24	28
Garbage collectors and related labourers	916	1	1	2	1	2	2	3
Agricultural, fishery and related labourers	921	18	17	16	14	13	14	14
Mining and construction labourers	931	42	41	39	34	40	47	49
Manufacturing labourers	932	31	35	34	58	51	55	52
Transport labourers and freight handlers	933	14	14	11	13	10	12	9

Source: QNHS, LFS and Oxford Economics.

Note: Occupations may not add up to employment totals due to missing or unknown occupations. Figures are rounded to nearest 1,000. Therefore occupations with less than 500 will be recorded as zero.

Table A.4: Ireland 3-digit ISCO 88 occupations (2001-2007, 000's)

	Code	2001	2002	2003	2004	2005	2006	2007
Armed forces	100	7	7	7	7	7	6	6
Legislators and senior government officials	111	3	4	5	8	4	5	4
Senior officials of special-interest organisations	114	1	1	2	1	0	1	1
Directors and chief executives	121	3	5	2	13	8	11	11
Production and operations managers	122	229	232	233	228	226	218	220
Other specialist managers	123	61	60	60	57	64	65	70
Managers of small enterprises	131	0	0	0	0	0	0	0
Physicists, chemists and related professionals	211	3	4	4	4	4	5	5
Mathematicians, statisticians and related professionals	212	1	1	1	2	2	1	2
Computing professionals	213	24	27	26	26	24	25	24
Architects, engineers and related professionals	214	34	36	39	38	44	46	50
Life science professionals	221	3	3	3	4	4	4	5
Health professionals (except nursing)	222	13	14	16	17	17	16	17
Nursing and midwifery professionals	223	44	49	51	52	53	55	55
College, university and higher education teaching professionals	231	9	10	11	11	12	12	14
Secondary education teaching professionals	232	28	29	30	28	31	33	32
Primary and pre-primary education teaching professionals	233	26	27	29	30	27	33	32
Special education teaching professionals	234	0	0	1	0	0	0	0
Other teaching professionals	235	14	17	17	19	19	20	19
Business professionals	241	27	33	33	40	39	44	42
Legal professionals	242	8	8	8	8	9	10	11
Archivists, librarians and related information professionals	243	3	2	2	4	3	1	3
Social science and related professionals	244	3	5	5	6	7	9	9
Writers and creative or performing artists	245	12	11	11	12	13	13	14

	Code	2001	2002	2003	2004	2005	2006	2007
Religious professionals	246	4	4	4	4	4	3	3
Public service administrative professionals	247	12	12	13	12	13	12	11
Physical and engineering science technicians	311	23	22	21	23	23	23	22
Computer associate professionals	312	0	0	0	0	0	0	0
Optical and electronic equipment operators	313	2	2	4	3	5	3	3
Ship and aircraft controllers and technicians	314	0	0	3	3	0	2	1
Safety and quality inspectors	315	1	2	2	2	3	3	3
Life science technicians and related associate professionals	321	0	0	0	0	0	0	0
Health associate professionals (except nursing)	322	8	9	7	10	10	11	13
Nursing and midwifery associate professionals	323	1	1	2	2	1	2	0
Primary education teaching associate professionals	331	0	0	0	0	0	0	0
Pre-primary education teaching associate professionals	332	3	4	4	5	7	7	9
Special education teaching associate professionals	333	0	0	0	0	0	0	0
Other teaching associate professionals	334	0	0	0	0	0	1	0
Finance and sales associate professionals	341	49	48	48	55	55	58	57
Business services agents and trade brokers	342	0	0	0	1	1	1	1
Administrative associate professionals	343	3	2	5	3	4	2	4
Customs, tax and related government associate professionals	344	1	0	0	0	0	0	0
Police inspectors and detectives	345	0	0	0	0	0	0	0
Social work associate professionals	346	7	8	10	6	7	9	9
Artistic, entertainment and sports associate professionals	347	12	15	12	14	16	17	19
Religious associate professionals	348	0	0	0	0	0	0	0
Secretaries and keyboard-operating clerks	411	42	43	42	41	47	47	40

	Code	2001	2002	2003	2004	2005	2006	2007
Numerical clerks	412	27	28	27	30	32	31	33
Material-recording and transport clerks	413	19	20	17	20	19	22	23
Library, mail and related clerks	414	19	18	18	15	16	19	17
Other office clerks	419	68	80	80	76	78	88	96
Cashiers, tellers and related clerks	421	32	31	33	36	37	36	38
Client information clerks	422	17	16	14	16	19	17	17
Travel attendants and related workers	511	5	3	3	3	2	3	3
Housekeeping and restaurant services workers	512	72	75	81	76	81	86	96
Personal care and related workers	513	39	41	48	47	56	67	72
Other personal services workers	514	14	13	15	16	18	19	20
Protective services workers	516	24	27	27	29	29	31	33
Fashion and other models	521	0	0	0	0	0	0	0
Shop, stall and market salespersons and demonstrators	522	95	97	103	101	113	123	128
Market gardeners and crop growers	611	11	10	11	10	10	12	11
Animal producers and related workers	612	0	0	0	0	0	0	0
Crop and animal producers	613	0	0	0	0	0	0	0
Forestry and related workers	614	2	1	2	0	1	2	2
Fishery workers, hunters and trappers	615	2	3	2	2	1	2	2
Miners, shotfirers, stone cutters and carvers	711	0	0	1	0	1	2	2
Building frame and related trades workers	712	67	66	77	80	92	96	103
Building finishers and related trades workers	713	50	49	55	56	66	77	71
Painters, building structure cleaners and related trades workers	714	12	11	12	9	13	12	14
Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	721	15	14	15	14	16	15	16
Blacksmiths, tool-makers and related trades workers	722	1	2	1	2	2	2	1
Machinery mechanics and fitters	723	38	35	37	37	40	39	40
Electrical and electronic equipment mechanics and fitters	724	14	14	14	14	13	14	15

	Code	2001	2002	2003	2004	2005	2006	2007
Precision workers in metal and related materials	731	0	1	0	0	1	2	1
Potters, glass-makers and related trades workers	732	2	2	2	2	2	0	0
Handicraft workers in wood, textile, leather and related materials	733	2	2	3	3	2	2	2
Craft printing and related trades workers	734	7	7	5	6	6	6	7
Food processing and related trades workers	741	10	9	9	10	9	10	8
Wood treaters, cabinet-makers and related trades workers	742	5	5	4	4	3	5	4
Textile, garment and related trades workers	743	5	3	4	2	2	2	3
Pelt, leather and shoemaking trades workers	744	0	0	0	0	0	0	0
Mining and mineral-processing-plant operators	811	0	0	0	0	0	0	0
Metal-processing plant operators	812	3	2	1	2	2	2	1
Glass, ceramics and related plant operators	813	1	1	0	0	0	0	0
Wood-processing- and papermaking-plant operators	814	2	2	1	0	0	0	0
Chemical-processing-plant operators	815	11	12	11	9	8	8	7
Power-production and related plant operators	816	7	7	7	5	5	8	5
Industrial robot operators	817	0	0	0	0	0	0	0
Metal- and mineral-products machine operators	821	5	8	9	8	8	8	6
Chemical-products machine operators	822	1	1	0	0	0	1	2
Rubber- and plastic-products machine operators	823	6	4	3	2	3	2	2
Wood-products machine operators	824	3	2	2	2	1	1	1
Printing-, binding- and paper-products machine operators	825	1	0	1	1	0	0	0
Textile-, fur- and leather-products machine operators	826	10	9	7	5	4	3	2
Food and related products machine operators	827	16	17	17	12	16	15	16

	Code	2001	2002	2003	2004	2005	2006	2007
Assemblers	828	42	32	26	21	21	19	19
Other machine operators not elsewhere classified	829	0	0	0	0	0	0	0
Locomotive engine drivers and related workers	831	0	0	0	0	0	0	0
Motor vehicle drivers	832	60	64	63	68	71	73	74
Agricultural and other mobile plant operators	833	17	16	17	17	18	19	18
Ships' deck crews and related workers	834	0	0	0	0	1	0	0
Street vendors and related workers	911	6	5	5	3	3	4	3
Shoe cleaning and other street services elementary occupations	912	0	0	0	0	0	0	0
Domestic and related helpers, cleaners and launderers	913	38	40	41	40	47	51	54
Building caretakers, window and related cleaners	914	8	8	7	6	6	6	7
Messengers, porters, doorkeepers and related workers	915	8	9	9	8	9	10	12
Garbage collectors and related labourers	916	0	0	1	0	1	1	2
Agricultural, fishery and related labourers	921	14	14	13	11	10	10	12
Mining and construction labourers	931	31	31	29	24	31	37	40
Manufacturing labourers	932	23	28	27	50	45	47	47
Transport labourers and freight handlers	933	4	5	3	4	4	3	3

Source: QNHS and Oxford Economics.

Note: See note for Table A.3.

Table A.5: Northern Ireland 3-digit ISCO 88 occupations (2001-2007, 000's)

	Code	2001	2002	2003	2004	2005	2006	2007
Armed forces	100	3	4	3	3	3	3	6
Legislators and senior government officials	111	0	0	0	0	0	0	0
Senior officials of special-interest organisations	114	1	1	1	1	1	1	1
Directors and chief executives	121	0	0	0	0	0	0	0
Production and operations managers	122	52	54	55	52	48	53	53
Other specialist managers	123	16	19	18	18	19	17	18
Managers of small enterprises	131	8	6	7	6	3	7	6
Physicists, chemists and related professionals	211	1	1	1	1	1	1	1
Mathematicians, statisticians and related professionals	212	0	0	0	0	0	0	0
Computing professionals	213	6	6	5	8	7	5	7
Architects, engineers and related professionals	214	11	11	10	16	12	12	15
Life science professionals	221	2	1	1	2	2	1	2
Health professionals (except nursing)	222	8	6	7	9	14	8	8
Nursing and midwifery professionals	223	0	0	0	0	0	0	0
College, university and higher education teaching professionals	231	6	9	7	7	8	8	7
Secondary education teaching professionals	232	11	14	12	11	14	13	11
Primary and pre-primary education teaching professionals	233	10	13	11	10	13	12	10
Special education teaching professionals	234	1	1	1	1	1	1	1
Other teaching professionals	235	3	4	3	3	3	3	3
Business professionals	241	6	7	7	9	7	9	9
Legal professionals	242	3	4	3	5	4	5	5
Archivists, librarians and related information professionals	243	1	1	1	1	1	1	1
Social science and related professionals	244	4	4	4	6	5	5	6
Writers and creative or performing artists	245	2	2	2	2	4	3	2

	Code	2001	2002	2003	2004	2005	2006	2007
Religious professionals	246	2	3	2	4	3	4	4
Public service administrative professionals	247	1	1	1	1	1	1	1
Physical and engineering science technicians	311	7	8	7	8	7	7	10
Computer associate professionals	312	2	2	2	2	2	2	3
Optical and electronic equipment operators	313	1	2	2	1	2	2	2
Ship and aircraft controllers and technicians	314	0	0	1	1	1	1	1
Safety and quality inspectors	315	1	1	2	1	1	2	1
Life science technicians and related associate professionals	321	0	0	0	0	0	0	0
Health associate professionals (except nursing)	322	5	6	5	5	5	5	6
Nursing and midwifery associate professionals	323	20	25	23	20	20	22	26
Primary education teaching associate professionals	331	0	0	0	0	0	0	0
Pre-primary education teaching associate professionals	332	0	0	0	0	0	0	0
Special education teaching associate professionals	333	0	0	0	0	0	0	0
Other teaching associate professionals	334	3	3	4	4	4	4	3
Finance and sales associate professionals	341	15	15	22	20	20	22	18
Business services agents and trade brokers	342	0	0	0	0	0	0	0
Administrative associate professionals	343	1	1	2	1	1	2	1
Customs, tax and related government associate professionals	344	1	1	1	1	1	1	1
Police inspectors and detectives	345	0	0	0	0	0	0	0
Social work associate professionals	346	5	6	6	5	5	6	7
Artistic, entertainment and sports associate professionals	347	5	7	7	5	11	8	6
Religious associate professionals	348	0	0	0	0	0	0	0
Secretaries and keyboard-operating clerks	411	19	17	15	17	18	20	15

	Code	2001	2002	2003	2004	2005	2006	2007
Numerical clerks	412	11	12	13	12	11	11	12
Material-recording and transport clerks	413	3	3	3	3	3	3	3
Library, mail and related clerks	414	4	5	5	5	5	5	5
Other office clerks	419	42	46	50	48	45	46	50
Cashiers, tellers and related clerks	421	7	8	8	8	8	8	8
Client information clerks	422	10	12	13	12	10	12	14
Travel attendants and related workers	511	2	1	2	2	1	2	2
Housekeeping and restaurant services workers	512	20	18	21	15	15	19	18
Personal care and related workers	513	45	42	44	40	46	45	46
Other personal services workers	514	8	5	8	8	6	7	8
Protective services workers	516	2	2	2	1	1	1	4
Fashion and other models	521	0	0	0	0	0	0	0
Shop, stall and market salespersons and demonstrators	522	46	42	49	51	55	49	55
Market gardeners and crop growers	611	3	4	3	4	6	3	4
Animal producers and related workers	612	0	0	0	0	0	0	0
Crop and animal producers	613	14	21	17	20	31	16	21
Forestry and related workers	614	0	0	0	0	0	0	0
Fishery workers, hunters and trappers	615	1	1	1	1	2	1	1
Miners, shotfirers, stone cutters and carvers	711	0	0	0	0	0	0	0
Building frame and related trades workers	712	24	18	23	24	27	30	28
Building finishers and related trades workers	713	20	18	20	18	19	22	21
Painters, building structure cleaners and related trades workers	714	5	4	5	5	5	6	6
Metal moulders, welders, sheet-metal workers, structural-metal preparers, and related trades workers	721	7	8	8	6	6	7	7
Blacksmiths, tool-makers and related trades workers	722	1	1	2	1	1	1	1
Machinery mechanics and fitters	723	17	18	18	13	13	17	16
Electrical and electronic equipment mechanics and fitters	724	6	7	7	5	5	6	6

	Code	2001	2002	2003	2004	2005	2006	2007
Precision workers in metal and related materials	731	1	1	1	0	0	1	0
Potters, glass-makers and related trades workers	732	1	1	1	0	0	1	0
Handicraft workers in wood, textile, leather and related materials	733	1	1	1	1	1	1	1
Craft printing and related trades workers	734	2	1	2	1	1	2	1
Food processing and related trades workers	741	4	4	4	3	3	4	3
Wood treaters, cabinet-makers and related trades workers	742	2	2	2	1	1	2	1
Textile, garment and related trades workers	743	1	1	1	1	1	1	1
Pelt, leather and shoemaking trades workers	744	0	0	0	0	0	0	0
Mining and mineral-processing-plant operators	811	0	0	0	0	0	0	1
Metal-processing plant operators	812	0	0	0	0	0	0	0
Glass, ceramics and related plant operators	813	1	1	1	1	1	1	1
Wood-processing- and papermaking-plant operators	814	1	1	1	1	1	1	1
Chemical-processing-plant operators	815	2	2	2	2	2	2	3
Power-production and related plant operators	816	1	1	1	1	1	1	1
Industrial robot operators	817	0	0	0	0	0	0	0
Metal- and mineral-products machine operators	821	6	6	5	5	6	6	7
Chemical-products machine operators	822	0	0	0	0	0	0	0
Rubber- and plastic-products machine operators	823	2	2	1	1	1	2	2
Wood-products machine operators	824	0	0	0	0	0	0	0
Printing-, binding- and paper-products machine operators	825	0	0	0	0	0	0	0
Textile-, fur- and leather-products machine operators	826	5	5	5	4	5	5	6
Food and related products machine operators	827	5	5	5	4	5	5	6

	Code	2001	2002	2003	2004	2005	2006	2007
Assemblers	828	1	1	1	1	1	1	1
Other machine operators not elsewhere classified	829	6	6	6	5	6	6	7
Locomotive engine drivers and related workers	831	0	0	0	0	0	0	0
Motor vehicle drivers	832	25	26	23	23	24	23	27
Agricultural and other mobile plant operators	833	6	6	5	5	6	6	7
Ships' deck crews and related workers	834	0	0	0	0	0	0	0
Street vendors and related workers	911	2	2	2	2	2	2	2
Shoe cleaning and other street services elementary occupations	912	0	0	0	0	0	0	0
Domestic and related helpers, cleaners and launderers	913	31	27	33	25	28	26	32
Building caretakers, window and related cleaners	914	4	3	4	4	3	3	4
Messengers, porters, doorkeepers and related workers	915	16	14	17	13	14	13	16
Garbage collectors and related labourers	916	1	1	1	1	1	1	1
Agricultural, fishery and related labourers	921	4	3	3	4	3	3	2
Mining and construction labourers	931	11	10	10	10	9	10	9
Manufacturing labourers	932	8	7	7	8	6	7	5
Transport labourers and freight handlers	933	9	8	8	9	7	9	6

Source: LFS and Oxford Economics.

Note: See note for Table A.3.

(3) Highest education attainment/qualification level

Highest education attainment/qualification categories of people in employment and of the working-age population are sourced from the QNHS and LFS. It is critical to note that at this point in time, these sources ultimately determine the level of detail possible in relation to education attainment and qualifications. While DETI have been able to provide some further data on the more detailed 50 qualification categories in the LFS, a further breakdown beyond the 5 categories set out below was not obtained from CSO. However according to the Department of Education and Science, it is possible to request a special run of the QNHS split by ISCED categories.

QNHS education/qualification categories (Ireland)	LFS education/qualification categories (NI)
<ul style="list-style-type: none"> ■ Primary 	<ul style="list-style-type: none"> ■ No qualifications
<ul style="list-style-type: none"> ■ Lower secondary 	<ul style="list-style-type: none"> ■ Other qualifications
<ul style="list-style-type: none"> ■ Higher secondary, post leaving certificate and other non-third level 	<ul style="list-style-type: none"> ■ GCSE grades A-C or equivalent
<ul style="list-style-type: none"> ■ Third level diplomas and certificates 	<ul style="list-style-type: none"> ■ GCE A-Level or equivalent
<ul style="list-style-type: none"> ■ Third level degrees and higher 	<ul style="list-style-type: none"> ■ Other higher below degree
<ul style="list-style-type: none"> ■ Other/not stated 	<ul style="list-style-type: none"> ■ Degree or equivalent

It is therefore important for readers to understand that this exercise is altogether different to ongoing work to develop national and internationally comparative qualification frameworks which are much more detailed e.g. the Ireland version has 10 levels, but for which data are not yet collected or possible to estimate from the QNHS or LFS.

However this does not mean that it is not feasible to align North-South education/attainment categories¹⁴. The International Standard Classification of Education 1977 (ISCED) was designed by UNESCO to serve as ‘an instrument suitable for assembling, compiling and presenting statistics of education both within international countries and internationally’. A definitional note on ISCED is provided at the outset of the report.

ISCED provides a methodology that translates national education programmes into an internationally comparable set of categories for levels of education and field of education, which the OECD uses to present results in its annual ‘Education at a Glance’ reports. The OECD results include Ireland, which allows a cross-check of the approach used here with published figures. Relevant LFS qualification data for the UK were also obtained to estimate ISCED education shares and compare to published OECD figures for the UK. This allowed a cross-check of the approach for the UK which is identical to the

¹⁴ Government statisticians expressed some concern that data for the South is presented by level of education and NI by highest qualification level. This is not seen as a major conceptual difference.

approach used for NI given the same data are available. Below are the definitions for the six ISCED education categories:

- **ISCED 0 – pre-primary education:** Programmes at level 0 (pre-primary), defined as the initial stage of organised instruction, are designed primarily to introduce young children to a school type environment, to provide a bridge between the home and a school-based atmosphere. Upon completion of these programmes, children continue their education at level 1 (primary education).
- **ISCED 1 – primary education or first stage of basic education:** Programmes at level 1 are normally designed on a unit or project basis to give students a sound basic education in reading, writing and mathematics, along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music. In some cases religious instruction is featured. The core at this level consists of education provided for children, the customary or legal age of entrance being not younger than five years or older than seven years. This level covers, in principle, six years of full-time schooling.
- **ISCED 2 – lower secondary education or second stage of basic education:** The contents of education at this stage are typically designed to complete the provision of basic education which began at ISCED level 1. In many, if not most countries, the educational aim is to lay the foundation for lifelong learning and human development. The programmes at this level are usually on a more subject-oriented pattern using more specialised teachers and more often several teachers who conduct classes in their field of specialisation. The full implementation of basic skills occurs at this level. The end of this level often coincides with the end of compulsory schooling where it exists.
- **ISCED 3 – (upper) secondary education:** This level of education typically begins at the end of full-time compulsory education for those countries that have a system of compulsory education. More specialisation may be observed at this level than at ISCED level 2 and often teachers need to be more qualified or specialised than for ISCED level 2. The entrance age to this level is typically 15 to 16 years. The educational programmes included at this level typically require the completion of some nine years of full-time education (since the beginning of level 1) for admission or a combination of education and vocational or technical experience.
 - ISCED 3A – programmes designed to provide direct access to ISCED 5A.
 - ISCED 3B – programmes designed to provide direct access to ISCED 5B.
 - ISCED 3C – programmes not designed to lead to ISCED 5A or 5B.
- **ISCED 4 – post-secondary non tertiary education:** ISCED 4 captures programmes that straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered as upper secondary or post-secondary programmes in a national context. These programmes can, considering their content, not be regarded as tertiary programmes. They are often not significantly more advanced than programmes at ISCED 3 but they serve to broaden the knowledge of participants who have already completed a programme at level 3. Typical examples are programmes designed to prepare students for studies at level 5 who, although having completed ISCED level 3, did not follow a curriculum which would allow entry to level 5, i.e. pre-degree foundation courses or short vocational programmes.

- **ISCED 5 – first stage of tertiary education (not leading directly to an advanced research qualification):** This level consists of tertiary programmes having an educational content more advanced than those offered at levels 3 and 4. Entry to these programmes normally requires the successful completion of ISCED level 3A or 3B or a similar qualification at ISCED level 4A. They do not lead to the award of an advanced research qualification (ISCED 6). These programmes must have a cumulative duration of at least two years.
- ISCED 5A – programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements.
- ISCED 5B – programmes that are practically oriented/occupationally specific and are mainly designed for participants to acquire the practical skills and know-how needed for employment in a particular occupation or trade or class of occupations or trades, the successful completion of which usually provides participants with a labour-market relevant qualification.
- **ISCED 6 – second stage of tertiary education (leading to an advanced research qualification):** This level is reserved for tertiary programmes which lead to the award of an advanced research qualification. The programmes are, therefore, devoted to advanced study and original research and not based on course-work only. They typically require the submission of a thesis or dissertation of publishable quality which is the product of original research and represents a significant contribution to knowledge. They prepare graduates for faculty posts in institutions offering ISCED 5A programmes, as well as research posts in government, industry etc.

As explained in the definitional note, it is often the case that cross-country comparisons group together ISCED categories into ISCED 0+1+2, ISCED 3+4 and ISCED 5+6. This is the approach adopted in this study and used in the CEDEFOP report on 'Future Skill Needs in Europe' although more detailed underlying data are available¹⁵. Often this is because some ISCED categories are not relevant to individual countries (for example ISCED 1 or 4 to NI) or views on classification of attainment levels into narrow categories are mixed and better met by presenting broader results. In reality too, with increased retention rates at school and more school leavers entering higher education, employment is becoming more polarised between jobs demanding graduate qualifications (ISCED 5+6) and those requiring little or no qualifications (ISCED 1+2) so further detail is not always required. In fact what may be more important is more detailed analysis of skill needs within the higher qualification category. For example by subject or undergraduate versus PhD.

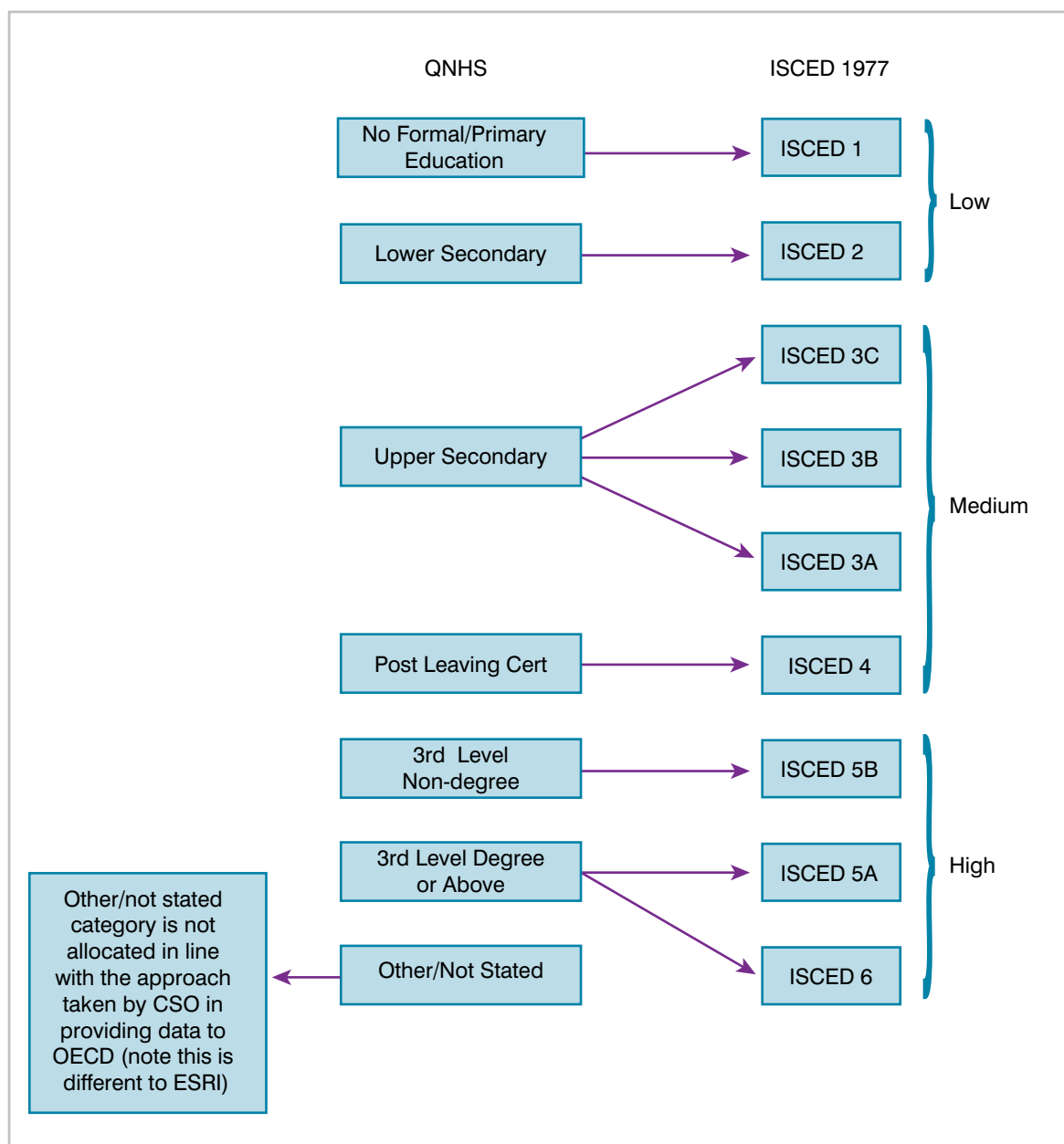
Throughout the report, these aggregated categories are named as follows, which is consistent with the CEDEFOP report:

- Low qualification – ISCED 0+1+2 (pre-primary, primary and lower secondary).
- Medium qualification – ISCED 3+4 (upper secondary and post-secondary non-tertiary education).
- High qualification – ISCED 5+6 (university educated).

¹⁵ As stated earlier, it is understood that CSO are able to provide QNHS data for the 6 ISCED categories.

The classification system to convert QNHS and LFS education/qualifications levels to ISCED categories is summarised in the diagrams below. This is based directly on the OECD Implementation Manual (1999 Edition) for classifying educational programmes in OECD countries (Ireland and UK), and guidance from the Department of Education and Science in Ireland. Note carefully the assumptions to allocate the other/not stated category across ISCED categories. For Ireland, the other/not stated category is not allocated as this is the approach taken by CSO in supplying data to OECD¹⁶. The NI split of the other category is based on the UK Department for Children, Schools and Families' 'equivalence tables'.

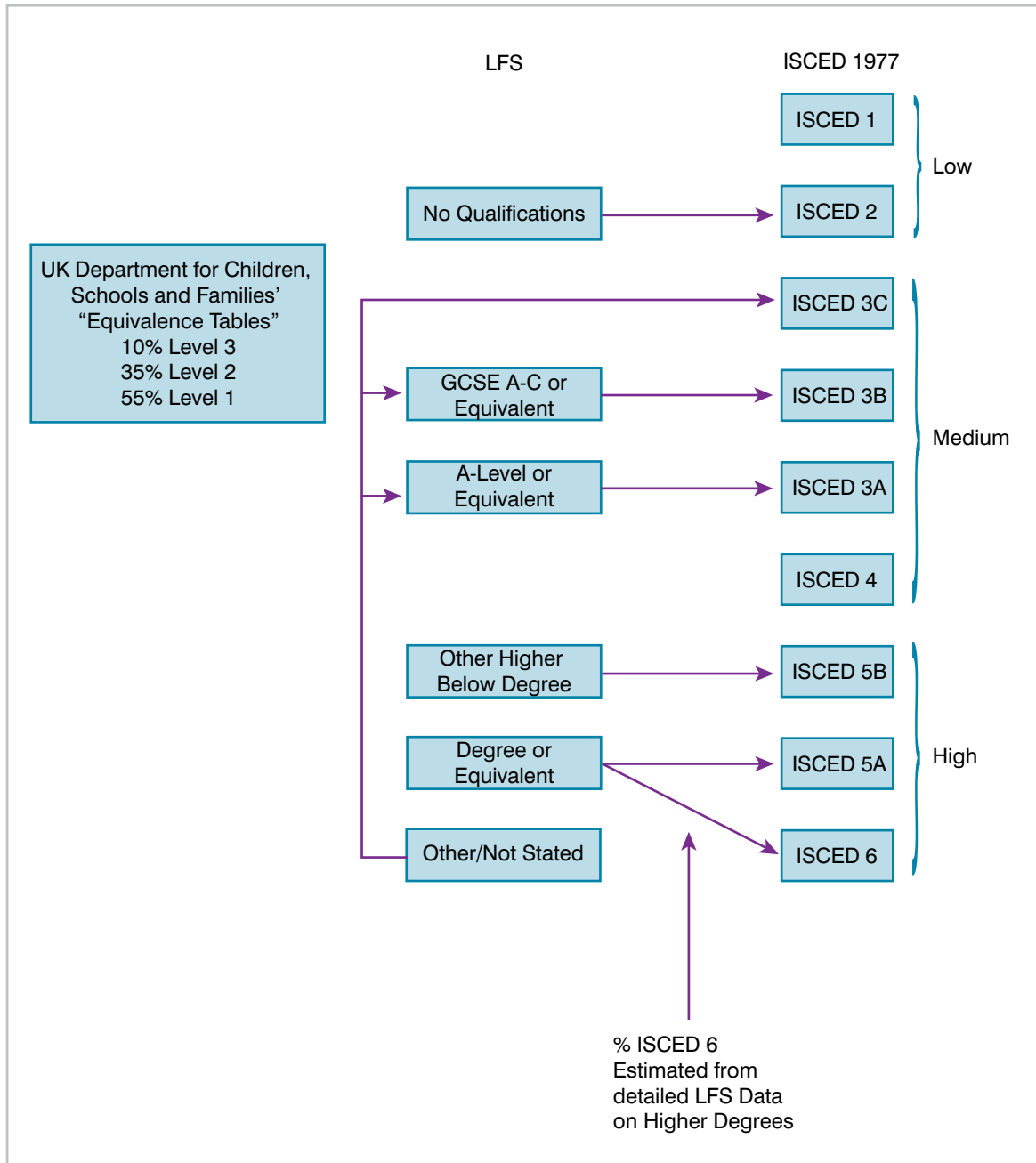
Figure A.1: Converting QNHS (Ireland) education attainment levels to ISCED categories



Source: OECD and Oxford Economics.

¹⁶ ESRI do allocate the other/not stated category however the Department of Education and Science do not believe there is sufficient evidence to do so.

Figure A.2: Converting LFS (NI) qualification levels to ISCED categories



Source: OECD and Oxford Economics.

Key Data Limitations

While the progress made by this study in matching North-South economic and skills data can be viewed a success, it would have been unrealistic from the outset to expect to be able to match all indicators.

Furthermore where data are not immediately comparable, the development of 'proxy' indicators is difficult as in some cases data available in one jurisdiction are collected from unique, bespoke surveys which obviously cannot be replicated in the other jurisdiction without additional survey/primary research. To give an example, the NI's Skills Monitoring Survey and 'Skills at Work in NI 2006' report, which quantify among other skill factors, skill gaps and utilisation of skills, are more comprehensive and quantitative-based than the existing FÁS/ESRI surveys and other results presented in the FÁS/EGFSN National Skills Bulletins. This means that it is not possible to develop matching North-South and All-Island datasets on skill shortages, gaps and utilisation of skills. The upside of this at least is that it does identify gaps in North-South data which could guide future priorities for new data collection.

The lack of 4-digit NI SOC 2000 occupation data from the LFS, beyond the 2001 Census, is a slight problem for aligning to ISCO 88 though not major. Indeed having actual 4-digit data would likely make little difference.

While there are advantages in using the QNHS and LFS in terms of their international comparability and counting of people in employment as opposed to jobs (which in some instances policy makers are more interested in), the small sample size of the NI LFS results in some volatile data trends from year-to-year.