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Comparative Analysis of Skills Monitoring Surveys

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Economic Research and Evaluation

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COMPARATIVE ANALYSIS OF SKILLS MONITORING SURVEYS

Report prepared for

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1 Background

Introduction

1.1 In recent years, each of the four UK countries has undertaken a number of relatively large-scale employers' skills surveys. These surveys have sought to identify the incidence, extent, causes and implications of recruitment difficulties and skill problems from the perspective of employers.

1.2 In addition, the Republic of Ireland has undertaken three national surveys of vacancies, every two years since 1998/99. The Irish surveys have been more specifically concerned with current vacancies and recruitment problems. While the Irish surveys share some common features with their UK counterparts, they have not been explicitly concerned with employers' perceptions of external skill shortages or internal skill gaps.

1.3 The primary objective of this report, which has been commissioned by the Department for Employment and Learning (DEL), is to provide a comparative analysis of findings from the various employer skills surveys undertaken in the four countries of the UK and, where this is possible, the Republic of Ireland's national survey of vacancies. That is, how do the answers provided by employers vary across the five countries? There are a number of benefits to be gained from such an exercise.

1.4 First, a comparative approach can contribute to an increased understanding of recruitment difficulties and employers' reported skills problems. For example, do the surveys produce similar messages regarding how employers respond to recruitment difficulties and skill gaps in their workforce? Conversely, are there variations across the five countries in the impact of, and responses to, recruitment difficulties and skills-related problems? If the latter, what factors might be adduced to explain the observed differences?

1.5 Second, from a methodological perspective, a comparative approach provides an opportunity to identify potential points of learning for those commissioning and carrying out such surveys. Where topics of interest are addressed on a comparable basis by some or all of the five countries, a comparative analysis can help in assessing the robustness and validity of the approach. Inter-country differences in concepts that are well-defined and measured should be amenable to substantive interpretation and discussion. Concepts that are less well-defined or measured may result in inter-country differences that are inconsistent and more difficult to interpret.

1.6 Conversely, where there are differences between the surveys, for example in the definition and measurement of relevant concepts, a comparative approach can help in highlighting areas where improvements might be made or in suggesting the need for a more tightly-defined common approach.

1.7 While the UK surveys in particular share a broadly common methodological framework and approach, it will be seen that there are a number of differences of detail in the design and implementation of the various skills surveys. These differences make it more difficult to draw meaningful conclusions in respect of inter-country variations in a number of areas of interest. For that reason, a key message to emerge from this comparative study is the desirability of a more co-ordinated and common approach to survey design and implementation.

1.8 Of course, the fact that differences exist in survey design and implementation simply highlights the difficulties that are inherent in seeking to compare findings from surveys that are not standardised across the countries of interest, however much they may share a broadly common set of objectives and methodological framework. This in turn points to a key issue to be addressed at the outset of this study, that is, to what extent can findings from the employer skills and vacancy surveys undertaken in the five countries be compared?

1.9 Prior to considering the comparability of the surveys, the next part of this Section sets out the key issues addressed by the surveys undertaken in the five countries. This is accompanied by a summary of the main indicators for which comparisons are to be drawn.

1.10 Following the discussion of indicators to be compared, the Section turns to the choice of surveys to be compared. The Section then sets out the approach taken to this comparative analysis. Briefly, the approach has two strands:

- Comparability of the surveys. This raises a number of technical issues and is discussed in detail in Appendix A of this report. The findings from the appraisal are summarised below.

- Comparisons of findings from the surveys. This element of the approach focuses on the collation of data for those indicators for which findings can reasonably be compared, having regard to caveats identified in the analysis of comparability of the surveys.

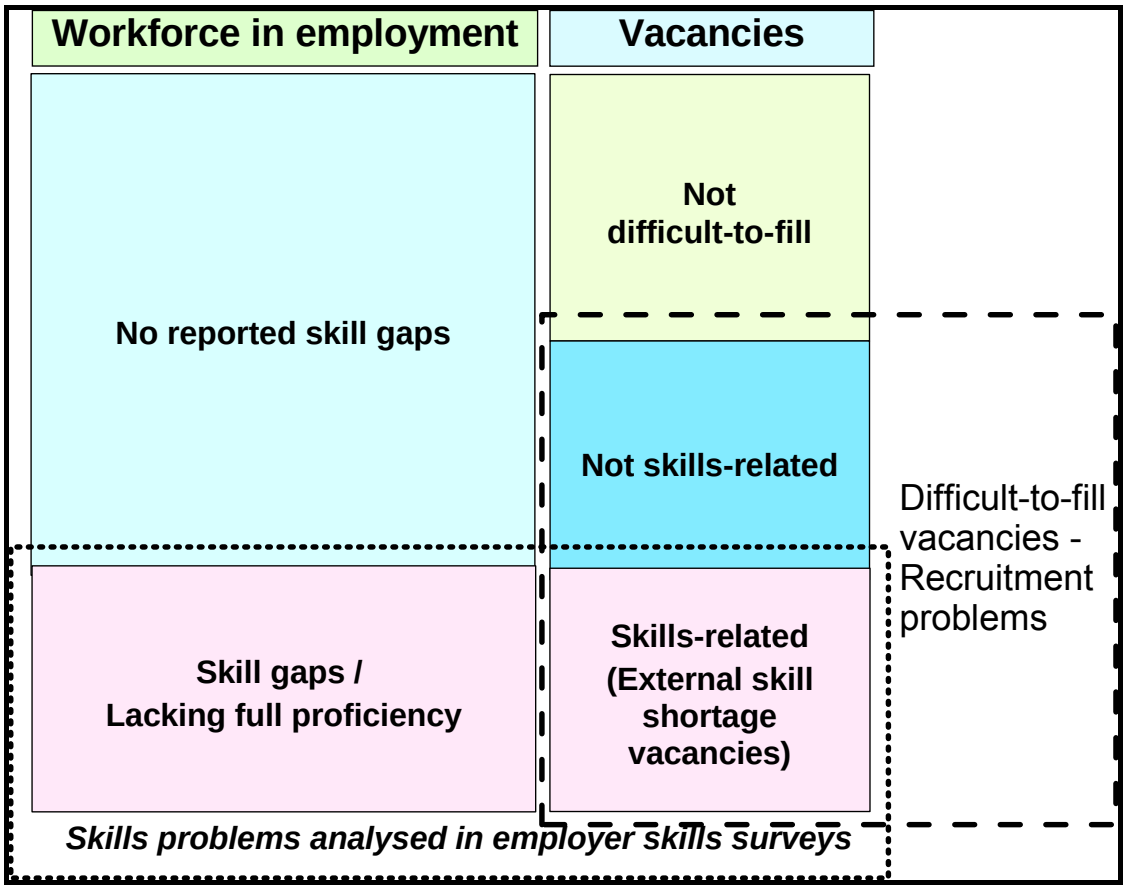
1.11 This Section concludes by setting out the structure of the report.

Issues and Indicators to be compared

1.12 The employer skills surveys that have been undertaken in the UK share a broadly similar set of objectives, seeking to provide an overview of issues connected with skill shortages, skill gaps and training, from an employer's perspective. The surveys are particularly interested in identifying where recruitment difficulties are related to external skills shortages and therefore subject to a 'skills' solution.

1.13 These objectives are addressed within a common descriptive framework. As illustrated in Figure 1.1, *recruitment problems* are associated with job vacancies that are classified by respondents as *difficult-to-fill*[1]. Of particular interest are vacancies that are difficult-to-fill because of low numbers of applicants with the required skills or lack of work experience or qualifications required by the company. Vacancies that are classified as difficult-to-fill for such reasons are referred to as *skill-shortage vacancies*.

Figure 1.1 Recruitment problems and skill gaps



[1] This is the term used in the Northern Ireland and Republic of Ireland surveys. Such vacancies are referred to as 'hard-to-fill' in the English, Scottish and Welsh surveys.

1.14 Whereas recruitment problems and skill-shortage vacancies refer to difficulties experienced in relation to the external labour market, the second set of problems typically analysed in employer skills surveys focus internally, on the company's current workforce.

1.15 As shown in Figure 1.1, the main point of interest in that context is the existence or otherwise of *internal skill gaps*. The concept of internal skill gaps is intended to reflect the extent to which employers perceive their employees' current skills as insufficient to meet current business objectives. In the English and Scottish employer skills surveys, internal skill gaps are measured indirectly on the basis of employers' perceptions of the level of proficiency of their workforce. In Northern Ireland and Wales, a direct question approach is used.

1.16 Within the broad descriptive and conceptual framework discussed above, the UK employer skills surveys typically seek to address a similar core set of questions, as follows:

- What is the incidence and extent of recruitment problems faced by employers, as measured by difficult-to-fill vacancies?
- To what extent do recruitment problems reflect a lack of relevant skills amongst potential recruits into the available positions?
- To what extent do skill gaps exist within the workforce in employment?
- What is the level of provision of off-the-job training?
- How do the above vary by industry sector, establishment size, and occupations?

1.17 In answering these questions, attention is focused on both quantitative and qualitative indicators. The main quantitative indicators used in the UK employer skills surveys are designed to measure:

- **Incidence**. For example, the proportion of establishments reporting one or more difficult-to-fill vacancies, both overall and by industry sector and employment size-band.
- **Extent**. For example, the number of difficult-to-fill vacancies expressed as a percentage of total employment[2], again both overall and by industry sector and employment size-band.

[2] This is the *density* measure of extent. Alternatively, extent could be measured as a *rate*, that is, the number of vacancies as a proportion of the sum of employment plus vacancies (see Dickerson, 2003).

- **Composition**. For example, the industry sector or occupational profile of difficult-to-fill or skill-shortage vacancies. The composition of vacancies can in turn be compared to, for example, the composition of employment in order to say where vacancies are most highly concentrated.

1.18 Qualitative indicators reported on in respect of employer skills surveys typically seek to provide further information on respondents' perceptions in relation to:

- Reasons for or causes of, difficult-to-fill and skill-shortage vacancies and skill gaps/lack of proficiency.
- Skills sought in relation to vacancies or perceived to be lacking in respect of skill gaps.
- Effects or impacts of skills-related problems.
- Measures taken to overcome recruitment and skills-related problems.

1.19 The Republic of Ireland vacancy surveys share the UK surveys' concern with difficult-to-fill vacancies, but do not seek to estimate the incidence or extent of skill-shortage vacancies. Nor is the issue of skill gaps addressed by the Irish surveys, which instead focus on employers' perceptions of changes in skill requirements. These contrasts reflect the different objectives of the Irish surveys (see also Appendix A).

1.20 This report seeks to draw comparisons, where these are possible, between the various survey findings in respect of the foregoing quantitative and qualitative indicators, with reference to:

- Difficult-to-fill vacancies.
- Skill-shortage vacancies.
- Skill gaps.
- Off-the-job training.

1.21 Prior to considering the comparability of the surveys in respect of indicators reported under the above headings, the next part of this Section sets out the surveys that are to be compared.

The surveys to be compared

1.22 As was noted in the foregoing introduction, the five countries that are the focus of this study have undertaken a number of large-scale surveys of employers over the past number of years. The surveys to date are listed by country in Table A.1 in Appendix A.

1.23 The first employers' skills survey in the UK was undertaken in England in 1999 (ESS 1999). This was closely followed by the inaugural NI Skills Monitoring Survey (SMS), which was conducted in the year 2000. The ESS 1999 was followed up by a similar survey in 2000/01 (ESS 2001) and a further survey in 2003, albeit on a much smaller scale than the two previous surveys. A second NI Skills Monitoring Survey was held in 2002.

1.24 The English and Northern Ireland skills surveys in turn provided the model for the 2002 Skills in Scotland survey and the 2003 Future Skills Wales (FSW) Generic Skills Survey. Scotland has just recently published the results of its 2003 update.

1.25 In the Republic of Ireland, vacancy surveys have been conducted in 1998/99, 1999/2000 and 2001/02. The first two of these covered private sector non-agricultural firms. The most recent vacancy survey was extended in scope to encompass the public sector, which was the subject of a separate report.

1.26 For a number of reasons, it would not be feasible to seek to compare findings from the full schedule of surveys that have been undertaken to date. Most importantly, *within* each country, the surveys that have been conducted have varied in terms of their scope and/or scale. As noted in the previous paragraph, the most recent Republic of Ireland survey covers both the public and private sectors.

1.27 In England, ESS 1999 was confined to non-agricultural industries and establishments with five or more employees. By contrast, ESS 2001 covered all industries and all establishments with one or more employees. The ESS 2002 follow-up was again restricted to establishments with five or more employees. In addition, it was on a much smaller scale[3].

1.28 In Northern Ireland, the first Skills Monitoring Survey (SMS 2000) was confined to private sector establishments, whereas SMS 2002 included the public sector. While the 2003 Skills in Scotland (SiS) survey was not restricted in scope, the sample size (3,006) was much reduced by comparison with SiS 2002 (8,507).

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[3] The sample size for ESS 2002 was 4,012, compared with around 27,000 cases in both ESS 1999 and ESS 2001.

1.29 Second, it is desirable to build in some degree of control with respect to the timing of the surveys to be compared. Primarily, this is because difficult-to-fill vacancies are likely to be sensitive to the economic cycle[4]. In the case of the UK countries, where the broad macro-economic conditions will be determined at national level, this requirement is best met by selecting surveys that are as proximate in time as possible. Given the exceptional experience of the Republic in recent years, this is probably not a factor that can be accommodated in any event.

1.30 In light of the above, and having regard to the over-riding need to ensure as much consistency as is possible in terms of coverage by industry sector and employment size-band, the following surveys are analysed in this study:

- **Northern Ireland** - the 2002 SMS (DEL, 2003).
- **England** – ESS 2001 (Hogarth *et al*, 2001).
- **Scotland** – the 2002 Skills in Scotland survey (Futureskills Scotland, 2002).
- **Wales** – the 2003 Generic Skills Survey (Future Skills Wales, 2003).
- **Republic of Ireland** – the 2001/02 Vacancy Survey (Hughes *et al*, 2002, 2003).

Comparability of the surveys

1.31 The comparability of the five surveys listed above is discussed in detail under a range of headings in Appendix A. The key points emerging from that discussion are summarised below under the following main headings:

- Survey design.
- Definitions and measurement of indicators.

[4] Though, it can be noted that, when compared on a consistent basis, the three English surveys show little or no change in vacancies as a proportion of employment. This holds also for both difficult-to-fill and skill-shortage vacancies (see Hillage *et al*, 2003, Table 4.3).

Survey design

1.32 The UK surveys share the same broad set of objectives within the descriptive framework of recruitment problems and skill gaps illustrated in Figure 1.1 above. Both ESS 1999 and the Northern Ireland SMS evolved out of the Skill Needs in Britain surveys which were conducted on an annual basis from 1990 to 1997, and provided model approaches for the Scottish and Welsh surveys.

1.33 In that context, it is hardly surprising that the UK employer skills surveys have much in common with respect to issues such as the broad structure of the questionnaires (see Table A.2 in Appendix A) and topic lists, especially the treatment of recruitment difficulties and skill gaps (see Table A.3 in Appendix A).

1.34 The UK surveys studied for this report also possess many of the same features in other aspects of survey design, including (see Table 1.1):

- The unit of analysis. This is the establishment or workplace, as opposed to the enterprise or organisation.
- Sample frame. This is the BT Business Database in each of the surveys.
- Stratification. The Great Britain surveys stratify by industry sector, establishment size-band and also on a geographical basis. Stratification in the Northern Ireland survey is by size-band only.
- Targeting. Each of the surveys disproportionately samples the larger workplaces, allocating interviews in proportion to numbers employed within each size-band rather than the number of establishments.
- Data collection. The UK surveys all use Computer Assisted Telephone Interviewing (CATI).
- Scale and scope. They are all relatively large surveys, encompassing all size-bands and, apart from Northern Ireland, all industry sectors.

1.35 The fact that they share a number of common design features greatly enhances the comparability of the UK surveys. As illustrated in Table 1.1, there are, nonetheless, some differences in survey design.

Table 1.1 Employer Skills Surveys: Design features

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Year	2002	2001	2002	2003	2001/02
Unit of analysis	Establish-ment	Establish-ment	Establish-ment	Establish-ment	Enterprise/ organisation
Size	All	All	All	All	All
Industry	Non-agricultural industries	All industries	All industries	All industries	Non-agricultural industries
Sample frame	BT Business Database	BT Business Database	BT Business Database	BT Business Database	ESRI list of firms
Type	Random dispropor-tionate	Quota sampling	Quota sampling	Quota sampling	Mixed follow-up with random selection
Stratification	Size	Region & LSC, industry sector, size	22 LEFs, industry sector, size	Unitary authority, industry sector, size	Size & sector
Targeting	Larger firms	Larger firms with regional minima	Larger firms with LEF minima	Larger firms with UA minima	Size, sector
Interview method	CATI[1]	CATI[1]	CATI[1]	CATI[1]	Postal w/telephone follow-up
Achieved sample size	4,504	27,031	8,507	6,020	1,635 private 413 public
Response rate	73%	53%	55%	51%	42% private 72% public
Weighting factors	Size & sector	Region, size, sector	Region, size, sector	UA, size and sector	Size & sector
Grossing	BT Business Database	AES[2] 1999	IDBR[3] 2002	ABI[4] 2001	Various sources[5]

1 Computer Assisted Telephone Interviewing.
2 Annual Employment Survey
3 Inter-Departmental Business Register
4 Annual Business Inquiry
5 Including, the Census of Industrial Production, Annual Services Enquiries, Labour Force Survey

1.36 In the first instance, the Great Britain surveys made use of a quota sampling strategy as compared with the random disproportionate strategy employed in the Northern Ireland survey. Nonetheless, Forth (2003) concludes that the ESS 2001 methodology "closely resembles" stratified random sampling (Forth's rationale for this is discussed in Appendix A). This provides a degree of reassurance in making comparisons between the surveys. The implications for making statistical comparisons are discussed in detail in Appendix A below.

1.37 The second major point of difference between the UK surveys is that they have each used a different source of population data for weighting and grossing. In addition, there are variations regarding survey outcomes. While the Northern Ireland survey achieved a 73 per cent response rate, the Great Britain surveys report response rates in the range 51-55 per cent.

1.38 These contrasts do not preclude drawing comparisons between estimates produced by the various surveys. They do, however, increase the degree of uncertainty that attaches to any such comparisons. Partly for that reason, a cautious approach is warranted in drawing inferences regarding the significance or otherwise of inter-country differences between sample estimates. Thus, for example, this study uses the 99 per cent confidence interval in any statistical tests for the significance of differences in sample estimates between the surveys.

1.39 The Republic of Ireland vacancy surveys include some of the same design features as their UK counterparts, but differ in a number of important respects. Most notably, the unit of analysis for the Irish vacancy surveys is the individual enterprise or organisation. Since enterprises or organisations can comprise multiple sites or workplaces, this means that it is not possible to compare indicators for the *incidence* of current vacancies or recruitment difficulties with the UK surveys, which are based on interviews with individual establishments or workplaces.

1.40 It is not necessarily the case that the different unit of analysis also precludes comparisons of indicators for the *extent* of current vacancies or recruitment difficulties. This is because the feasibility or otherwise of such comparisons depends on two other factors:

- Whether the collection of data at establishment as opposed to enterprise/organisation level makes any difference to the estimation of the overall number of current vacancies.

- The definition of current vacancies used in the surveys.

1.41 Regarding the estimation of the number of current vacancies, the UK's monthly ONS Vacancy Survey, which commenced in April 2001, favours the collection of data, *in most cases*, at enterprise or organisation level rather than at local unit or workplace level (Machin and Christian, 2002). However, Machin and Christian also describe some difficulties in obtaining responses from very large organisations with multiple sites in some industry sectors, such as hotels and restaurants and public administration.

1.42 For that reason, the ONS is developing an approach to data collection at local unit or workplace level to address such difficulties. But this also suggests that the 'optimal' unit of analysis for collection of data on current vacancies may well vary between industry sectors.

1.43 Nonetheless, this is an important issue. While the estimation of the number of current vacancies *per se* is not the primary objective of UK employer skills surveys, the vacancy question in these surveys is also the critical point of entry to the suite of questions aimed at identifying the incidence and extent of difficult-to-fill and skill-shortage vacancies. For that reason, the more critical issue affecting the comparability of the vacancy estimates is likely to reside in how job vacancies are defined. This issue is addressed in more detail below.

1.44 A second important contrast between the UK surveys and the Republic of Ireland is the method of data collection. Whereas each of the UK surveys used telephone interviewing, the Republic relies on a postal questionnaire. The choice of this method of data collection must be understood in terms of the different objectives of the Irish vacancy survey, which is more focused on obtaining detailed data on current vacancies by occupation and job types within occupations. This may make for more accurate reporting of vacancies by respondents to the Irish vacancy survey, since written records can be consulted prior to making returns. But the use of the postal questionnaire also has implications for response rates.

Definitions

1.45 The comparability of findings from different surveys is not just a function of design issues such as sampling strategy and data collection methods. Equally important is the definition and measurement of key variables or indicators relevant to the objectives of the survey.

1.46 In Appendix A below, the definitions employed by the surveys are reviewed in respect of the following:

- Current vacancies.
- Difficult-to-fill vacancies.
- External skill shortage vacancies.

- Internal skill gaps.

- Provision of training.

1.47 Regarding the comparability of the survey results for the number and incidence of *current vacancies*, a number of comments can be made. First, the overall approach is broadly similar across the five surveys. Respondents are simply asked to say if they have any vacancies and, if so, how many. All except the Welsh survey also seek to extract information on the types of current vacancies, typically in terms of occupations that respondents are seeking to fill the posts.

1.48 Second, only the Northern Ireland and the Republic of Ireland surveys provide respondents with a definition of a current vacancy. Based on comparisons with the ONS Vacancy Survey, the absence of a definition in the Great Britain surveys may have the effect of producing higher estimates of vacancy rates than would occur if a definition were to be provided. In particular, the Great Britain surveys do not explicitly restrict vacancies to those for which the establishment is actively seeking to recruit from the external labour market.

1.49 Third, while the foregoing raises issues regarding the validity and reliability of the vacancy question in the Great Britain surveys especially, some encouragement can be gleaned from the findings of the qualitative research undertaken for ESS 2002 regarding respondents' understanding of what constitutes a vacancy. These follow-up interviews suggest that, in general, respondents view a vacancy as involving active recruitment. In addition, ESS 2001 estimates of vacancy shares by industry sector show a broadly similar pattern to the industry composition of vacancies from the ONS Vacancy Survey (see Machin and Christian, 2002).

1.50 Overall, these findings do not invalidate inter-country comparisons of measures for the incidence and extent of vacancy rates. But they do suggest a considerable degree of caution in interpreting the findings. In addition, the assessment indicates the desirability of a more tightly-defined and common definition of vacancies for use in the various surveys.

1.51 The surveys also adopt a broadly similar approach to the identification and measurement of *difficult-to-fill vacancies*. While the incidence question is posed in a relatively uniform fashion, no formal definition of a difficult-to-fill vacancy appears in any of the surveys. To that extent, the surveys simply measure respondents' subjective perceptions of what vacancies are difficult-to-fill or not.

1.52 There are, however, some differences of detail in the implementation of the survey approaches. In particular, it might be expected that the Northern Ireland and Republic of Ireland approaches would result in higher estimates for the number of difficult-to-fill vacancies by comparison with the approaches used in Great Britain. Thus, as with current vacancies, while it is reasonable to compare the findings from the different surveys, this must be done with some caution.

1.53 *Skill-shortage vacancies* do not feature in the Republic of Ireland survey. Across the UK surveys, while there are some differences in approach, comparability of results for skill-shortage vacancies is positively affected by the fact that the surveys share a common conceptual definition of what constitutes a skill shortage vacancy. Thus, the incidence and extent of skill-shortage vacancies is derived in each of the UK surveys by asking respondents to identify the reasons for their difficult-to-fill vacancies. A skill-shortage vacancy is identified where the respondent says that vacancies are difficult-to-fill because of lack of relevant skills or experience required or qualifications demanded.

1.54 Because they are derived as a subset of difficult-to-fill vacancies, the main constraints on comparing results for skill-shortage vacancies are more likely to reside in the different approaches used for determining the overall number of vacancies at the establishment and in eliciting the reasons for vacancies being difficult-to-fill. Again, therefore, caution needs to be exercised in making comparisons.

1.55 In the UK employer skills surveys, the incidence of *skill gaps* is measured in one of two ways:

- The proportion of establishments saying that a skill gap exists amongst their workforce.

- The proportion of establishments saying that not all of their employees are 'fully proficient' at their current jobs.

1.56 The main conclusion drawn from the assessment of comparability is that the UK surveys differ too widely in their approaches to the measurement of skill gaps for any meaningful comparisons to be drawn. In reaching this conclusion, doubt is also cast on the validity of using the proficiency question as a proxy indicator for 'skill gaps'. This issue is discussed further in Section 4 below, based on the analysis presented in Appendix A.

1.57 Finally, the UK surveys would appear to be broadly comparable with respect to indicators for the provision of *off-the-job training*, though less so in respect of the number of employees receiving such training. The Republic of Ireland uses a differently phrased definition of such training, and there are some differences in scope (apprentices are excluded, while owner-managers and proprietors are included).

Comparison of findings

1.58 Having regard to the findings from the assessment of comparability of the surveys, the approach taken to drawing comparisons between the surveys has been based in the first instance on the collation of data from the various published survey reports. The information in the published reports has been augmented by the availability of the following databases:

- Selected tabulations from the Skills in Scotland survey can be accessed via a dataset on the Futureskills Scotland web-site. This has proven to be extremely useful in the present study and provides a model for disseminating survey results more widely.

- The raw data from the Northern Ireland Skills Monitoring Survey were made available in their entirety in a statistical file.

1.59 Nonetheless, a number of difficulties were encountered in collating data on a consistent basis across the five surveys:

- The surveys use different groupings for industry sectors (see Table A.12) and employment size-bands (see Table A.13).

- The reporting of qualitative indicators is not always based on the same units of analysis (e.g. the effects of difficult-to-fill vacancies are reported variously on the basis of vacancies and establishments). This difficulty is compounded by the use of different coding frameworks (see Appendix A for a more detailed discussion of this issue).

1.60 As discussed in Appendix A, it proved possible to obtain data on a consistent basis for Northern Ireland, England and Scotland for a seven-fold grouping of industry sectors, excluding the agriculture sector. This was not possible for the analysis by employment size-band. However, the availability of the NI SMS data means that such comparisons can be made, albeit separately for Northern Ireland compared to, respectively, England and Scotland.

1.61 The cross-country tabulations that have been possible for the incidence, extent and composition of current vacancies, difficult-to-fill vacancies and skill-shortage vacancies are summarised in Table 1.2. The data that have been collated and tabulated are presented in Appendix B.

1.62 Regarding the qualitative indicators, the approach adopted in this report is to look more at the rankings of responses given by respondents, rather than the actual percentages (see the discussion of qualitative indicators for difficult-to-fill vacancies in Appendix A). This is not wholly satisfactory as a means of comparing the surveys and reiterates the need for a more co-ordinated approach.

Table 1.2 Indicators for which data were collated

	N. Ireland	England	Scotland	Wales	Rep. of Ireland
Current vacancies (Section 3)					
Incidence	C, I, S	C, I, S	C, I, S	C	C
Extent	C, I, S, O	C, I, S, O	C, I, S, O	C	C, I
Composition	I, S, O	I, S, O	I, S, O	I	I
Difficult-to-fill vacancies (Section 3)					
Incidence	C, I, S	C, I, S	C, I, S	C, S	
Extent	C, I, S, O	C, I, S, O	C, I, S, O	C	
Composition	I, S, O	I, S, O	I, S, O		
Reasons	√	√	√	√	
Effects	√	√	√	√	√
Responses	√	√	√	√	√
Skill-shortage vacancies (Section 4)					
Incidence	C, I, S	C, I, S	C, I, S	C	
Extent	C, I, S, O	C, I, S, O	C, I, S, O	C	
Composition	I, S, O	I, S, O	I, S, O		
Reasons	√	√	√	√	
Effects	√	√			
Responses	√	√	√		
Skill gaps/proficiency of the workforce (Section 4)					
Incidence	C	C	C	C	
Extent	C	C	C	C	
Off-the-job training (Section 4)					
Provision	C, I, S	C, I, S	C, I, S	C,S	C
Extent	C,I,S	C,I,S	C,I,S	C	C,I

Key:
C Country
I Industry
S Establishment size band
O Occupations

Structure of the Report

1.63 The structure of the remainder of this report is as follows.

1.64 The incidence and extent of current vacancies and recruitment problems will clearly be influenced by labour market trends, especially employment growth and unemployment. In addition, it is well known that vacancy rates vary from one industry sector to another (see Machin and Christian, 2002). Partly, this is because industry sectors will vary in terms of employment growth. In addition, certain industry sectors typically have higher rates of labour turnover than others (e.g. turnover in the hotels and restaurants sector tends to be higher than in public administration and defence). For that reason, vacancy rates may vary from one country to another due to differences in the industry composition of employment. Thus, **Section 2** of this report provides a brief overview on the labour market context in each of the five countries.

1.65 **Section 3** of the report focuses on recruitment difficulties. The Section commences with a discussion of the incidence and extent of current vacancies before turning to a consideration of difficult-to-fill vacancies. The quantitative indicators for incidence, extent and composition are discussed, respectively, at overall country level and then by industry sector, establishment size-band and occupations. This Section also includes a discussion of qualitative indicators for difficult-to-fill vacancies, that is, reasons given, effects, and measures taken.

1.66 **Section 4** of the report is concerned with skill-shortage vacancies, skill gaps and off-the-job training. The discussion of skill-shortage vacancies follows much the same format as for difficult-to-fill vacancies. For the reasons given above, statistical comparisons are not drawn in respect of skill gaps. Rather, the concern is to summarise the issues emerging from the assessment of the comparability of the surveys. This Section also includes a discussion of off-the-job training.

1.67 **Section 5** of the report presents the concluding remarks.

2 Labour Market Context

Introduction

2.1 Vacancies arise due to employment growth and the turnover of existing jobs in the labour market. To that extent, vacancies are a natural feature of the functioning of the labour market. Whether or not vacancies result in recruitment problems in turn depends on the balance between demand and supply in the labour market.

2.2 As the economy expands, so also does the number of vacancies. In a period of especially rapid growth, the demand for labour may outstrip the available supply. Firms with new job openings or seeking to replace quits may find it increasingly difficult to attract sufficient applicants to meet their recruitment needs. Conversely, in a downturn, employment opportunities will contract, as firms close or do not seek to replace quits. Vacancies will still arise, but at a reduced rate.

2.3 The cyclical nature of recruitment problems also means that vacancy rates tend to move in tandem with unemployment rates, albeit in the opposite direction. In a period of growth, falling unemployment signals a tightening labour market and an increased likelihood of recruitment difficulties and skill shortages. Similarly, as unemployment increases, the vacancy rate tends to fall and recruitment difficulties ease (see also Frogner, 2002).

2.4 The pace of employment growth and the unemployment rate tend to vary geographically. Thus, the incidence and extent of recruitment problems can be expected to vary geographically. Research based on the ESS 1999 and 2001 shows that the relationship between the geography of vacancies and unemployment is rather more complex than might be expected from the simple model outlined above (e.g. Green and Owen, 2002; Hogarth and Wilson, 2003; Dickerson, 2003). Nonetheless, it is important to establish the labour market context prevailing in each of the five countries as a precursor to the more detailed comparisons of recruitment difficulties and skill-shortage vacancies in Sections 3 and 4 below. For that reason, this Section commences with a comparative overview on recent labour market trends across the five countries.

2.5 In addition, vacancy rates are well known to vary by industry sector, establishment size and occupation. Hence, this Section also provides an overview on the sectoral and occupational composition of employment in each of the five countries as well as the size distribution of employment at establishment level. Doing this is useful not just to point up some contrasts between the five countries that may affect observed vacancy rates. It also provides a point of reference for the survey results for the composition of vacancies.

Trends

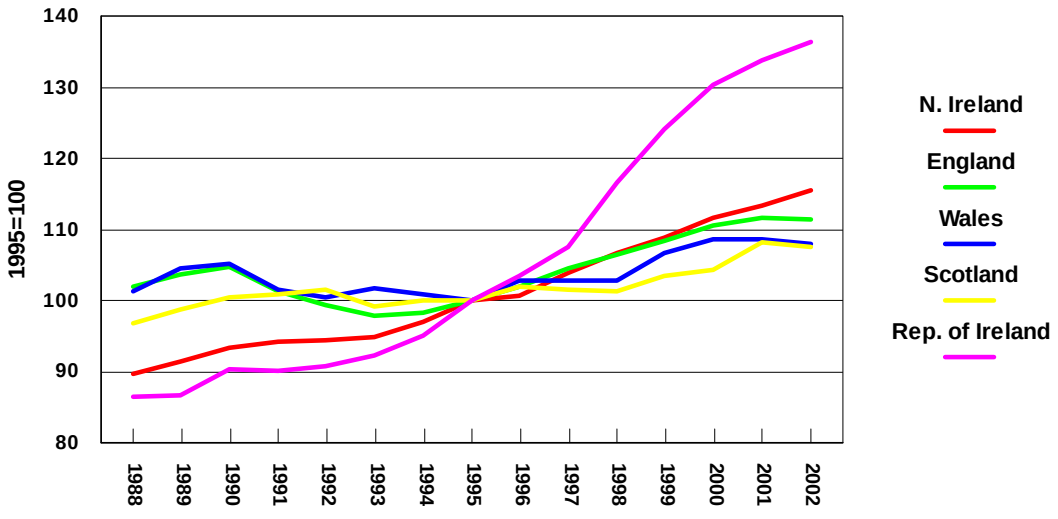
2.6 The key labour market trends characterising each of the five countries in the period from 1995 to 2002 are summarised in Table 2.1. Considering first the pattern of employment growth, the main point of note is that the pace of growth, and hence the pressure of demand on the labour market, has varied from one country to another.

2.7 The unprecedented performance of the Republic of Ireland in the late-1990s is reflected in a 38 per cent expansion in employment over the period from 1995 to 2002. The bulk of this occurred over the period 1997 to 2000, since when there has been a slower rate of employment growth (Figure 2.1). This has been reflected in a reduced private sector vacancy rate in the Republic, from around six per cent in 1998/99 and 1999/00 to three per cent in 2001/02 (Hughes *et al*, 2002).

2.8 The pace of growth has also varied within the UK. From 1995 to 2002, employee jobs in Northern Ireland grew by 16 per cent. This was five percentage points in excess of the growth recorded in England and double the employment rates for both Scotland and Wales.

2.9 More recently, and especially in Great Britain, growth has slackened with employment levelling off in the years 2001 and 2002. This in turn appears to have resulted in an easing of pressure on the labour market. The ONS UK Vacancy Survey has not been in existence for long enough to discern annual trends. Nonetheless, the data that are available suggest a relatively flat vacancy rate. In the seven-month period from June to December 2001, the vacancy rate averaged 2.6 per cent, dropping by only 0.2 percentage points to 2.4 per cent in the comparable period in 2002.

Figure 2.1 Employment



Sources: NOMIS; CSO.

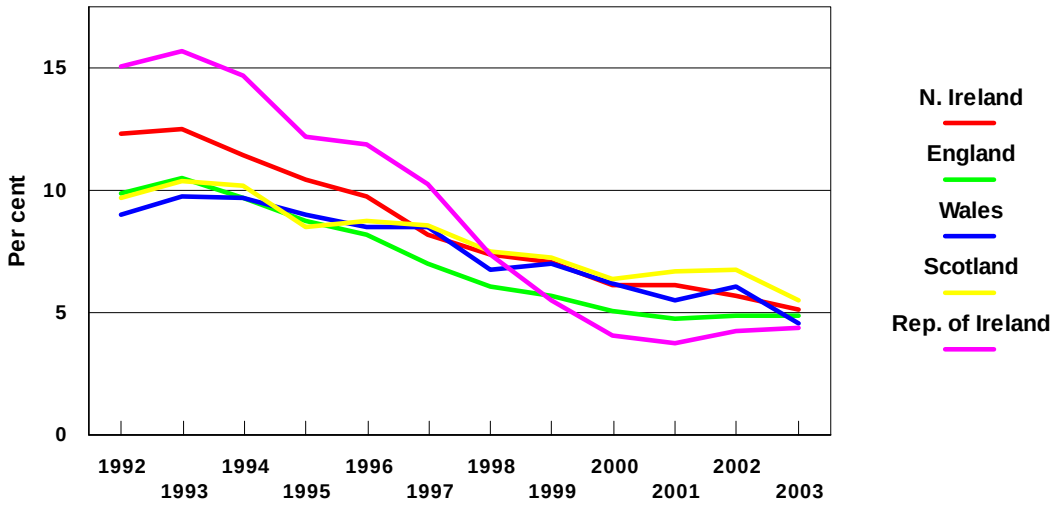
Table 2.1 Labour market context: Key trends and relative position

	N. Ireland	England	Wales	Scotland	Republic of Ireland
Employment growth 1995-2002					
% change	16	11	7	8	38
Unemployment					
Per cent	5.2	4.9	4.6	5.5	4.4
Change since 1995 (pps)	-5	-4	-4	-3	-8
Employment rate					
% of working-age population	68	74	68	73	66
Population growth					
1996-2002, % per annum	0.35	0.36	0.17	-0.12	1.30
Average hourly earnings (males)					
% of UK, 2002	84	102	86	92	n.a.
Annual % change, 1998-2002	3.7	5.8	5.3	5.4	n.a.
Relative productivity					
Output per worker (UK=100)	86	101	93	95	n.a.
Change 1996-2001 (pps)	-4.3	0.9	-1.9	-7.5	n.a.
GDP per capita (EU=100)	80	100	81	96	110
					(100)[1]

1 GNP relative to the EU average.
Sources: NOMIS; Labour Market Trends; Population Trends; Regional Accounts; New Earnings Survey; CSO.

2.10 While the pressure of demand has clearly varied in intensity across the five countries, whether or not this in turn feeds through to recruitment difficulties depends on the balance between demand and supply in the labour market. The trend in unemployment rates would suggest that, notwithstanding the variations in employment demand, labour market tightening has been relatively uniform across the five countries. Unemployment has fallen steadily across the board (Figure 2.2), so that by 2002 there was only a one percentage point spread in the unemployment rate across the five countries (Table 2.1).

Figure 2.2 Unemployment



Sources: DETI; NOMIS; CSO.

2.11 Taken at face value, this would suggest that the balance between demand and supply in the labour market has been relatively similar across the five countries in the period since 2001. But the unemployment rate is not the sole indicator of the availability of labour. There will generally be a potential labour supply amongst those who are presently not active in the labour market, such as women working in the home or students. One way of measuring this potential is to consider variations in the employment rate, or the percentage of working-age people who are in a job. The lower the employment rate, the larger the potential pool of labour supply.

2.12 Measured on that basis, there remain sharp differences between the five countries, ranging from 66 per cent in the Republic of Ireland to 74 per cent in England and Scotland. In the countries with low employment rates, there may be more scope to match employment growth with an increase in labour supply from amongst those not in employment, whether they are actively seeking work (the unemployed) or presently inactive. Indeed, increasing participation by women has provided a critical source of labour supply in meeting the very rapid pace of expansion in the Republic.

2.13 In addition, the Republic has benefited from a rapid pace of population growth (1.3 per cent per annum from 1995-2002), which has also been important in meeting the growth in labour demand. The pace of population growth in the UK countries has been rather slower. Partly due to persistent net out-migration, Scotland's population is in decline. Combined with its relatively high employment rate, this may affect the likelihood of recruitment difficulties, for a given increase in labour demand. The Welsh population has been growing at a very modest pace. From a labour market perspective, the context in Wales is different to that in Scotland, as the Welsh employment rate is below-average in a UK context.

2.14 Both England and Northern Ireland have experienced modest population growth, in the region of 0.35 per cent per annum since 1995. Again, the labour market context for this varies between the two countries, as Northern Ireland's employment rate is well below the English rate. Though, in the case of Northern Ireland, the employment rate gap partly reflects the region's relatively youthful population profile, with many of the non-employed being in education.

2.15 Overall, then, there are mixed signals from indicators for the likelihood of cross-country variations in labour market imbalances due to a mismatch between labour supply and demand. To that extent, it is useful to also consider the growth in average earnings as an indicator of labour market tightness. This is useful because, in a tightening labour market and especially where skill shortages appear, employers may find that they need to bid up the price of labour in order to meet their requirements (Frogner, 2002, finds a small, but positive, effect on earnings growth from the CBI's indicator for skilled labour demand).

2.16 On that basis, the evidence from the UK countries is that the pressure of demand has been sharpest in England, where average earnings have grown by 5.8 per cent per annum since 1998 (Table 2.1). Scotland and Wales have not been far behind in that regard (5.3-5.4 per cent). Earnings growth in Northern Ireland has, however, lagged well behind the other UK countries, rising by 3.7 per cent per annum since 1998. Why this should be the case is not clear, and may reflect influences such as the sectoral composition of demand and/or the growth in part-time employment. Nonetheless, the divergence in earnings growth would not suggest that recruitment difficulties have been significantly more acute in Northern Ireland than in the rest of the UK, despite the faster pace of employment growth.

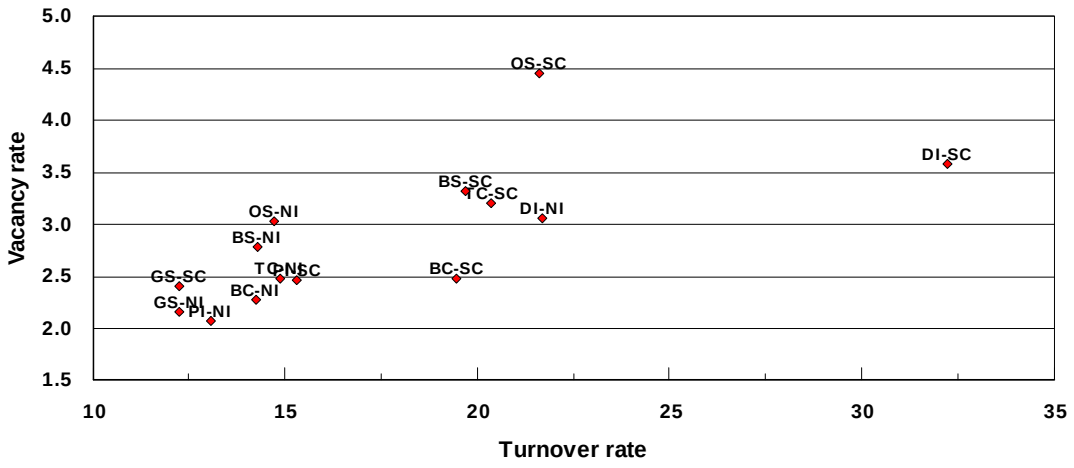
2.17 A final point to note is that indicators based on unemployment and employment rates primarily relate to the likelihood of labour market imbalances due to a mismatch between the quantity of labour required and that which is available to meet demand. Such imbalances are also likely to affect the likelihood of skill-shortage vacancies, or difficulty in matching the supply of skills with employers' requirements. But it would also be expected that the nature and composition of employment demand will affect the incidence and extent of skill-shortage vacancies.

2.18 To that extent, it is interesting to note the variations that exist in relative workforce productivity levels within the UK countries. Measured relative to the UK average, there is a wide range from 80 per cent in Northern Ireland to 101 per cent in England (Table 2.1). Furthermore, productivity relative to the UK average has been falling in Northern Ireland and Scotland and, to a lesser extent, in Wales. This would suggest that employment growth in England has been more skewed towards the higher-skilled end of the spectrum. If so, this would tend to increase the likelihood of skill-shortage vacancies in England relative to the other countries of the UK.

Industry composition

2.19 The composition of employment by industry sector is important to consider for at least two reasons. First, vacancy rates are partly a function of employment turnover in existing positions. For example, a firm may find that it has to advertise an existing position to replace someone who has quit for reasons of retirement or because they are moving to a new job. This is important in the present context because turnover rates vary sharply by industry sector (Figure 2.3[5]). The lowest turnover rates tend to be in government services (GS)[6], especially public administration and defence, with the highest rates occurring in distribution, hotels and restaurants (DI). Reflecting this factor, vacancy rates by industry sector are positively correlated with turnover rates (Figure 2.3).

Figure 2.3 Vacancy and turnover rates
N. Ireland and Scotland



Sources: DEL, 2003; Futureskills Scotland, 2002.

2.20 Second, the pattern of employment growth varies considerably from one industry to another. In both the UK countries and the Republic of Ireland, net new job creation has been fastest in private services sectors such as distribution, hotels and restaurants and financial and other services (Table 2.2). Apart from the Republic, employment has been contracting in the production industries and there has been modest growth in government services, though the pace has quickened more recently due to the growth in government expenditure in areas such as education and health.

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[5] The Welsh survey does not collect turnover information. Both ESS 2001 and the Republic of Ireland collected turnover information, but these data were not included in the published reports. Thus, only Scotland and Northern Ireland are shown in Figure 2.3.

[6] This is a combined sector encompassing public administration and defence, education and health. It is used as a measure of public sector employment.

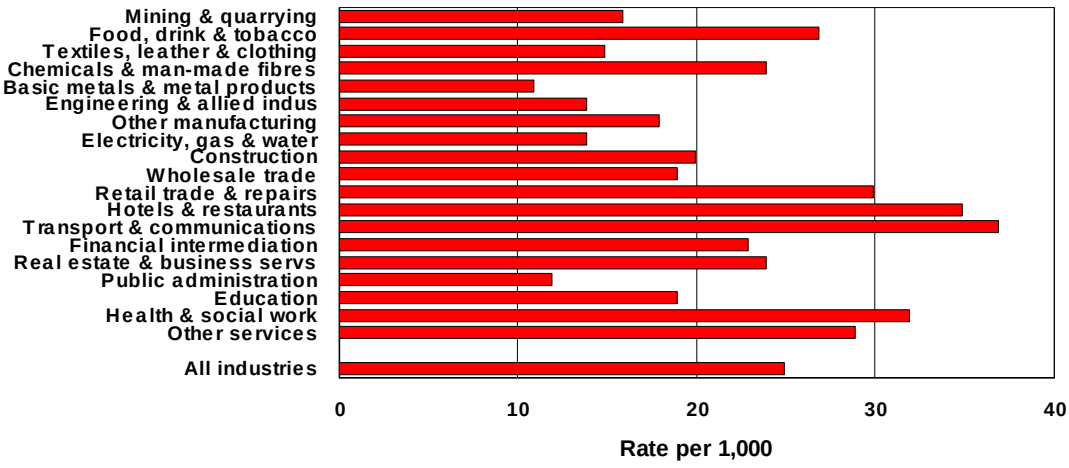
Table 2.2 Growth in employee jobs by industry, 1995-2002 (per cent change)

	N. Ireland	England	Wales	Scotland	Republic of Ireland
	%	%	%	%	%
Production industries	-8	-12	-15	-9	16
Construction	51	26	30	-11	93
Distribution, hotels & restaurants	34	15	15	10	46
Transport, storage & communications	28	15	8	12	95
Financial & other business services	56	23	9	21	80
Public administration, education & health	7	13	15	10	34
Other services	15	25	20	24	25
All industries	**16**	**11**	**7**	**8**	**38**

Sources: NOMIS; CSO.

2.21 The combined influence of these two factors can be seen in the variations by industry sector in vacancy rates according to the ONS UK Vacancy Survey (Figure 2.4). With above-average rates of both employment growth and turnover, vacancy rates in the period shown were highest in hotels and restaurants and transport and communications.

Figure 2.4 Vacancies by industry sector: United Kingdom
Per 1,000 employees, June-August 2002



Source: ONS Vacancy Survey (extracted from Machin & Christian, 2002)

2.22 The lowest vacancy rates were in public administration and also certain manufacturing sectors. The aforementioned expansion in education and health is also reflected in recent above-average vacancy rates.

2.23 These industry sector variations in vacancy rates are likely to be important not just in terms of the actual number of vacancies at any one point in time. In addition, industry sectors will tend to vary in terms of their skill requirements. For that reason, the industry composition of employment may also influence the likelihood of skill-shortage vacancies arising.

2.24 While the UK countries in particular show a number of similarities in their industry composition, there are some important differences. In particular, the public sector has a much lower representation in England than in the other UK countries. There, fewer than one in four persons (24 per cent) were employed in government services in 2002 (Table 2.3. Table B2.1 shows industry composition including agriculture). This compares with over one in three (34 per cent) in Northern Ireland and 31 per cent in Wales.

Table 2.3 Industry composition, 2002 (non-agricultural employment)

	N. Ireland	England	Wales	Scotland	Republic of Ireland
	%	*%*	*%*	*%*	*%*
Production industries	16	15	18	15	19
Construction	6	4	5	5	11
Wholesale & retail trade	17	18	17	16	15
Hotels & restaurants	6	7	7	8	6
Transport, storage & communications	4	6	5	6	7
Financial & other business services	11	21	11	17	14
Public administration & defence	9	5	7	7	5
Education & health	26	19	24	20	16
Other services	5	5	5	6	6
All industries	**100**	**100**	**100**	**100**	**100**

Sources: NOMIS; CSO.

2.25 The other main contrast between the UK countries is the very high share of employment in financial and business services in England (21 per cent), compared to just 11 per cent in Northern Ireland and Wales.

2.26 Regarding the Republic of Ireland, government services employment accounts for just 21 per cent of non-agricultural employment, which is below the proportion in any of the UK countries. In contrast, production industries account for a relatively high share of non-agricultural employment in the Republic (19 per cent), as does construction (11 per cent). In other respects, the industry composition of employment in the Republic is not greatly different from the UK countries.

2.27 The implication of the foregoing variations in industry composition is that vacancy rates and recruitment problems may well vary across the five countries regardless of the overall labour market situation as indicated by employment and unemployment rates.

Size distribution of establishments

2.28 The distribution of employment by size of establishment is a second important correlate of vacancy rates. In general, vacancy rates tend to decline with the size of the workplace. This is a common finding across the UK employer skills surveys, and is discussed in detail in Section 3 below. The concern at this juncture is to provide a descriptive overview on differences between the surveys in the size distribution of establishments. For the reasons discussed in Appendix A, Northern Ireland is compared separately to Scotland (Table 2.4 overleaf) and England (Table 2.5). Being based on enterprises/organisations, data are not available for the Republic of Ireland.

2.29 Considering first the comparison between Northern Ireland and Scotland, the main point of note is the similarity in the distributions for establishments by number of employees. In each of the surveys, workplaces with fewer than ten employees comprised almost three-quarters of the total number of establishments. These small workplaces accounted for much less than this when measured in employment terms, 19 per cent in Northern Ireland and 15 per cent in Scotland. The reason for this difference at the lower end of the size distribution is not clear. Nonetheless, if all other factors were equal, the greater concentration of employment in the smallest size band could be expected to lead to a higher overall vacancy rate in Northern Ireland than in Scotland.

2.30 A different picture emerges when Northern Ireland is compared with England (Table 2.5). In that instance, the main point of contrast is the very high share of establishments in the 1-4 size band in England (72 per cent) compared to Northern Ireland (52 per cent). Most of this difference is reflected in a much higher share of establishments in the 5-24 size band in Northern Ireland, at 38 per cent compared to 21 per cent in England. These variations in the size distribution of establishments are large and remain unexplained in this study. Nonetheless, the differences in the size distribution of employees are much less pronounced and may not exert any great influence on overall vacancy rates.

Table 2.4 Size distribution of employment and establishments: N. Ireland and Scotland

Number of employees:	Establishments		Employees	
	N. Ireland	Scotland	N. Ireland	Scotland
	%	%	%	%
1-9	73.6	73.2	18.6	15.4
10-49	22.3	21.8	31.5	28.4
50-249	3.7	4.3	25.3	27.6
250+	0.4	0.7	24.7	28.6
All	**100.0**	**100.0**	**100.0**	**100.0**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table 2.5 Size distribution of employment and establishments: N. Ireland and England

Number of employees:	Establishments		Employees	
	N. Ireland	England	N. Ireland	England
	%	%	%	%
1-4	51.5	71.9	8.4	10.5
5-24	37.7	20.9	25.7	22.4
25-49	6.6	3.7	15.8	12.6
50-99	2.5	2.0	11.9	13.4
100-199	1.0	0.8	10.4	10.1
200-499	0.4	0.5	9.4	15.5
500+	0.2	0.1	18.3	15.5
All	**100.0**	**100.0**	**100.0**	**100.0**

Sources: DEL, 2003; ESS 2001.

Occupations

2.31 The final correlate of vacancy rates considered in this Section is the occupational composition of employment, as measured in the survey datasets (Table 2.6). While data for the Republic of Ireland are included in the comparison, it is important to bear in mind that, due to differences in classification systems, these data are mapped only approximately to the occupational groups used in the UK surveys.

2.32 Bearing that caveat in mind, the main point of note is that, while there are some differences between the countries, these are not especially pronounced. For example, the share of total employment accounted for by managerial and senior official employees is a little higher in England, especially by comparison with Northern Ireland and the Republic of Ireland. But vacancy rates in this occupation tend to be low in any event. The more important compositional influences are likely to lie more in the middle and lower ends of the occupational spectrum, for example, the higher share of skilled trades in the NI occupational profile. Overall, however, differences in occupational composition *per se* are unlikely to exert any great influence on inter-country difference in vacancy rates and recruitment problems.

Table 2.6 Occupational composition of employment in survey datasets

	N. Ireland	Scotland	England	Rep. of Ireland[1]
	%	*%*	*%*	*%*
Managerial & senior official	12	14	16	12
Professional	10	14	13	12
Associate professional	9	9	8	8
Administrative & secretarial	16	13	15	15
Skilled trades	11	8	9	7
Personal service	8	7	7	14
Sales & customer service	11	16	13	10
Process, plant & machine operatives	12	8	11	13
Elementary occupations	10	12	8	9
All occupations	**100**	**100**	**100**	**100**

1 Due to differences in the classification of occupations, the distribution for the Republic of Ireland maps only approximately to the system used in the UK. The RoI data are not therefore directly comparable and contrasts should be drawn with caution.
Sources: DEL, 2003; ESS, 2001; Futureskills Scotland, 2002; Hughes *et al*, 2002, 2003.

Concluding Remarks

2.33 This Section has set out some key features of the labour market context prevailing in each of the five countries in this study. This has been with a view to determining the major contrasts between the countries that may in turn affect the incidence and extent of recruitment difficulties and skill-shortage vacancies.

2.34 Regarding the balance between demand and supply in the labour market, while there have been variations in employment growth (especially between NI and Great Britain within the UK, and the Republic compared to the rest), there has also been a strong convergence in unemployment rates across the five countries. By 2002, the range in unemployment rates across the five countries was only one percentage point.

2.35 Other labour market indicators show a more mixed picture. In particular, the employment rate in England and Scotland remains well above the other three countries. But in Scotland, population growth has been negative, compared to modest growth in England. Both Northern Ireland and the Republic of Ireland have a low employment rate and are experiencing population growth.

2.36 Despite having recorded the fastest growth in employment amongst the UK countries, average earnings growth in Northern Ireland has been well below average. Thus, the level of average earnings in Northern Ireland has slipped in relative terms, to 84 per cent by 2002. This may result in recruitment difficulties related to low pay, a factor that would also affect Wales where relative earnings were 86 per cent in 2002.

2.37 Regarding the composition of employment by industry sector, there are some important differences between the five countries that are likely to affect vacancy rates. Within the UK countries, Northern Ireland and Wales have relatively high shares of employment in government services. Historically, vacancy rates have been lower in the public sector, though this has been less true recently in areas such as education and health. By contrast, England has a relatively low share of employment in government services and a high share of employment in financial and business services.

3 Recruitment Problems

Introduction

3.1 This Section focuses on recruitment problems as reported by respondents to the various surveys studied in this report. Recruitment problems occur when employers encounter difficulties in filling positions that are currently vacant or unoccupied, or likely to become vacant in the near future.

3.2 Current vacancies *per se* are not the primary object of study in the UK employer skills surveys. Nonetheless, they provide the critical point of entry for the suite of questions within each survey aimed at quantifying difficult-to-fill and skill shortage vacancies and further probing of their features and impacts. In addition, it is often useful to consider difficult-to-fill and skill-shortage vacancies as a share of all vacancies. Hence, this Section commences with an overview on the incidence and extent of current vacancies across the five countries on which this study is based. Current vacancies are analysed with respect to industry sector, establishment size band and occupational composition.

3.3 The Section then compares the survey results for the incidence and extent of difficult-to-fill vacancies. Again, these are analysed by industry sector, establishment size band and occupational composition. In addition, comparisons are drawn in respect of responses given by employers regarding the reasons that vacancies are difficult-to-fill, the effects of such vacancies, and the measures taken to overcome the difficulties encountered.

Current Vacancies

Incidence and extent

3.4 The basic measures typically used for the analysis of the incidence and extent of current vacancies are summarised in Box 3.A overleaf. These are also used for the analysis of difficult-to-fill and skill-shortage vacancies. The incidence measure simply gives the proportion of establishments where one or more vacancies exist.

3.5 There are two possible measures of the extent of current vacancies, the density indicator and the vacancy rate. The vacancy rate measure is theoretically to be preferred, being more consistent with the economic concept of vacancies as a measure of unfilled labour demand. Nonetheless, at whole-economy level, it hardly matters which extent indicator is used. This is because, at that level of analysis, vacancies tend to be small enough relative to employment that the two indicators are almost identical. Of course, for micro-level analyses at establishment level, it matters a lot whether the density or rate measure is used (see Dickerson, 2003).

Box 3.A Current vacancies: Indicators

Indicator	Measurement
Incidence	Number of establishments with at least one vacancy as a per cent of all establishments
Extent	
Density	Number of vacancies as per cent of employment
Vacancy rate	Number of vacancies as per cent of (employment + vacancies)
Composition	
Vacancy shares	Number of vacancies in an industry sector or employment size-band or occupational grouping as a per cent of all vacancies

3.6 While the vacancy rate measure is used by Hughes *et al* in reporting on the Irish vacancy survey, the density measure is the more commonly used in the UK employer skills survey reports. For that reason, the density measure is also the main extent indicator used in this report.

3.7 The headline survey results for incidence and extent are shown in Table 3.1. While an incidence measure is reported for the Republic of Ireland, this is for completeness only and should not be compared with the UK incidence estimates. As was noted in Section 1 above, the Republic's survey is on an enterprise/organisation basis rather than the establishment basis used in the UK surveys.

3.8 Considering first the variations in the incidence of current vacancies, the results point to a significantly[7] higher incidence in Wales than in England and Northern Ireland[8] (see Table B3.1[9]). The only other significant difference is between Scotland and England. The pairwise differences between Northern Ireland and, respectively, England and Scotland are not statistically significant, that is, they are all within the margins that would be expected from the levels of sampling error associated with each of these surveys.

[7] This is at the 99 per cent confidence level. The choice of this confidence level is discussed in detail in the sampling error section of Appendix A.

[8] As discussed in Appendix A, the Republic is not included in any such statistical tests.

[9] The tabulations in Appendix B are titled according to the Section of the report to which they refer and the order in which they appear within that Section. Thus, Table B3.1 presents results used in Section 3 (hence the 'B3'). It is also the first Appendix Table to which reference is made within Section 3 (hence Table B3.1).

Table 3.1 Current vacancies: Incidence and extent

	N. Ireland	England	Scotland	Wales	Rep. of Ireland[1]
	%	*%*	*%*	*%*	*%*
Incidence					
% of establishments	16	14	18	22	*22*[1]
Density					
% of employment	2.6	3.7	3.1	2.0	3.6
Rate					
% of vacancies + employment	2.5	3.6	3.0	2.0	3.5
Memo items					
Unemployment rate[2]	5.7	5.0	6.8	4.6	4.1
Unemployment rate / vacancy rate	2.3	1.4	2.2	2.3	1.2

Notes:
1 Per cent of firms / organisations, hence not directly comparable to establishment-based incidence measure. Derived as weighted average of private and public sector employers reporting at least one vacancy, that is, 62.5 per cent of public sector organisations (weighted base=571) and 21.6 per cent of private sector organisations (weighted base=98,600).
2 This is the unemployment rate during the survey year.

Sources: NI – DEL, 2003; England – ESS 2001; Scotland – Futureskills Scotland, 2002 ; Wales – Future Skills Wales, 2003; Republic of Ireland – Hughes *et al*, 2002, 2003..

3.9 The picture is somewhat different for inter-country differences in the extent of current vacancies. The Welsh density measure is significantly different from England and Scotland, but in this instance the indicator for Wales is below the level reported in any of the other countries (see Table B3.2). The only other significant difference between the UK countries is between Northern Ireland and England.

3.10 A number of points can be made regarding these results. First, Wales appears to be somewhat of an 'outlier', having both the highest incidence and the lowest density. It is not at all obvious, however, why this should be the case.

3.11 Second, taken at face value, the results would suggest that, amongst the UK countries, the 'tightest' labour market at the time that the survey was being undertaken was in England. There, the unemployment rate at the time of the survey was only 1.4 times higher than the vacancy rate[10,11], compared to a ratio of 2.3 in each of the other UK countries.

3.12 The results shown in Table 3.1 do not, however, form a definitive basis on which to draw conclusions regarding relative labour market tightness. First, as discussed in Appendix A, there are differences in the form of the vacancy question as posed by the various surveys. The Northern Ireland and Republic of Ireland surveys provide brief definitions that correspond with the economic concept of a vacancy, that is, a job which is unfilled, presently available and that has been notified to external applicants. In contrast to this, vacancies are not defined in the English, Scottish and Welsh surveys.

3.13 The absence of a definition could potentially impart an upward bias to the numbers of vacancies reported in the Great Britain surveys when these are compared to Northern Ireland and the Republic[12]. That said, it is not obvious from the headline results in Table 3.1 that this has happened to any great degree in the Great Britain surveys. For example, the English vacancy rate is significantly higher than Northern Ireland but the Welsh rate is significantly lower. Nonetheless, the possibility that the level of measurement error varies from one survey to another does make it more difficult to assess the meaning of the inter-country differences.

3.14 Second, in addition to the influence of labour market conditions and measurement differences, the cross-country variations shown in Table 3.1 may also be influenced by the compositional factors discussed in Section 2 above and which are known to be associated with vacancies, that is, industry sector, establishment size and occupations. Consideration of these compositional influences also has the benefit of acting as a form of validity check. That is, to the extent that the surveys are measuring the incidence and extent of vacancies on a reasonably consistent basis, then it would be expected that broadly similar *patterns* should be apparent in the vacancy indicators when analysed by industry sector, etc.

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[10] As can be seen from Table 3.1, at country-level, the vacancy rate measure is almost identical to the density measure.

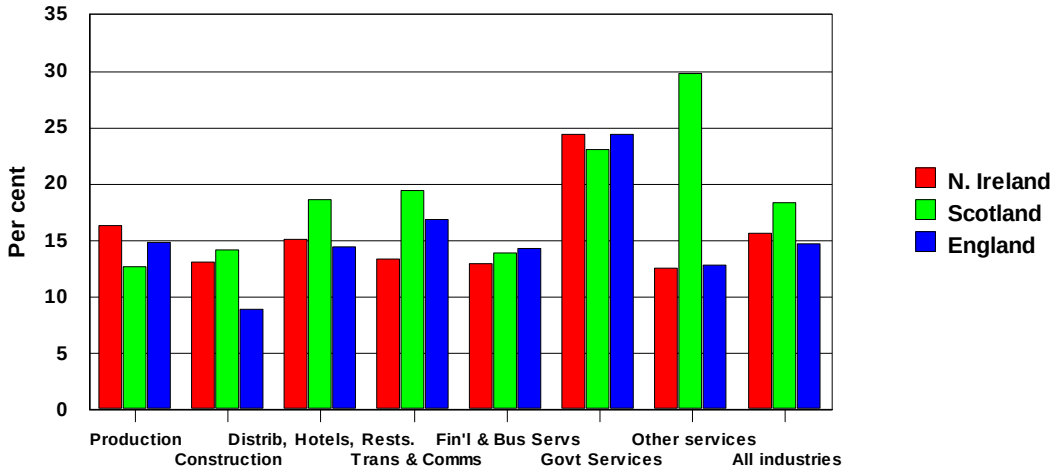
[11] This is the unemployment-vacancy or U/V ratio (see, for example, Layard *et al*, 1991).

[12] For example, the failure to specify that a vacancy refers to a post that is available externally may lead some respondents to include posts that are only advertised internally (see also Machin and Christian, 2002).

Industry sector

3.15 It is possible to compare the incidence of vacancies by industry sector for Northern Ireland, Scotland and England. When this is done, the main point to emerge is the broad similarity between the three countries in the pattern by industry sector. Apart from other services in Scotland, the incidence of vacancy rates is highest in the government services sector (Figure 3.1. See also Table B3.3). Partly, this is because government services establishments tend to be larger than average (in the Northern Ireland survey, the average government services establishment was over three times larger than the average for other industry sectors). Outside of government services, the incidence tends to be fairly uniform.

Figure 3.1 Incidence of current vacancies by industry sector
Per cent of establishments

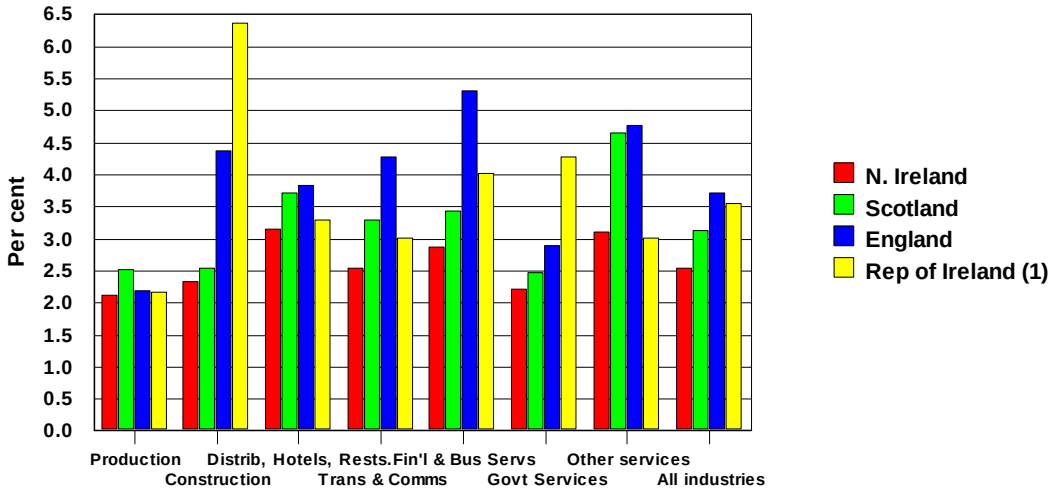


Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

3.16 Considering vacancies as a per cent of employment by industry sector (the density measure), it is possible to include some comparisons also with the Republic of Ireland (Figure 3.2 overleaf. See also Table B3.4). Caution needs to be exercised due to the different industry sector groupings used by the Republic. Nonetheless, there would appear to be a somewhat different pattern of vacancies by industry sector in the Republic as compared with the UK countries. In particular, the density for the construction industry is relatively high, perhaps due to the pressures placed on that sector by the rapid pace of house-building and infrastructure investment in the Republic.

3.17 As with the incidence of vacancies, there is again a broad similarity in the overall pattern across the UK countries. In each of the three UK countries shown in Figure 3.2, density is relatively low in the production industries and, to a lesser extent, government services. Higher densities are found in private services sectors such as distribution, hotels and restaurants and financial and business services.

Figure 3.2 Vacancies as per cent of employment by industry sector



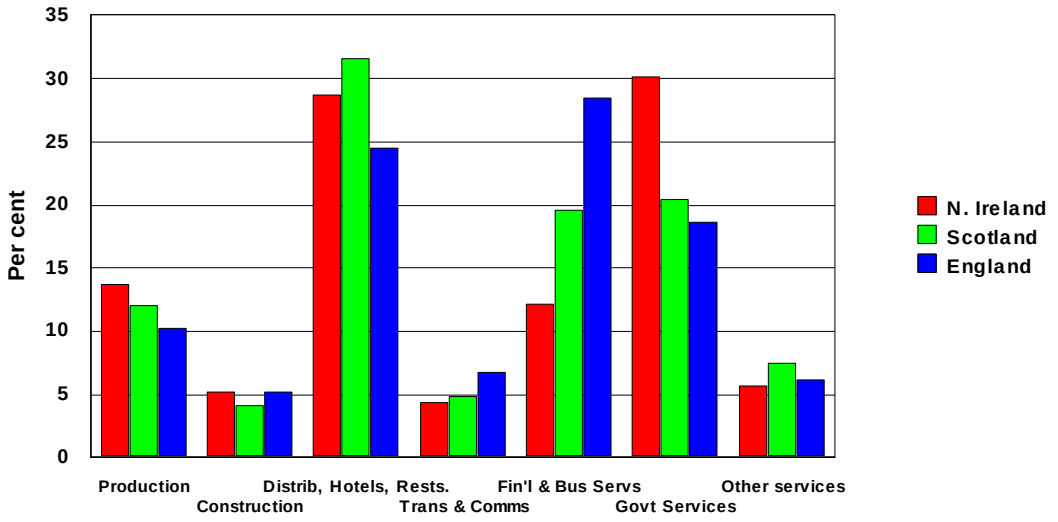
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Hughes et al, 2003a,b.
(1) Transport & communications, hotels and restaurants and other services reported as one sector in RoI study.

3.18 Reflecting its higher overall vacancy rate, density is higher in England than in Northern Ireland or Scotland for each industry sector apart from the production industries. Regarding the significance of these differences, it should be borne in mind that it is more difficult to detect statistically significant differences for sub-groupings such as industry sectors, since sample sizes are obviously less than at whole-economy level.

3.19 Interestingly, however, none of the differences by industry sector is statistically significant. This might suggest that industry composition makes an important contribution to the observed inter-country differences in vacancy rates. For example, the overall density of vacancies in Northern Ireland may be lower due to compositional influences such as an above-average concentration of employment in the public sector accompanied by a below-average share in private services such as financial and business services. Differences in industry composition will have some effect on the overall density of vacancies, but the influence of this factor should not be over-stated. For example, though the pair-wise differences were not significant, the density of vacancies in England was higher than in Northern Ireland in all but one of the seven industry sectors shown in Figure 3.2.

3.20 Nonetheless, the composition of vacancies by industry sector is certainly strongly shaped by the composition of employment. For example, government services account for a substantially higher share of vacancies in Northern Ireland than in the other UK countries (Figure 3.3. See also Table B3.5). By contrast, financial and business services comprise a higher share of vacancies in England than in the other UK countries.

Figure 3.3 Composition of vacancies



Sources: DEL; Futureskills Scotland; ESS 2001.

3.21 The correlation between the sectoral distribution of vacancies and employment is not perfect. This can be seen from the ratio by industry sector of vacancy shares relative to employment shares (Table 3.2 overleaf). A ratio equal to one implies that the sector's share of vacancies is equivalent to its share of employment. A ratio of less than one identifies a sector where vacancies are disproportionately concentrated relative to employment (density in the sector is above average), and vice versa for a ratio less than one (density in the sector is below average).

3.22 In each of the three countries for which the data are available, vacancies are relatively more concentrated relative to employment in private service sectors such as distribution, hotels and catering and financial and business services (they each have ratios greater than one) and less concentrated in production industries or government services (where the ratios are less than one). There are some exceptions, such as the relatively high share of vacancies accounted for by the construction sector in England compared to its relatively low share in Scotland and Northern Ireland. Further, the concentration of vacancies in financial and business services is rather greater in England than in Scotland or Wales. Such contrasts warn against ascribing too much importance to the role played by industry composition.

3.23 Overall, the main point of interest is the broad similarity between Northern Ireland, Scotland and England in the sectoral pattern of vacancies relative to employment shares. This provides some reassurance that, even though the form of the vacancy question varies across the three countries, the responses are still comparable, albeit not perfectly so.

Table 3.2 Current vacancy shares relative to employment shares, by industry sector[1] (ratio of shares)

Industry sector:	N. Ireland	Scotland	England
	Ratio	*Ratio*	*Ratio*
Production	0.8	0.8	0.6
Construction	0.9	0.8	1.2
Distribution, hotels & restaurants	1.2	1.2	1.0
Transport & communications	1.0	1.1	1.2
Financial and business services	1.1	1.1	1.4
Public admin., education & health	0.9	0.8	0.8
Other services	1.2	1.5	1.3
All industries	**1.0**	**1.0**	**1.0**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

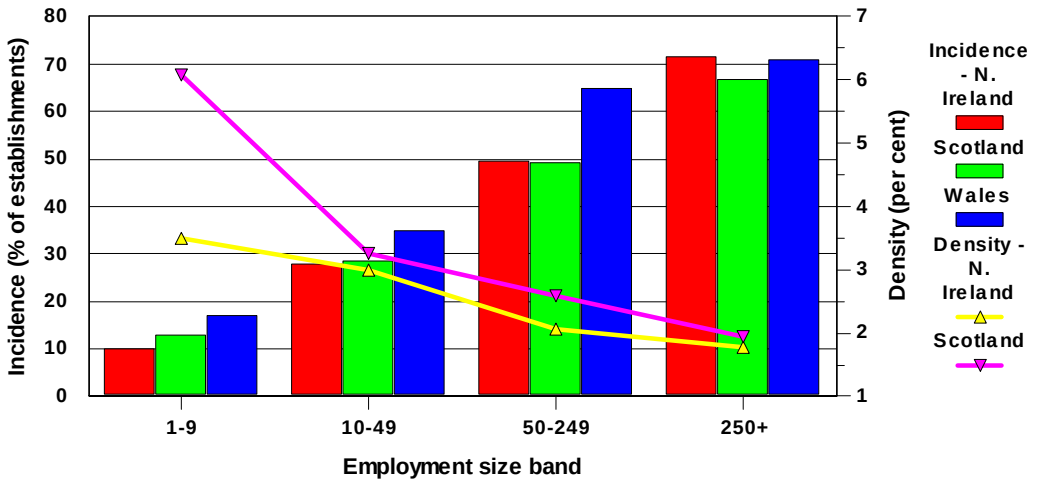
Establishment size

3.24 A common finding across each of the employer skills surveys is that, as establishment size increases, so too does the incidence of current vacancies (Figures 3.4 and 3.5. See also Tables B3.6-B3.7). That is, the larger the establishment, the more likely is it to have one or more current vacancies. This is not unexpected. Larger establishments will have more positions 'at risk' of becoming vacant due to employer turnover. Given the larger share of establishments in the 1-4 size category this is likely to be part of the explanation for the lower overall incidence of vacancies in England than in Northern Ireland (see Table 2.5 above).

3.25 A second common finding across the various skills surveys is that vacancies as a proportion of total employment (the density measure) tend to decrease with establishment size. Again, this is not unexpected. A single vacancy in a small workplace has proportionately greater impact than in a large establishment.

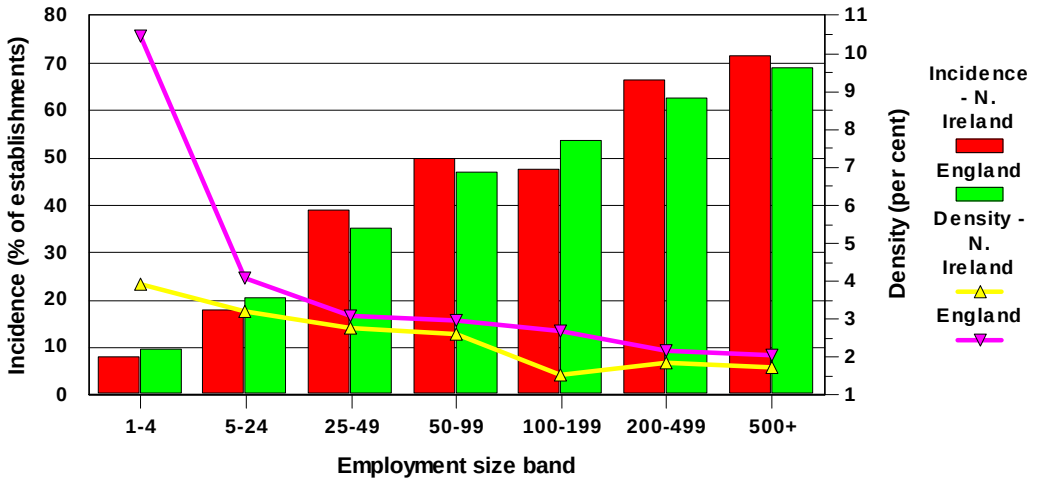
3.26 Regarding the cross-country comparisons, the first point to note is that the relationship between incidence and establishment size is very similar across the four UK countries. The only significant pair-wise difference on the incidence measure is between Wales and Northern Ireland in respect of establishments with 1-9 persons in employment.

Figure 3.4 Establishment size and vacancies
N. Ireland, Scotland and Wales



Sources: DEL, 2003; Futureskills Scotland, 2002; Future Skills Wales, 2003.

Figure 3.5 Establishment size and vacancies
N. Ireland and England



Sources: DEL, 2003; ESS 2001.

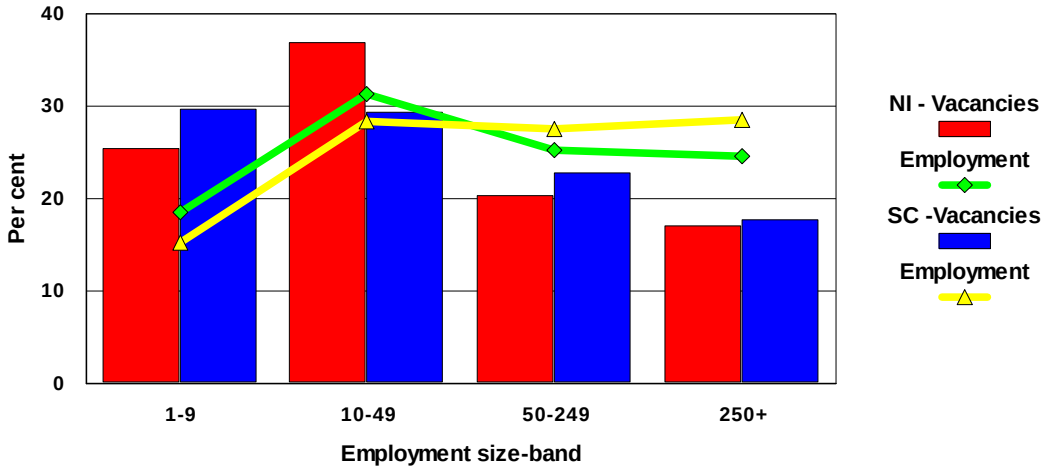
3.27 The same is not, however, true in respect of the density measure. As can be seen from Figure 3.4, there is a large difference between the density measures for Northern Ireland and Scotland in respect of establishments with 1-9 employees. This difference is significant. Similarly, when comparing Northern Ireland and England, there is a large and significant difference in vacancies as a per cent of employment for establishments with fewer than five employees (Figure 3.5). While the density measure for Northern Ireland is consistently below England and Scotland for each of the larger size bands, these differences are not significant. Indeed, when establishments in the 1-4 size band are excluded, there are no significant differences between the densities for Northern Ireland (2.4 per cent in the 5+ size bands), England (2.9 per cent) or Scotland (2.7 per cent).

3.28 It is not at all obvious why the density measure in the smaller establishments should be so much lower for Northern Ireland, when compared with Scotland and England. Part of the explanation may lie in the fact that the vacancy question is posed somewhat differently in Northern Ireland (see Appendix A)[13]. Thus, while the patterns by industry sector are somewhat reassuring in terms of the comparability of the survey results, this is less true when the variations by establishment size are considered.

3.29 The differences in the density measure for the smallest establishments also affect the relationship between the composition of vacancies and establishment size. In both Scotland and England, the share of total vacancies mostly declines with establishment size, albeit the shares are relatively flat in the larger size bands (Figures 3.6 and 3.7. See also Tables B3.8-B3.9). In Northern Ireland, the vacancy share first rises from the lowest size band to the next largest, before declining sharply and remaining relatively flat for establishments in the 50+ size bands.

3.30 Notwithstanding these differences in the profile of vacancy shares by establishment size, a common message emerging from the skills surveys is that current vacancies tend to be disproportionately concentrated in the smaller establishments. In both Northern Ireland and Scotland, the share of vacancies accounted for by establishments in the 1-9 size band is in excess of their employment shares. Conversely, establishments in the 250+ category have a lower share of vacancies than of employment.

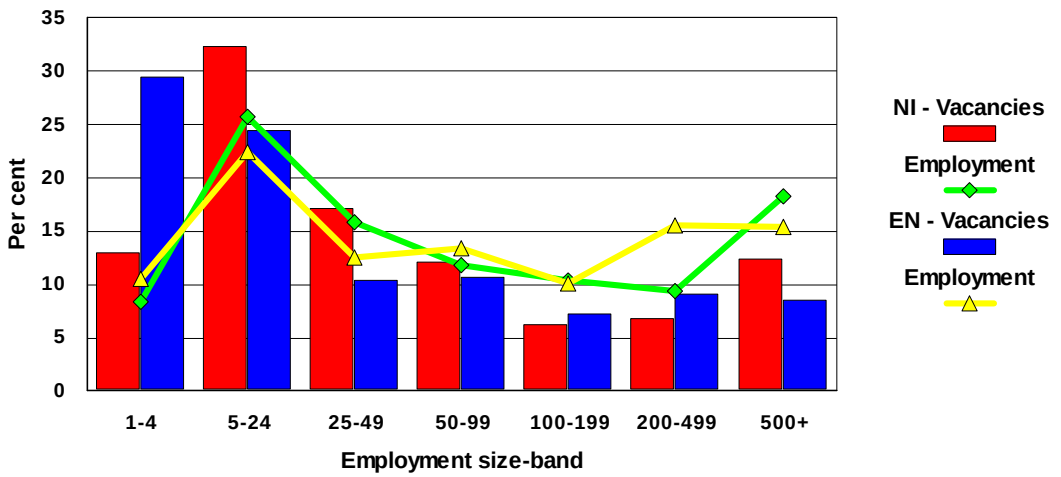
Figure 3.6 Composition of vacancies and establishment size
N. Ireland and Scotland



Sources: DEL, 2003; Futureskills Scotland, 2002.

[13] For example, in the Northern Ireland vacancy question, explicit reference is made to filling vacancies from the external labour market. But smaller establishments that are part of multi-site enterprises or organisations may use internal labour markets (that is, other establishments in the same organisation) in filling their vacancies.

Figure 3.7 Composition of vacancies and establishment size
N. Ireland and England

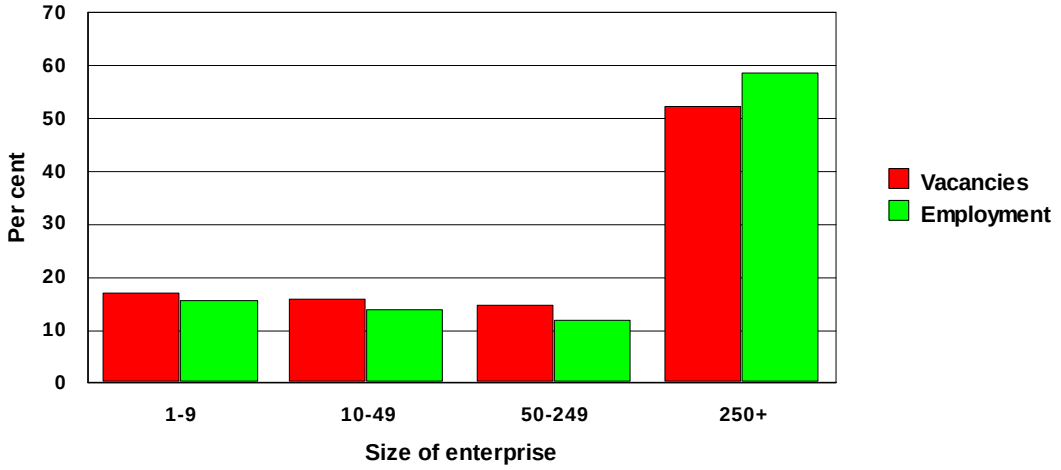


Sources: DEL, 2003; ESS 2001.

3.31 Similarly, when comparing Northern Ireland and England, the share of vacancies accounted for by the smaller establishments tends to be in excess of their employment shares. This is particularly noticeable in the 1-4 size band in England.

3.32 It should, however, be noted that this relationship does not appear to hold when the unit of analysis is the enterprise or organisation. According to the ONS UK Vacancy Survey, vacancies are more proportionately distributed in relation to employment when considering enterprises rather than establishments (Figure 3.8).

Figure 3.8 UK vacancies reported by size of enterprise
June-August 2002, not seasonally adjusted



Sources: ONS Vacancy Survey (extracted from Machin & Christian, 2002); DTI Small and Medium Enterprise Statistics, 2002.

Occupations

3.33 The broad patterns in vacancies by occupation show a number of similarities across the four countries for which data are available. Thus, vacancies as a proportion of employment tend to be lowest in the managerial and senior official and professional occupations in each of the four countries (Table 3.3)[14]. The higher densities occur at the upper end of the occupational spectrum only in associate professional occupations, being more concentrated in the middle and lower end of the scale. One of the issues to be examined in relation to recruitment problems is whether difficult-to-fill vacancies follow a similar pattern to that shown in Table 3.3.

Table 3.3 Vacancies as per cent of employment by occupation[1]

Occupation:	N. Ireland	Scotland	England	Rep. Of Ireland
	%	%	%	%
Managerial & senior official	0.7	0.9	1.2	1.6
Professional	1.6	2.0	2.6	3.6
Associate professional	3.7	4.0	7.4	5.5
Administrative & secretarial	1.8	2.5	3.2	2.7
Skilled trades	3.0	3.0	4.5	7.9
Personal service	2.9	5.5	4.8	3.5
Sales & customer service	2.7	3.6	4.3	3.4
Process, plant & machine operatives	2.5	4.4	3.0	2.3
Elementary occupations	5.1	4.3	6.5	4.2
All occupations	**2.6**	**3.1**	**3.7**	**3.6**

1 The lightly shaded cells highlight occupations with below-average densities where, within each country, the density is two standard deviations or more below the mean for that country (0.6 percentage points for the Republic). Similarly, the more heavily shaded cells highlight occupations with above-average densities where, within each country, the density is two standard deviations or more above the mean for that country (0.6 percentage points for the Republic).
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Hughes *et al*, 2002, 2003.

[14] As discussed in Appendix B, the mapping from the occupations used in the Republic of Ireland reports to the occupational groups shown in Table 3.3 is an approximate one and the results should therefore be interpreted with caution.

3.34 The variations in vacancy densities by occupation also have implications for the composition of vacancies. Thus, in each of the four countries, managerial and senior official occupations account for just 3-5 per cent of all vacancies (Table B3.10). This compares with their employment share of 12-16 per cent (see Table 2.6 above). Associate professional occupations account for a disproportionately high share of vacancies in each country, ranging from 11-16 per cent compared with an employment share in the range 8-9 per cent.

3.35 The above patterns hold for each country, but there is somewhat more variation in other occupations. In the Republic of Ireland, there is a particular concentration of vacancies in the skilled trades occupations. In Scotland, the concentration is greatest in personal service occupations, operatives and elementary occupations. In England, the share relative to employment is high in skilled trades, personal service and elementary occupations. By contrast, in Northern Ireland, the largest concentration is in elementary occupations (20 per cent of vacancies compared to 10 per cent of employment).

Summary

3.36 Overall, when the results from the various surveys are compared, there were few statistically significant differences in the incidence and extent of current vacancies. Measured as a percentage of total employment, the density of current vacancies was significantly lower in Wales than in England and Scotland. The density measure for Northern Ireland was also significantly lower than for England. The results for the Republic of Ireland cannot be compared with the UK surveys in terms of statistical significance, but it can be noted that the density in the Republic was on a par with England.

3.37 Considered in relation to unemployment rates at the time of the survey, the survey findings indicate that England had the 'tightest' labour market amongst the UK countries. The tightness measure was about the same for the Republic of Ireland as for England.

3.38 The labour market interpretation of the inter-country differences in vacancies as a proportion of employment is, however, clouded by differences in the approach used to measure current vacancies. Whereas Northern Ireland and the Republic of Ireland provided respondents with a definition, this was not done in the Great Britain surveys.

3.39 Comparing the survey estimates by industry sector, establishment size, and occupational composition, it was reassuring from the perspective of comparability to find broadly similar patterns in the composition of current vacancies. The main point of concern in that regard was that the density of vacancies in the very smallest establishments was significantly higher in England and Scotland than in Northern Ireland, but for no obvious reason apart from the difference in measurement.

Difficult-to-fill vacancies

Incidence and extent

3.40 In the UK employer skills surveys, respondents are asked to self-classify their vacancies as being difficult-to-fill or otherwise[15]. For Northern Ireland, England and Scotland, this is done on a job-type or occupation-by-occupation basis. An establishment is deemed to have a difficult-to-fill vacancy if it responds that any job type or occupational vacancy is proving difficult. In each of these three countries, about one in ten establishments said that one or more of their vacancies were proving difficult-to-fill (Table 3.4).

Table 3.4 Difficult-to-fill vacancies: Incidence and extent

	N. Ireland	England	Scotland	Wales
	%	*%*	*%*	*%*
Incidence				
% of all establishments	10	8	10	14
% of establishments with a vacancy	62	52	55	64
Density				
% of employment	1.5	1.7	1.4	1.1
Composition				
% of all current vacancies	60	47	46	55

Sources: NI – DEL, 2003; England – ESS 2001; Scotland – Futureskills Scotland, 2002; Wales – Future Skills Wales, 2003.

3.41 The incidence of difficult-to-fill vacancies was highest in Wales (14 per cent), and significantly greater than in England or Northern Ireland (see Table B3.1). This is likely to reflect the higher overall incidence of vacancies in Wales (see Table 3.1 above). The Welsh survey uses a slightly different approach, with a single question being posed regarding all vacancies taken together. But the proportion of establishments with a vacancy that also reported a difficult-to-fill vacancy was about the same in Wales (55 per cent) as in Northern Ireland (60 per cent).

[15] See Appendix A for a detailed discussion of the classification of vacancies as difficult-to-fill or otherwise. The Republic of Ireland measures incidence on a different basis (enterprises / organisations rather than establishments and also does not report on the extent of difficult-to-fill vacancies. Hence, this discussion focuses on the UK employer skills surveys.

3.42 While one in ten establishments reported having a difficult-to-fill vacancy, such vacancies comprised a relatively small percentage of employment in each of the four UK surveys, ranging from 1.7 per cent in England to 1.1 per cent in Wales. The density measures for Northern Ireland, England and Scotland are not significantly different from each other, but the Welsh density was significantly lower than in England (see Table B3.2). Once again, therefore, the results for Wales are somewhat anomalous, with the highest incidence being accompanied by the lowest density.

3.43 The main point of note, however, is the variation in the share of all current vacancies that are difficult-to-fill. In Northern Ireland, this was estimated at 60 per cent, significantly higher than England or Scotland (see Table B3.11), where fewer than half of all current vacancies were identified as difficult-to-fill. The contrast between Northern Ireland and England especially is somewhat unexpected.

3.44 As discussed in respect of Table 3.1 above, the variations in the ratio of unemployment rates to vacancy rates suggest that, allowing for differences in the timing of the surveys, the labour market was tighter in England than in the other UK countries. There is some evidence that difficult-to-fill vacancies are more sensitive to the economic cycle than are all vacancies, falling relatively faster in the downward phase and rising more quickly in the upswing (Wegerif, 1994). It might therefore have been expected that difficult-to-fill vacancies would have accounted for a higher share of vacancies in England than in the other UK countries.

3.45 Of course, this hypothesis implicitly assumes that the efficiency (or otherwise) of the labour market does not vary from one UK country to another. But it may be, for example, that the effectiveness of job search varies from one country to another and/or that mismatches between the jobs on offer and the skills and other attributes of job-seekers are more likely to occur in one country than another.

3.46 It is also the case that, as documented in Appendix A, there are some differences in approach to the measurement of current vacancies. This may be having an influence on the observed variations, though it is not possible to say to what extent. Again, this makes it harder to interpret the cross-country differences.

3.47 Finally, as with current vacancies, there may be compositional influences arising from between-country differences in factors such as industry structure, establishment size distribution and/or the occupational profile of the workforce. The next part of this Section considers the incidence and extent of difficult-to-fill vacancies under each of these headings. This is followed by a discussion of the more qualitative survey findings on reasons for, effects of and actions taken to overcome difficult-to-fill vacancies.

Industry sector

3.48 As with current vacancies, the variation in the incidence of difficult-to-fill vacancies is very similar across the surveys for which findings are available. Apart from other services, there were no significant differences by individual industry sector between Northern Ireland, England and Scotland. Indeed, the most striking finding is that, within each country, incidence did not vary greatly from one sector to another, again excepting other services in Scotland (see Table B3.12). Whereas government services showed an above-average incidence for all current vacancies in each of the three countries, this was not the case for difficult-to-fill vacancies. In Northern Ireland, the proportion of establishments with a current vacancy and that also reported a difficult-to-fill vacancy was lowest in government services (see Table B3.13).

3.49 On an industry by industry basis, there were no significant between-country differences in the density of difficult-to-fill vacancies (Table B3.14). There were, however, some contrasts by industry sector when considering difficult-to-fill vacancies as a percentage of all current vacancies. Within each industry sector apart from other services, the proportion of all vacancies reported as difficult-to-fill was higher in Northern Ireland than in England or Scotland (Figure 3.9. See also Table B3.15).

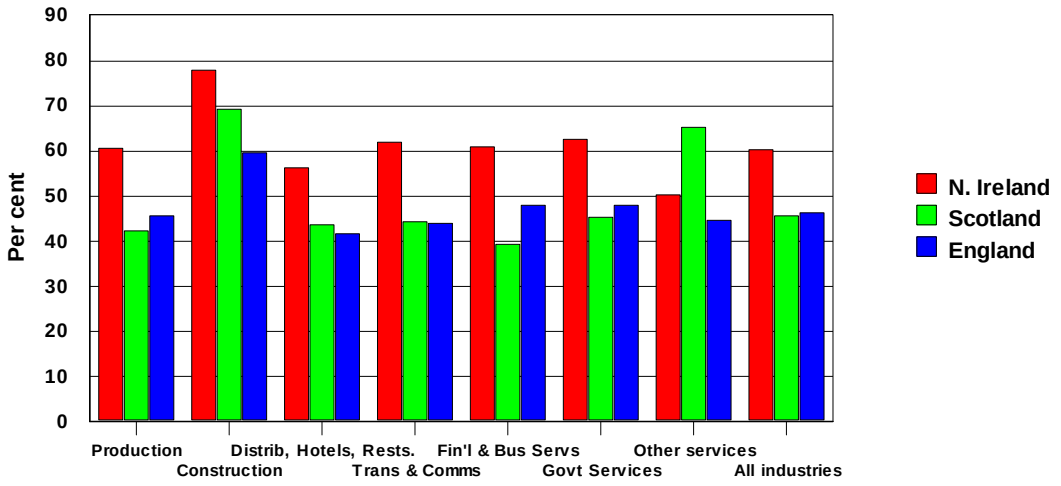
3.50 As sample sizes are lower when the survey data are analysed by industry sector, it can be more difficult to detect statistically significant differences. Thus, it was only in distribution, hotels and restaurants and government services that the difficult-to-fill share of all vacancies was significantly higher in Northern Ireland by comparison with the other countries. Nonetheless, these are large sectors, accounting for 58 per cent of total non-agricultural employment in Northern Ireland (see Table 2.3). Overall, these findings indicate that, for whatever reason, current vacancies in Northern Ireland were more likely to be difficult-to-fill than in England or Scotland, regardless of industry sector.

3.51 The second point of note from Figure 3.9 is that, when the three surveys are compared, vacancies were most likely to be difficult-to-fill in the construction sector. This has implications for the occupational composition of difficult-to-fill vacancies which are discussed further below.

3.52 The third point emerging from Figure 3.9 is that, apart from the construction sector generally and other services in Scotland, the likelihood of a vacancy being difficult-to-fill did not vary greatly from one industry sector to another within each of the three countries. This in turn means that the composition of difficult-to-fill vacancies (see Table B3.16) was closely aligned with the composition of all current vacancies in each of the three surveys. Thus, as with all current vacancies, difficult-to-fill vacancies are also more highly concentrated in private services industries such as distribution, hotels and catering.

3.53 The exception to this is, of course, the construction industry. There, the greater likelihood of a vacancy being difficult to-fill, given that a vacancy exists, means that such vacancies are more highly concentrated in that sector than was found to be the case for all current vacancies.

Figure 3.9 Difficult-to-fill vacancies by industry sector
Per cent of current vacancies



Sources: DEL, 2003; Futureskills Scotland, 2002; ESS 2001.

Table 3.5 Difficult-to-fill vacancy shares relative to employment shares, by industry sector (ratio of shares)

Industry sector:	N. Ireland		Scotland		England	
	All	D2F	All	D2F	All	D2F
Production	0.8	0.8	0.8	0.7	0.6	0.6
Construction	0.9	1.2	0.8	1.2	1.2	1.5
Distribution, hotels & restaurants	1.2	1.2	1.2	1.1	1.0	0.9
Transport & communications	1.0	1.0	1.1	1.0	1.2	1.1
Banking, finance & insurance etc	1.1	1.1	1.1	0.9	1.4	1.5
Public admin., education & health	0.9	0.9	0.8	0.8	0.8	0.8
Other services	1.2	1.0	1.5	2.1	1.3	1.2
All industries	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Establishment size

3.54 The incidence and density of difficult-to-fill vacancies follow the same broad patterns by establishment size as were found for all current vacancies, that is:

- The incidence of difficult-to-fill vacancies increases sharply with establishment size (Tables B3.17 and B3.18).

- Expressed as a percentage of employment (the density measure), difficult-to-fill vacancies decline with establishment size (Tables B3.19 and B3.20).

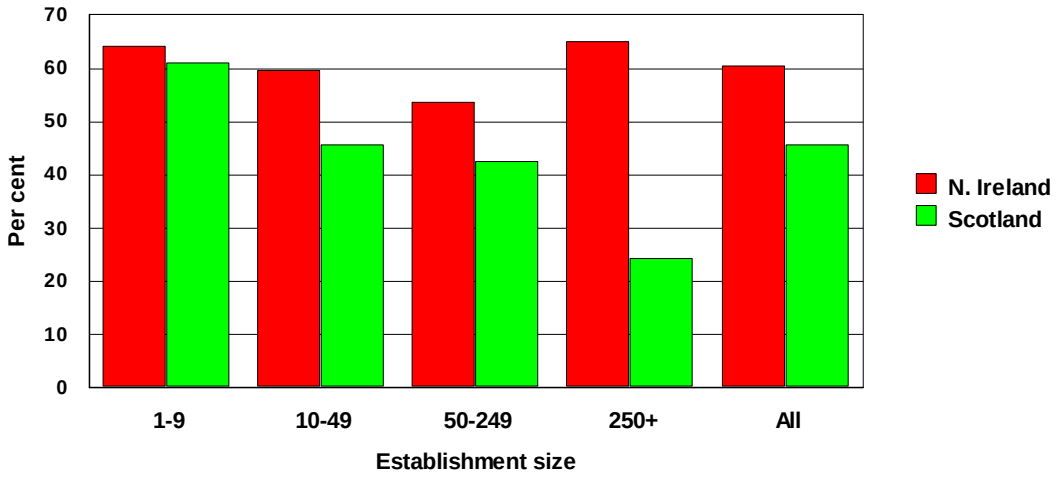
3.55 Further, as with all vacancies, the between-country differences are largest in the smallest establishments size bands. In the 1-4 size band in Northern Ireland, difficult-to-fill vacancies represented 2.3 per cent of employment compared to 5.6 per cent in England (this difference is significant). Comparing Northern Ireland with Scotland, the density measure in establishments with 1-9 employees was 2.2 per cent and 3.7 per cent respectively. Again, it is not obvious why these differences should have arisen, apart from the different approaches to measuring current vacancies.

3.56 As with the patterns by industry sector, however, the most striking differences between the countries occur when difficult-to-fill vacancies are expressed as a share of all vacancies. Comparing Northern Ireland and Scotland, the main point to note is that the difficult-to-fill share of all current vacancies decreases with establishment size in Scotland but is fairly constant across the size distribution of establishments in Northern Ireland (Figure 3.10. See also Table B3.21).

3.57 A similar picture emerges when Northern Ireland is compared with England. While the gradient is less pronounced, England is similar to Scotland in reporting a decline in the difficult-to-fill vacancy share with establishment size (Figure 3.11. See also Table B3.22). Again, this contrasts with a relatively flat share by establishment size band in Northern Ireland.

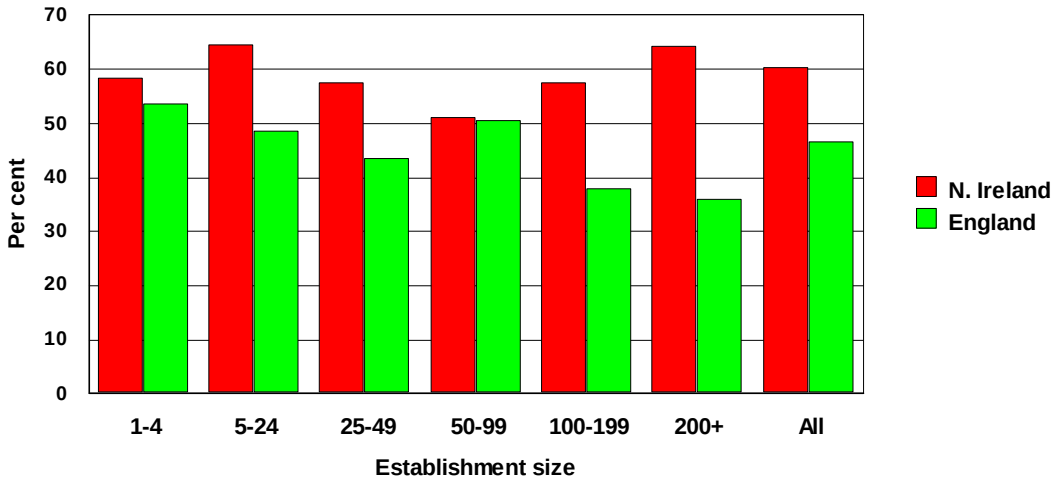
3.58 Notwithstanding the smaller sample sizes that occur when the survey data are analysed by establishment size, the differences in difficult-to-fill vacancy shares shown in Figures 3.10 and 3.11 are mostly significant (the 10-49 and 250+ size bands when comparing Scotland and Northern Ireland and the 5-24, 25-49, 100-199 and 200+ size bands when comparing England and Northern Ireland. As with industry sector, these findings again suggest that, when it arises, a vacancy tends to be more difficult-to-fill in Northern Ireland than in England or Scotland. It is not possible to say definitively if this reflects differences in labour market efficiency, or is an artefact of differences in survey design (e.g. weighting and grossing) and/or the measurement of vacancies.

Figure 3.10 Difficult-to-fill vacancies by establishment size
Per cent of current vacancies: Northern Ireland and Scotland



Sources: DEL, 2003; Futureskills Scotland, 2002.

Figure 3.11 Difficult-to-fill vacancies by establishment size
Per cent of current vacancies - Northern Ireland and England



Sources: DEL, 2003; ESS 2001.

3.59 One implication of the variations in difficult-to-fill vacancies as a share of all vacancies is that, in England and Scotland, recruitment problems are relatively more concentrated in the smaller establishments. For example, in Scotland, establishments with 1-9 employees accounted for 40 per cent of difficult-to-fill vacancies compared with 30 per cent of all vacancies and 15 per cent of employment (see Table B3.23). In England, over one in three (34 per cent) difficult-to-fill vacancies were in establishments with 1-4 employees, compared to their 29 per cent share of all current vacancies and 11 per cent share of employment (see Table B3.24). By contrast, in Northern Ireland, the size distribution of difficult-to-fill vacancies is more closely aligned with that for all current vacancies (Tables B3.23 and B3.24).

Occupations

3.60 The extent to which vacancies are difficult-to-fill or otherwise varies sharply from one occupation to another. In Northern Ireland, difficult-to fill vacancies as a percentage of employment varied from 0.3 per cent in managerial and senior official occupations to three per cent in elementary occupations (Table 3.6). In Scotland, the density ranged from 0.2 per cent in managerial and senior official occupations to 3.6 per cent in personal service occupations. In England, the lowest density was also in managerial and senior official occupations (0.4 per cent), but the highest density occurred in associate professional occupations (3.6 per cent).

Table 3.6 Difficult to fill vacancies as per cent of employment by occupation[1]

Occupation:	N. Ireland	Scotland	England
	%	%	%
Managerial & senior official	0.3	0.2	0.4
Professional	0.7	0.6	1.5
Associate professional	2.9	2.1	3.6
Administrative & secretarial	0.8	0.8	0.8
Skilled trades	2.5	2.0	3.1
Personal service	1.6	3.6	2.7
Sales & customer service	1.2	1.3	1.7
Process, plant & machine operatives	1.7	2.3	1.5
Elementary occupations	3.0	1.8	2.8
All occupations	**1.5**	**1.4**	**1.7**

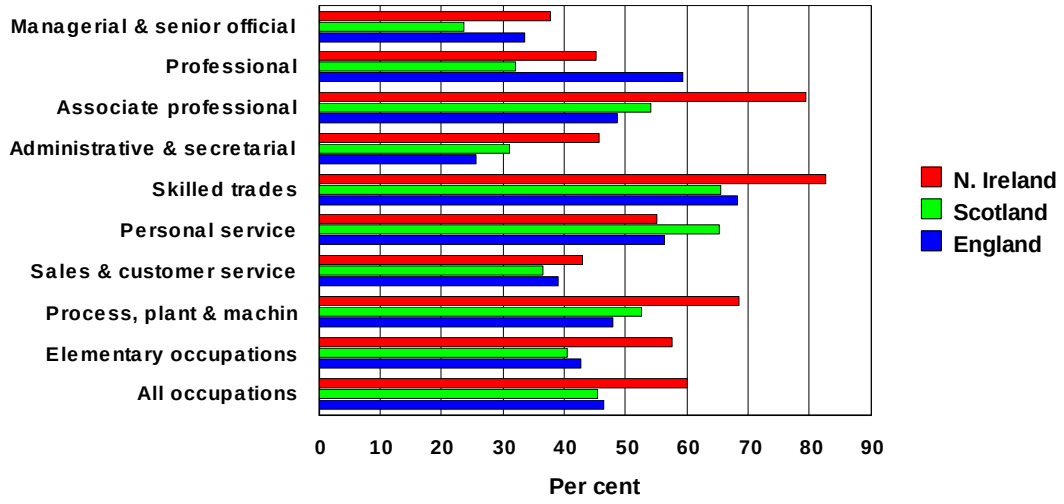
1 The lightly shaded cells highlight occupations with below-average densities where, within each country, the density is two standard deviations or more below the mean for that country. Similarly, the more heavily shaded cells highlight occupations with above-average densities where, within each country, the density is two standard deviations or more above the mean for that country.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

3.61 Notwithstanding the contrasts in the occupations with the highest density, the overall occupational *pattern* of difficult-to-fill vacancies did not vary greatly between the three countries.

3.62 Thus, in each country, associate professional occupations showed comparatively high densities, as did skilled trades. The high density of difficult-to-fill vacancies in the skilled trades occupations most likely reflects the finding, reported above, that such vacancies were relatively higher in the construction industry. Difficult-to-fill vacancies were also apparent in the less-skilled occupations, notably elementary occupations in Northern Ireland and England and personal service occupations in Scotland.

3.63 As in the analysis by industry sector and establishment size, the difficult-to-fill share of all vacancies tended to be higher in most occupations in Northern Ireland than in England or Scotland (Figure 3.12. See also Table B3.25). The only exception to this was in personal service occupations, though the share in the sales and customer service occupations was only slightly higher in Northern Ireland. Taken at face value, this would suggest a greater difficulty in filling vacancies in Northern Ireland, given that a vacancy has arisen. Again, it is not possible to say if this fully reflects a labour market effect or is at least partly affected by the different measurement approaches used in the three countries

Figure 3.12 Difficult-to-fill vacancies as per cent of all current vacancies



Sources: DEL, 2003; Futureskills Scotland, 2002; ESS 2001.

3.64 A second point to note from Figure 3.12 is that, within each country, the difficult-to-fill vacancy share varies from one occupation to another. In Northern Ireland, the three occupations with the highest shares of difficult-to-fill vacancies (associate professional, skilled trades and process, plant and machine operatives) accounted for 54 per cent of all difficult-to-fill vacancies in Northern Ireland (see Table B3.26). This compares with their 30 per cent employment share, giving a concentration ratio of 1.8 (that is, 54 divided by 30).

3.65 Similarly, in England, there were three occupations where the share of all vacancies accounted for by difficult-to-fill vacancies was well above average (associate professional, skilled trades and personal service). Together, these three occupations accounted for 44 per cent of difficult-to-fill vacancies compared to their 24 per cent employment share, giving a concentration ratio of 1.8.

3.66 In Scotland, the three occupations where the difficult-to-fill share was highest (associate professional, skilled trades and personal service) accounted for 43 per cent of all difficult-to-fill vacancies and 24 per cent of employment, again giving a concentration ratio of 1.8.

3.67 Thus, in each country, difficult-to-fill vacancies tend to be relatively highly concentrated in particular occupations, albeit these are the broadly defined Major Groups of SOC 2000. Interestingly, the concentration ratio for the three occupations was the same in each of the three countries (their combined share of vacancies was 1.8 times their combined share of employment). Furthermore, in each country, these three occupations were distributed across the occupational spectrum and two of the three occupations where recruitment problems were most pronounced (associate professional and skilled trades) occurred in each of the three countries.

Reasons

3.68 One of the major benefits of employer skills surveys is that they provide an opportunity to probe, in a qualitative fashion, for the causes and effects of recruitment problems and how firms deal with these. From the perspective of this study, it is therefore unfortunate that the surveys exhibit a range of differences in their approach to and presentation of such qualitative indicators. The differences between the surveys in that regard are discussed in detail in Appendix A. The surveys are found to vary in terms of:

- The approach e.g. Scotland uses a two-stage approach to the reasons for difficult-to-fill vacancies.
- Whether questions are posed prompted or unprompted.
- The frameworks used for coding responses and reporting.
- The units in which responses are reported e.g. vacancies in England and Northern Ireland compared to establishments in Scotland and Wales.

3.69 The conclusion drawn is that, in the absence of a common approach, it is only possible to compare the surveys in respect of the ranking of factors identified by respondents regarding reasons for, effects of and measures taken to overcome recruitment problems. Though, even this strategy is not available for comparisons of skills sought.

3.70 Turning first to the reasons for difficult-to-fill vacancies, the rankings identified by respondents to each of the surveys are shown in Table 3.7. Due to the use of a two-stage approach[16], strictly speaking the Scottish results are not directly comparable with the other surveys even with the ranking approach.

3.71 In Northern Ireland, the reason most frequently cited by respondents was that 'not enough people were interested'. This factor ranked third amongst the respondents to the English survey. But the English survey also reports on 'low number of applicants generally', which ranked second amongst respondents to ESS 2001. These two responses may well be substitutes for each other. If so, then it might have been the case that too few applicants would also have ranked highest in ESS 2001 if they had been merged into a single response (see Table A.16). This illustrates the difficulties in drawing comparisons when response frameworks are coded differently between the surveys.

Table 3.7 Ranking of reasons given for difficult-to-fill vacancies[1]

N. Ireland[2]	England	Wales	Scotland
% of vacancies	% of vacancies	% of establishments	% of establishments
Not enough people interested	Lack of skills	Lack of skills	Number of applicants
Lack of work experience	Low number applicants generally	Lack of applicants	Mixture of quality and quantity
▪ Lack of skills ▪ Attitudes, motivation, personality ▪ Long / unsocial / irregular hours	Not enough people interested ▪ Low number with motivation ▪ Company does not pay enough	Lack of work experience Lack of qualifications	Quality of applicants *Main quantity reasons:*
Benefits trap	Competition from other employers	Applicants lack motivation/right attitude	Not enough people interested
▪ Wages lower than other firms	Lack of work experience		Low number jobseekers generally
▪ Competition from other employers	Lack of qualifications		Location of the firm
Lack of qualifications			Benefits trap
			Wages lower than other firms

1 'Ties' denoted by bullet points.
2 Excluding 'Other'.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003.

[16] Respondents are first asked to distinguish between 'quality' and 'quantity' reasons for lack of applicants. Skills-related reasons are then probed further under the quality heading.

3.72 The main point of contrast between the surveys is that, whereas in Northern Ireland, lack of work experience was the most frequently cited of the reasons related to skill-shortage vacancies[17], this was not the case in England and Wales. In those countries, lack of skills *per se* tended to be more important. Conversely, in each of the surveys, respondents ascribed a relatively low ranking to lack of qualifications as a reason for recruitment problems.

3.73 Overall, it is the quantity-related rather than skills-related factors that are more prominent in the reasons given by respondents for difficult-to-fill vacancies. Respondents in each country also tended to relate the quantity factors to a dearth of applicants in the labour market generally, rather than factors 'internal' to the firm (e.g. pay, hours, progression). This is perhaps more surprising in the case of Northern Ireland and Wales, where employment rates are well below the UK average (see Table 2.1 above) and so also are relative pay levels. But it should be borne in mind that reasons given is essentially a qualitative indicator, reflecting the subjective perspectives of respondents.

Effects

3.74 The rankings of survey responses to questions about the effect of difficult-to-fill vacancies are shown in Table 3.8. While the surveys are more nearly comparable on this indicator, there are still problems of interpretation. Primarily, this is due to variations between the surveys in the use of prompted versus unprompted responses combined with differences in the coding frameworks used for categorising and reporting on responses.

3.75 The problems that arise can be illustrated by comparing the surveys according to their first-ranked reasons. A very large majority of respondents identified difficult-to-fill vacancies as placing a strain on the management of existing staff in the Northern Ireland and Republic of Ireland surveys, 74 per cent and 81 per cent respectively (see Table A.17).

3.76 This factor features hardly at all in the other surveys, which might suggest that the experience of recruitment problems varies substantially from one country to another. However, it could be argued that 'strain on management of existing staff' is more a reflection of how businesses cope with difficult-to-fill vacancies than an indicator for the business impacts of recruitment problems. Seen in that light, the messages from the surveys are more consistent. The main business impacts tend to be around difficulties with customer services followed by business development effects or constraints on growing the business (e.g. delays developing new products).

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[17] These are lack of skills, lack of work experience and lack of qualifications.

Table 3.8 Ranking of effects of difficult-to-fill vacancies[1]

N. Ireland	England	Scotland	Wales	Rep of Ireland (Private sector)
% of vacancies	% of vacancies	% of establishments	% of establishments	% of firms
Strain on management of existing staff	Difficulties with customer services	Difficulties with customer services	Loss of business to competitors	Strain on management of existing staff
Customer service	Delays developing new products	Delays developing new products	Can't expand the business / meet growth targets	Restrictions to business development activities
Restrictions to business development activities	Loss of business to competitors	Loss of business to competitors	▪ Loss of quality in service	Loss of quality of service
▪ Increased running costs	Increased operating costs	Difficulties with quality standards	▪ Loss of efficiency / increased wastage	Increased running costs
▪ Increase in recruitment costs	Difficulties with quality standards	Increased running costs	▪ Stress / more work / increased pressure on other staff	Loss of business to competitors
Loss of business to competitors	Withdrawal of services / products	No effect on the business		Increased recruitment costs
Difficulties with quality	Difficulties w/new working practices	Withdrawal of services / products		

1 'Ties' denoted by bullet points.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003; Hughes et al, 2002.

Measures taken

3.77 The rankings for measures taken to overcome difficult-to-fill vacancies are shown in Table 3.9 overleaf (see also Table A.19). As with the preceding qualitative indicators, caution must be exercised in comparing the findings across the surveys. For example, whereas Scotland and Northern Ireland elicit unprompted responses, ESS 2001 used a pre-coded response framework with response options being read out in succession. In its postal survey, the Republic of Ireland survey supplied respondents with a pre-coded response framework. Perhaps partly for that reason, the rankings of measures taken varied from one country to another.

3.78 In Northern Ireland, the measures most frequently taken were focused on the recruitment process i.e. consider a wider range of people. The second-ranking measure was to provide more training to less qualified recruits.

Table 3.9 Ranking of measures taken to overcome difficult-to-fill vacancies[1]

N. Ireland[2]	England	Scotland	Wales	Rep of Ireland (Private sector)
% of vacancies	% of vacancies	% of establishments	% of establishments	% of firms
Considered a wider range of people	Spend more on recruitment	No measures taken	Expanded recruitment channels	Offered higher pay
Provide more training to less qualified recruits	More extensive range of recruitment channels	More extensive range of recruitment channels	Recruited from different geographical areas	Considered a wider range of people
No measures taken	Offered higher pay / more incentives	Offered higher pay / more incentives	Highlighted problem to local providers	Hire part-time or contract
More extensive range of recruitment channels	Re-define existing jobs	Considered a wider range of people	▪ Re-train existing staff / increase training	Provide more training to less qualified recruits
Offered higher pay / more incentives	Re-train existing staff / increase training	Giving some of the tasks to other staff	▪ Increased use of agency / temporary staff	Re-train existing staff / increase training
▪ Hire part-time or contract staff	Provide more training to less qualified recruits	Offered enhanced terms and conditions		▪ Links with schools & colleges
▪ Build links with schools / colleges	No measures taken	Spend more on recruitment		▪ Change job specifications of other staff

1 'Ties' denoted by bullet points.
2 Excluding 'Other'.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003; Hughes *et al*, 2002.

3.79 The ESS 2001 responses were rather more focused on the recruitment process. In addition, offering higher pay ranked third as a response, compared to fifth in Northern Ireland. Training solutions were less in evidence in ESS 2001.

3.80 The measures taken by establishments in Scotland followed a similar pattern to those in England, with a focus on the recruitment process and higher pay. Training did not feature. Interestingly, the most frequently cited response in Scotland was that no measures were taken. This was also a relatively high-ranking response in Northern Ireland. This does not necessarily mean that such vacancies do not also have an effect on the establishment. In the case of Northern Ireland, amongst those saying that no measures had been taken in response to a difficult-to-fill vacancy, only 15 per cent said that the vacancy was having no effect on the establishment.

3.81 As with the other countries, the main focus of measures taken by respondents in Wales was on the recruitment process, with 40 per cent saying that they had used a more extensive range of recruitment channels than normal. Other factors mentioned by Welsh respondents were cited much less frequently, with the second-ranked response being made by only one in ten of those with recruitment problems.

3.82 In the Republic of Ireland, the most frequently cited response was to offer higher pay (half of those with difficult-to-fill vacancies), perhaps reflecting the tightness of the labour market, with low unemployment and continuing growth in jobs.

3.83 Overall, there was a degree of commonality between the countries in the measures taken to overcome difficult-to-fill vacancies, with responses focused on the recruitment process tending to rank highly in each country. There was, however, greater diversity in the use of training as a response and also in the resort to offering higher pay.

Concluding Remarks

3.84 While one in ten establishments reported having a difficult-to-fill vacancy, such vacancies comprised a relatively small percentage of employment in each of the four UK surveys, ranging from 1.7 per cent in England to 1.1 per cent in Wales. The rates for Northern Ireland (1.5), Scotland (1.4) and England (1.7) were not significantly different from each other.

3.85 The main point of note, however, was the variation in the share of all current vacancies that are difficult-to-fill. In Northern Ireland, this was estimated at 60 per cent, significantly higher than England or Scotland, where fewer than half of all current vacancies were classified as difficult-to-fill. Also, in England and Scotland, difficult-to-fill vacancies were relatively more concentrated in the smaller establishments than were all current vacancies. A different pattern was observed in Northern Ireland, where difficult-to-fill vacancies as a share of all current vacancies did not vary greatly by establishment size.

3.86 It is not, however, possible to say if these contrasts reflect cross-country variations in the efficiency with which vacancies are matched with jobseekers, or are an artefact of differences in the design of the surveys and/or the measurement of vacancies, or some mixture of the two.

3.87 Nonetheless, the pattern of difficult-to-fill vacancies by occupation was quite similar in each of the three countries for which data were available. Difficult-to-fill vacancies were relatively concentrated in particular occupations, including associate professional and skilled trades in each country. Moreover, the occupations where difficult-to-fill vacancies comprised a large share of all current vacancies were distributed across the occupational spectrum.

4 Skill Shortages and Skill Gaps

Introduction

4.1 A major part of the rationale for employer skills surveys is to facilitate the analysis of skills-related problems as perceived by employers. In the surveys considered in this report, such problems are generally categorised under two headings (see also the discussion of Figure 1.1 in Section 1 above):

- External skill shortages.
- Internal skill gaps.

4.2 In employer skills surveys, external skill shortages are measured by the number of vacancies that are difficult-to-fill because there are too few applicants with the required skills, experience and/or qualifications. Thus, the incidence and extent of external skill shortages illustrates the difficulties that employers perceive in obtaining the skills that they need from the external labour market.

4.3 Internal skill gaps, on the other hand, are intended to measure the extent of skills problems that employers perceive within their existing workforce. An internal skill gap arises when employers perceive that not all employees possess the skills required to meet current business objectives.

4.4 This Section commences with an analysis of cross-country variations in the incidence and extent of external skill shortage vacancies. Similar to the analysis of recruitment problems, the headline findings are presented for the surveys compared, followed by analysis of variations by industry sector, establishment size and occupations. The Section also looks at cross-country variations on a number of qualitative indicators. The Republic of Ireland survey is not included in this analysis, as skill shortage vacancies are not one of the topics covered in that survey.

4.5 As discussed in Appendix A, the approaches used by the different surveys for the measurement of internal skill gaps vary too widely to justify a detailed examination along the same lines as for external skill shortages. Hence, only the headline indicators for internal skill gaps are reported along with a summary of the variations in the approach to measuring such gaps.

4.6 The Section concludes with a summary of findings relating to the provision of off-the-job training. This is of interest because such training represents one possible solution to skill problems, and can also act to prevent the emergence of internal skill gaps.

Skill shortages

Incidence and extent

4.7 The UK surveys share a common definition of what constitutes a skill-shortage vacancy, that is, a difficult-to-fill vacancy where the respondent says that the reasons include too few applicants with the required skills, experience and/or qualifications. To that extent, cross-country variations due to measurement differences are more likely to reflect differences in the approach to the measurement of current and/or difficult-to-fill vacancies, of which skill-shortage vacancies are a subset.

4.8 Bearing that caveat in mind, the headline indicators from the UK employer skill surveys for the incidence and extent of external skill-shortage vacancies are presented in Table 4.1. The first point to note is that such vacancies occur infrequently. Few establishments reported having one or more external skill-shortage vacancies.

Table 4.1 External skill shortage vacancies: Incidence and extent

	N. Ireland	England	Scotland	Wales
	%	*%*	*%*	*%*
Incidence				
% of all establishments	4	4	4	7
% of establishments with a vacancy	26	25	19	32
% of establishments with a difficult-to-fill vacancy	41	49	35	50
Density				
% of all employees	0.5	0.8	0.6	0.5
Composition				
% of all current vacancies	20	21	18	25
% of all difficult-to-fill vacancies	33	44	39	45

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003.

4.9 Further, the reported number of skill-shortage vacancies was not large in any of the four UK countries. As a percentage of employment, such vacancies ranged from 0.5 to 0.8 per cent. There were no significant inter-country differences in the density of skill-shortage vacancies.

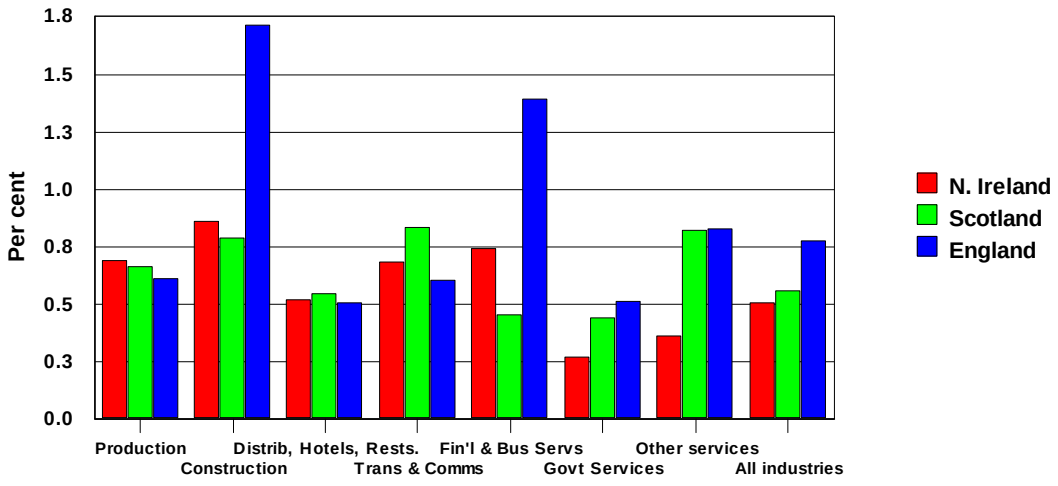
4.10 There were, however, some differences between the countries in the skill-shortage share of all difficult-to-fill vacancies. In Northern Ireland, one in three difficult-to-fill vacancies was of the skill-shortage variety. This was significantly less than in England (44 per cent) and Wales (45 per cent). Scotland occupied an intermediate position on this indicator, with skill-shortage vacancies comprising 39 per cent of all difficult-to-fill vacancies.

4.11 According to the survey findings, therefore, where they occurred, recruitment problems in Northern Ireland were less likely to be skill-related than was the case in England or Wales, and more likely to reflect a lack of applicants. It is not possible to say from the survey findings whether this contrast is due to differences between the countries in the supply of skills or whether establishments in England and Wales, on average, demanded a higher level of skills from applicants than did their counterparts in Northern Ireland. Given the workforce productivity differences and trends discussed in Section 2 above, the demand factor cannot be discounted in comparing Northern Ireland and England. But it is less obvious in the comparison with Wales.

Industry sector

4.12 The incidence of skill-shortage vacancies did not vary greatly by industry sector, ranging between two and 6-7 per cent of establishments in each of the three countries for which data are available (see Table B4.1). The same was not entirely true for the density measure, notably in England where skill-shortage vacancies were especially prominent in construction and financial and business services (Figure 4.1. See also Table B4.2).

Figure 4.1 External skill shortage vacancies by industry sector
Per cent of employment



Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

4.13 Apart from these two sectors, the overall pattern of skill-shortage vacancies did not vary greatly between the three countries. Thus, for example, the density of skill-shortage vacancies was below-average in government services in each of the three countries.

4.14 There were, however, sharper sectoral variations in skill-shortage vacancies expressed as a proportion of difficult-to-fill vacancies (see Table B4.3). In Northern Ireland, the skill-shortage share ranged from 20 per cent in government services to 54 per cent in the production industries. In England, the skill-shortage share was also well above average in the production industries (61 per cent), but highest in construction (65 per cent) and lowest in distribution, hotels and restaurants and transport and communications (both 32 per cent). In Scotland, the skill-shortage share was highest in production (62 per cent) and lowest in other services (27 per cent).

4.15 A further point of note regarding the skill-shortage share of all vacancies is that, in all but one industry sector, the share was higher in England than in Northern Ireland. Thus, the overall difference discussed above in respect of Table 4.1 is not a function of differences in industry composition.

4.16 One consequence of the variations by industry sector in the skill-shortage share of difficult-to-fill vacancies is that the sectoral composition of such vacancies differs somewhat from the profile for all difficult-to-fill vacancies. For example, in each of the three countries, the production industries' share of all skill-shortage vacancies was in excess of the sector's share of difficult-to-fill vacancies (Table 4.2). By contrast, the distribution sector share of skill-shortage vacancies was less than its share of difficult-to-fill vacancies in each of the three countries.

4.17 In Northern Ireland, government services accounted for fewer than one in five skill-shortage vacancies, compared to almost one in three difficult-to-fill vacancies. In England, skill-shortage vacancies were even more highly concentrated in financial and business services than were difficult-to-fill vacancies.

4.18 In each of the three countries, therefore, skill-shortage vacancies tend to be more concentrated in some industries than in others. Considered relative to employment shares (see Table B4.4), in Northern Ireland and Scotland skill-shortage vacancies were more highly concentrated in the production, construction and transport and communications sectors, along with financial and business services in Northern Ireland and other services in Scotland (reflecting its relatively high overall vacancy rate in Scotland). In England, skill-shortage vacancies were concentrated in construction, financial and business services and other services.

Table 4.2 Composition of external skill shortage vacancies by industry sector (per cent of total)

Industry sector:	N. Ireland		Scotland		England	
	D2F	ESS	D2F	ESS	D2F	ESS
Production	14	23	11	18	10	14
Construction	7	10	6	7	7	10
Distribution, hotels & restaurants	27	24	30	26	22	15
Transport & communications	4	6	5	7	6	5
Financial and business services	12	16	17	14	30	36
Public admin., education & health	31	19	20	20	19	16
Other services	5	3	11	7	6	5
All industries	**100**	**100**	**100**	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

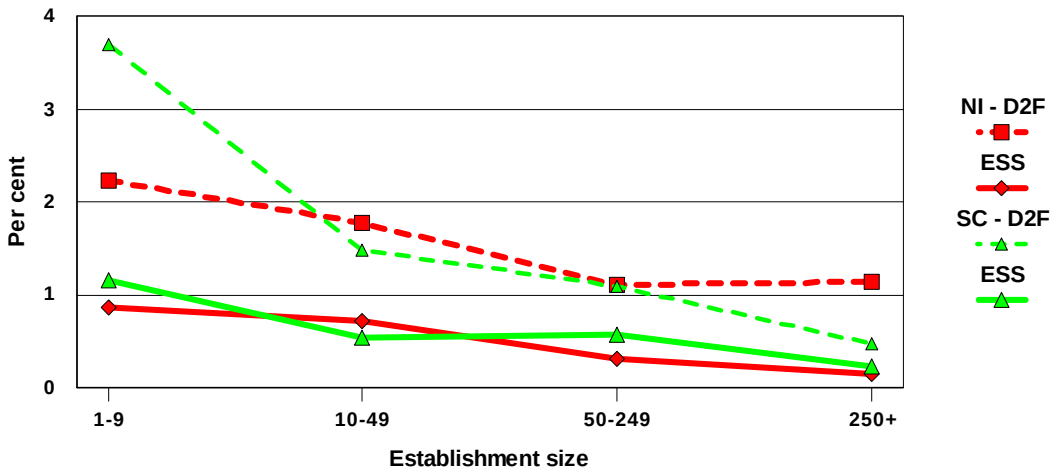
Establishment size

4.19 As with all current and difficult-to-fill vacancies, the incidence of skill-shortage vacancies increases with establishment size (Tables B4.5 and B4.6). That is, larger establishments are more likely to have one or more skill-shortage vacancies than are smaller establishments.

4.20 The density of skill-shortage vacancies declines with employment size, again following the same broad pattern as for all current and difficult-to-fill vacancies (Figures 4.2 and 4.3 overleaf. See also Tables B4.7 and B4.8). While this relationship holds for each of the countries for which data are available, there are some contrasts between the survey findings in the skill-shortage distribution as compared to difficult-to-fill vacancies by establishment size.

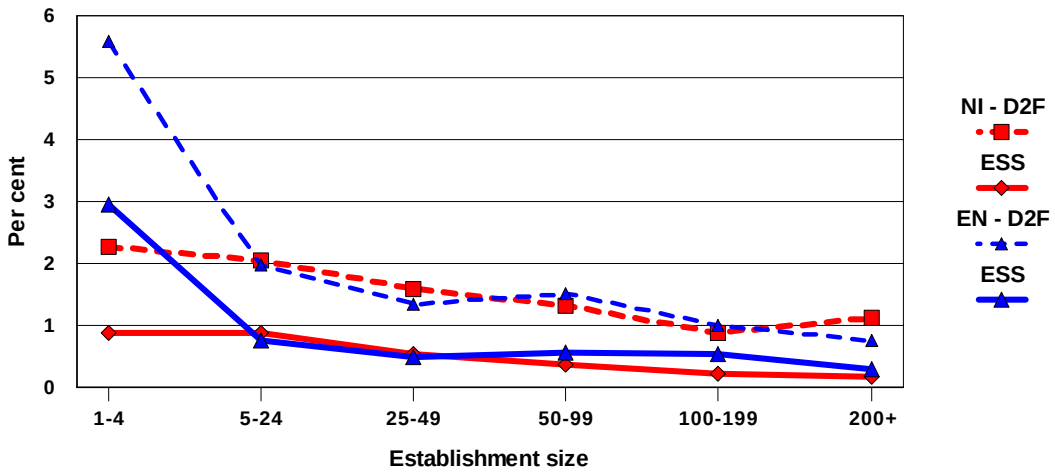
4.21 Comparing Northern Ireland and Scotland, the main point of note is that the gradients for the density of skill-shortage vacancies by establishment size are almost indistinguishable (Figure 4.2). This was not the case with respect to difficult-to-fill vacancies, where the Scottish gradient was rather steeper with a higher density in the 1-9 size band.

Figure 4.2 Skill-shortage vacancies by establishment size
Per cent of employment - N. Ireland and Scotland



Sources: DEL, 2003; Futureskills Scotland, 2002.

Figure 4.3 Skill-shortage vacancies by establishment size
Per cent of employment - N. Ireland and England



Sources: DEL, 2003; Futureskills Scotland, 2002.

4.22 By contrast, when comparing England and Northern Ireland, the large and significant difference in the density of difficult-to-fill vacancies in the 1-4 size band is also apparent for skill-shortage vacancies (Figure 4.3). Again, this is difficult to explain and may reflect differences in the measurement of vacancies in addition to any actual cross-country difference in the experience of the smaller establishments with respect to skill shortages.

4.23 A further significant difference between England and Northern Ireland lies in the skill-shortage share of difficult-to-fill vacancies by establishment size. In Northern Ireland, there was a tendency for the skill-shortage share to be lower for the larger establishments (Table 4.3. See also Tables B4.9 and B4.10).

Table 4.3 External skill shortage vacancies as per cent of difficult-to-fill vacancies by establishment size

Establishment size:	N. Ireland	England	Scotland
	%	%	%
Less than 50	40	46	34
50+	21	42	52
All	**33**	**44**	**39**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

4.24 By contrast, in England the skill-shortage share of difficult-to-fill vacancies was about the same in the larger establishments as in the smaller establishments. Thus, whereas in establishments with 50+ employees in England, skill-shortage vacancies accounted for 42 per cent of difficult-to-fill vacancies, the comparable share in Northern Ireland was only half this (21 per cent). This difference is statistically significant.

4.25 In Scotland, the skill-shortage share of difficult-to-fill vacancies amongst establishments with 50+ employees was also significantly higher than in Northern Ireland (52 per cent compared to 21 per cent). In the Scottish survey, however, the skill-shortage share was greater in the larger establishments than in those with fewer than 50 employees.

4.26 These contrasts also shape the composition of skill-shortage vacancies by establishment size. In Northern Ireland, establishments with fewer than 50 employees accounted for 77 per cent of skill-shortage vacancies, compared to 64 per cent of difficult-to-fill vacancies (Table 4.4 overleaf. See also Tables B4.11-B4.12). In Scotland, skill-shortage vacancies were less heavily concentrated in the smaller establishments than were difficult-to-fill vacancies. In England, the proportion of all skill-shortage vacancies accounted for by the smaller establishments (70 per cent) differed hardly at all from their share of all difficult-to-fill vacancies (69 per cent).

4.27 Notwithstanding these contrasts, a common message emerging from the survey finings is that, relative to the distribution of *employment*, skill-shortage vacancies tend to be more highly concentrated in the smaller establishments. Thus, in each of the three countries, the smaller establishments' share of all skill-shortage vacancies was roughly 1.5 times greater than their share of total employment.

Table 4.4 Composition of skill-shortage vacancies by establishment size (per cent)[1]

	N. Ireland		Scotland		England	
	LT50	50+	LT50	50+	LT50	50+
Vacancies						
▪ All current	62	37	59	41	63	36
▪ Difficult-to-fill	64	36	70	31	69	32
▪ Skill-shortage	77	24	59	40	70	29
Employment	50	50	43	57	46	54
Memo item:						
Skill-shortage share divided by employment share	1.5	0.5	1.4	0.7	1.5	0.5

1 Due to rounding, the sum of shares for the LT50 and 50+ size-bands may not add exactly to 100.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Occupations

4.28 Comparing the findings from the UK employer skills surveys reveals some interesting differences between the countries in the occupational patterns in reported skill-shortage vacancies. In England, the higher densities were found in the higher-skilled occupations and in skilled trades (Table 4.5). Both Northern Ireland and Scotland also reported above-average densities for skilled trades. But, in contrast to England, the other occupations with above-average densities tended to be found in the lower-skilled occupations.

4.29 At least in part, this contrast is likely to reflect a higher overall level of demand for the more skilled occupations in England. For example, when measured by current vacancies, the overall demand for associate professional occupations was twice as high in England (7.4 per cent) as in Northern Ireland (3.7 per cent). Due to differences in the measurement of vacancies, this may be over-stating the variation in total demand between the two countries. But a similar differential was reported between England and Scotland.

4.30 Reflecting the foregoing contrast, the occupational pattern in skill-shortage vacancies shown in Table 4.5 differs somewhat from the picture for difficult-to-fill vacancies. This is evident from the cross-country differences in skill-shortage vacancies as a percentage of all difficult-to-fill vacancies.

Table 4.5 External skill shortage vacancies as per cent of employment by occupation[1]

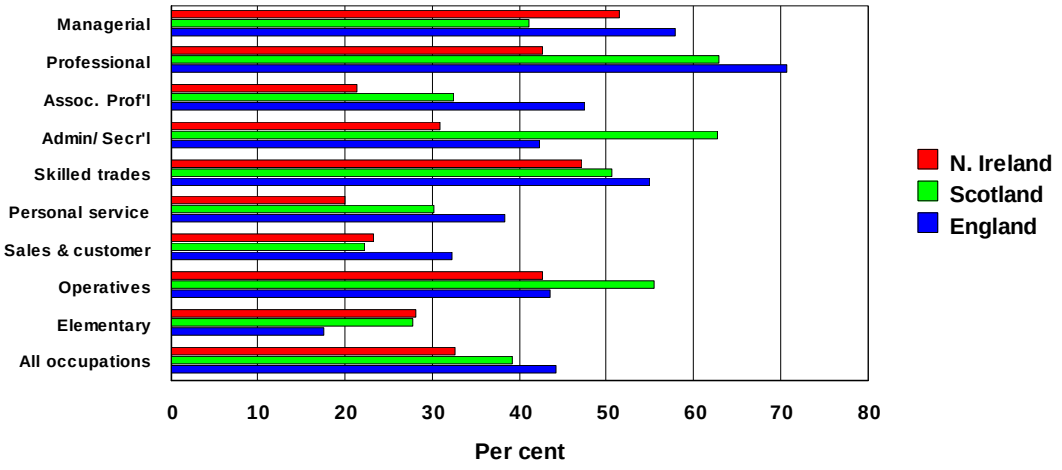
Occupation:	N. Ireland	Scotland	England
	%	%	%
Managerial & senior official	0.1	0.1	0.2
Professional	0.3	0.4	1.1
Associate professional	0.6	0.7	1.7
Administrative & secretarial	0.3	0.5	0.4
Skilled trades	1.2	1.0	1.7
Personal service	0.3	1.1	1.0
Sales & customer service	0.3	0.3	0.5
Process, plant & machine operatives	0.7	1.3	0.6
Elementary occupations	0.8	0.5	0.5
All occupations	**0.5**	**0.6**	**0.8**

1 The lightly shaded cells highlight occupations with below-average densities where, within each country, the density is two standard deviations or more below the mean for that country. Similarly, the more heavily shaded cells highlight occupations with above-average densities where, within each country, the density is two standard deviations or more above the mean for that country.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

4.31 In England, the skill-shortage share of all difficult-to-fill vacancies ranges from a low of 18 per cent in elementary occupations to a high of 71 per cent in professional occupations (Figure 4.4 overleaf. See also Table B4.13). The other occupations where skill-shortage vacancies comprise a high share of all difficult-to-fill vacancies include managerial and senior official (58 per cent), skilled trades (55 per cent) and associate professional (48 per cent).

4.32 By contrast, both Northern Ireland and Scotland reported a narrower range in the dispersion of the skill-shortage share of difficult-to-fill vacancies by occupation. Moreover, there was no obvious tendency for the skill-shortage share to cluster at the upper end of the occupational spectrum, as was the case in England.

Figure 4.4 External skill shortage vacancies as per cent of all difficult-to-fill vacancies by occupation



Sources: DEL, 2003; ESS 2001; FutureskillsScotland, 2002.

4.33 These contrasts in the skill-shortage share of difficult-to-fill vacancies also have implications for the occupational composition of skill-shortage vacancies. For example, whereas professional occupations accounted for only 11 per cent of all difficult-to-fill vacancies in England, they comprised almost one in five external skill-shortage vacancies (Table 4.6). This was well in excess of their 13 per cent share of employment (see Table 2.6 above). In Northern Ireland, professional occupations accounted for approximately equal proportions of both external skill-shortage vacancies and difficult-to-fill vacancies.

4.34 At the lower end, operatives accounted for 19 per cent of external skill-shortage vacancies in Scotland, well up from their 13 per cent share of difficult-to-fill vacancies. The comparable figures for Northern Ireland were 17 per cent and 13 per cent. By contrast, in England, the operatives' share of skill-shortage vacancies was equal to their share of all difficult-to-fill vacancies (nine per cent).

4.35 A final point to note is that, when considered relative to employment, skill-shortage vacancies tend to be relatively more highly concentrated in some occupations than in others (see the shaded cells in Table 4.6). This is true for each of the three countries shown. For example, taking the four occupations in each country where the skill-shortage share of all vacancies was in excess of the employment share, their combined share of skill-shortage vacancies was 1.7-1.8 times their combined employment share. This concentration ratio hardly varied from one country to another, albeit the concentration was greater at the top end in England as compared with Northern Ireland and Scotland.

Table 4.6 Composition of external skill-shortage vacancies by occupation[1]

Occupation:	N. Ireland		Scotland		England	
	D2F	ESS	D2F	ESS	D2F	ESS
Managerial & senior official	2	3	2	2	4	5
Professional	5	6	6	10	11	18
Associate professional	17	11	13	11	17	18
Administrative & secretarial	9	8	7	11	7	7
Skilled trades	18	26	12	15	16	20
Personal service	8	5	18	14	11	9
Sales & customer service	9	6	15	8	13	9
Process, plant & machine operatives	13	17	13	19	9	9
Elementary occupations	19	16	15	10	13	5
All occupations	**100**	**100**	**100**	**100**	**100**	**100**

1 Shaded cells show the occupations in which the occupation's share of D2F or ESS vacancies exceeds its employment share.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Reasons

4.36 As noted above, skill-shortage vacancies are derived as a subset of difficult-to-fill vacancies, where the respondent says that the reasons for the vacancy being difficult-to-fill include too few applicants with the right skills, experience and/or qualifications. It is, therefore, useful to consider the rankings of these three factors based on the responses given by employers.

4.37 As it transpires, it is only possible to compare the findings for England and Northern Ireland. The Scottish approach is not comparable while the Welsh report does not distinguish the reasons given for skill-shortage vacancies from those given for difficult-to-fill vacancies.

4.38 When the Northern Ireland and England surveys are compared, the main point of note is that lack of experience is the most common source of skill-shortage vacancies in Northern Ireland, compared to lack of skills in England (Table 4.7. See also Table B4.14)

Table 4.7 Ranking of reasons given by employers for external skill shortage vacancies

N. Ireland	England
Lack of work experience	Lack of skills
Lack of skills	Lack of work experience
Not enough people interested	Low number of applicants generally
Lack of qualifications	Lack of qualifications
Poor attitudes. motivation & personality	Poor attitudes, motivation & personality

Sources: DEL, 2003; ESS 2001.

4.39 The contrast between Northern Ireland and England may reflect differences in the occupational composition of skill-shortage vacancies, as discussed above. More speculatively, the contrast may also reflect labour market differences. As noted in Section 2 above, the Northern Ireland employment rate is well below the English rate, so there may be differences in the 'pool' of people possessing the requisite experience. Related to this, the working-age population in Northern Ireland has a younger age profile.

4.40 The second point to note is that lack of qualifications does not feature very strongly. Indeed, in both surveys, this ranked fourth in the reasons given for external skill-shortage vacancies, behind a lack of applicants more generally.

Skills sought

4.41 As discussed in Appendix A, the survey findings for skills sought in respect of skill-shortage vacancies are not directly comparable. This is unfortunate as such comparisons are potentially of benefit in providing further insights into the differences between the countries in the composition of skill-shortage vacancies.

4.42 What can be said from the available data (see also Table A.20) is that in both Scotland and Northern Ireland, the most frequently mentioned skills sought were generally 'softer' skills such as communications, team-working and customer-handling. In the English survey, the most frequently mentioned skills sought tended to be advanced IT and other technical/practical.

4.43 These contrasts in skills sought are consistent with the differences discussed above in the occupational composition of skill-shortage vacancies.

Effects

4.44 The rankings of effects of skill-shortage vacancies for England and Northern Ireland are shown in Table 4.8 below. These data are collected in the Welsh and Scottish surveys, but the reports do not distinguish the effects of skill-shortage vacancies from other difficult-to-fill vacancies.

4.45 The main point of note is that the effects of skill-shortage vacancies do not vary greatly from those for all difficult-to-fill vacancies (see also Table B4.15). Thus, in Northern Ireland, the vast majority of respondents also said that such vacancies placed greater strain on the management of existing staff (69 per cent of skill-shortage vacancies compared to 74 per cent for all difficult-to-fill vacancies).

Table 4.8 Ranking of effects of external skill shortage vacancies

N. Ireland	England
More strain on management of existing staff	▪ Difficulties with customer service
Restrictions to business development activities	▪ Delays developing new products
Difficulties with customer service	Increased running/operating costs
Loss of business to competitors	Loss of business to competitors
▪ Increased running/operating costs ▪ Increase in recruitment costs	Difficulties with quality

Sources: DEL, 2003; ESS 2001.

4.46 Regarding the effects on business performance, the most commonly cited impact of external skill-shortage vacancies in Northern Ireland was to result in restrictions to business development activities, compared to difficulties with customer service in the case of all difficult-to-fill vacancies. This might suggest that such skill-shortage vacancies have a more adverse effect on business expansion.

4.47 There was also some evidence for this from ESS 2001, where delays developing new products tied with difficulties with customer service in relation to skill-shortage vacancies. In the case of all difficult-to-fill vacancies, delays developing new products ranked behind difficulties with customer service.

4.48 Overall, however, a firm conclusion cannot be drawn as to whether skill-shortage vacancies were more likely to constrain business development than were other types of difficult-to-fill vacancies. Certainly, the effects of skill-shortage vacancies as perceived by survey respondents were not dramatically different from those for all difficult-to-fill vacancies.

Responses

4.49 The rankings of measures taken to overcome external skill-shortage vacancies are shown in Table 4.9. Compared to all difficult-to-fill vacancies, the Northern Ireland respondents were somewhat more likely to adopt a training solution than a recruitment-based response. Thus, the most frequently-cited measure taken to deal with skill-shortage vacancies in Northern Ireland was to provide more training to less qualified recruits (see also Table B4.16). This measure ranked second in respect of all difficult-to-fill vacancies. Offering higher pay also moved up in the ranking of measures taken, from fifth to third.

Table 4.9 Ranking of measures taken to overcome external skill shortage vacancies

N. Ireland	England	Scotland
Been prepared to provide more training to less qualified recruits	▪ Increase advertising / recruitment spend	Used more extensive range of recruitment channels than normal
Considered a wider range of people	▪ Expand recruitment channels	No measures taken
Offered higher pay	Offered higher pay	Offered higher pay
No measures taken	Been prepared to provide more training to less qualified recruits	Spent more on recruitment or used more expensive methods
▪ Hired part-time or contract staff ▪ Built links with schools/colleges	▪ Increase training ▪ Re-define existing jobs	Considered a wider range of people

Note: Bullets denote 'ties'.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

4.50 There were fewer differences in the rankings of measures reported by respondents to the England and Scotland surveys. In both of these surveys, the three measures most frequently taken in response to all difficult-to-fill vacancies were also the most frequently mentioned for skill-shortage vacancies. The only change in the top three was in Scotland, where the use of a more extensive range of recruitment channels displaced 'no measures taken' as the most commonly mentioned response.

4.51 Overall, then, the respondents to the English and Scottish surveys emphasised recruitment strategies in responding to external skill-shortage vacancies. Respondents to the Northern Ireland survey were more likely to look to a training solution. The contrast may reflect the greater contribution of lack of experience to skill-shortage vacancies in Northern Ireland. At least in England, lack of skills was more a factor than lack of experience.

Skill gaps

4.52 As defined in ESS 2001, skill gaps are intended to "reflect the extent to which employers perceive their employees' current skills as insufficient to meet current business objectives". While the UK employer skills surveys share this view of what is intended by the term 'skill gaps', the approaches taken to measuring the concept vary too widely for any meaningful comparisons of survey findings. The reasons for this conclusion are discussed in detail in Appendix A. What follows is a brief summary of that assessment.

4.53 There are two basic models used for measuring the incidence of skill gaps:

- The single direct question approach.
- The proficiency question.

4.54 The first of these approaches is used in the surveys for Northern Ireland and Wales. Respondents are simply asked to say if there is a gap between the types of skills that employees at the establishment have now, compared to those needed to meet business objectives.

4.55 With the proficiency question approach, used in the surveys for Scotland and England, the respondent is asked to say, on an occupation by occupation basis, what proportion of employees at the establishment are "fully proficient at their current job". In the Scottish survey, an establishment is identified as having a skills gap if any employee is not fully proficient.

4.56 In ESS 2001, the proficiency question is used to derive two measures of the existence of a skills gap. Under the broad measure, an establishment is identified as having a skills gap where less than all staff are considered to be fully proficient. In principle, this measure should be comparable to the Scottish skills gap measure.

4.57 With the narrow measure used in ESS 2001, an establishment is identified as having a skills gap where less than nearly all staff are considered to be fully proficient.

4.58 The headline indicators reported in the various employer skills surveys for these various skill gap measures are shown in Table 4.10. If the measures were mutually consistent, so that they each represented different ways of measuring the same underlying construct, it might be concluded that the incidence of internal skill gaps varies widely between the four UK countries, from 13 per cent in Northern Ireland to 23 per cent in England (using the broad measure of the incidence of internal skill gaps).

Table 4.10 Survey estimates for the incidence of skill gaps (per cent of establishments)

	N. Ireland	England		Scotland	Wales
		Narrow measure	Broad measure		
	%	%	%	%	%
% of all establishments	13	7	23	16	19
% of establishments with a skill shortage vacancy	27	25	n.a.	n.a.	n.a.
Establishments with a skill shortage vacancy and a skills gap (% of all)	1	1	n.a.	n.a.	n.a.

n.a. Not available.

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003.

4.59 Unfortunately, the proficiency question and the direct question may not be measuring the same construct. One indication of this can be gleaned from the Northern Ireland survey. In the Northern Ireland survey, the proficiency question is also posed to respondents answering in the affirmative to the direct skills gap question. This means that, for respondents saying that a skills gap exists at their establishment, it is also possible to calculate the narrow and broad proficiency-based measures used in ESS 2001.

4.60 When this is done, it transpires that only two-thirds of those saying that they had a skills gap are also identified as having such a gap using the ESS 2001 broad proficiency measure. In other words, one in three of the respondents to the Northern Ireland survey who said that they had a skills gap (in response to the direct question) also said that their workforce was fully proficient. If the two measures were perfect substitutes for each other (that is, two different ways of measuring the same thing), the full proficiency proportion would have been closer to zero.

4.61 The disparity between the direct question and the proficiency question approaches was even wider when the narrow measure of proficiency was used. Then, only 36 per cent of establishments saying they had a skills gap would be classified as such on the basis of the narrow measure of proficiency (see also Table A.21).

4.62 There is also evidence from qualitative research undertaken for ESS 2002 that survey respondents do not necessarily equate lack of proficiency with a lack of skills. In the follow-up interviews that were undertaken for ESS 2002, it was found that (Hillage *et al*, 2002):

Employers strongly associated the concept of proficiency … with personal performance. A lack of proficiency was often described in terms of poor performance rather than with reference to the absence of a particular skill.

4.63 Mason and Wilson (2003) note that the ESS 2002 research "has also cast some doubt on the use of the term 'proficiency' itself, in that respondents may understand 'proficiency' to mean very different things".

4.64 While it is a simple approach, the direct question at least has the merit of posing the issue of the gap between the skills possessed by employees in relation to current business objectives. The proficiency question approach is indirect, with lack of proficiency serving as a proxy indicator for the existence of a skills gap. The findings from the Northern Ireland survey and the ESS 2002 qualitative research, however, cast some doubt on the validity of the proficiency question as a skills gap measure. This is the main reason that the survey findings are not considered comparable for the purposes of this report. The conclusion drawn also suggests that there is a need to give further consideration to the measurement of internal skill gaps.

Off-the-job Training

Incidence and extent

4.65 Each of the five surveys analysed in this report also include a module of questions devoted to the provision of off-the-job training[18], that is, training delivered away from the immediate work position, at the workplace or elsewhere, and involving all sorts of courses, including induction and health and safety, so long as these are funded and arranged by the employer.

4.66 In Appendix A below, the comparability of the questions for the provision of off-the-job training is assessed. It is concluded that the UK surveys would appear to be broadly comparable with respect to indicators for the incidence of off-the-job training, though less so in respect of the number of employees receiving such training. The Republic of Ireland uses a differently phrased definition of such training, and there are some differences in scope; apprentices are excluded, while owner-managers and proprietors are included.

[18] The Northern Ireland survey also includes a set of questions regarding on-the-job training.

4.67 The problem that arises in comparing indicators for the proportion of employees receiving training is that the probability of a non-response or missing data is correlated with establishment size; the larger the establishment, the more likely was it that the respondent was unable to say how many employees were in receipt of off-the-job training. It is possible to adjust for non-response, and this has been done for the Northern Ireland results. But from the perspective of comparing survey findings, a uniform approach to this would be desirable.

4.68 Turning first to the headline indicators for the provision of off-the-job training, there are large differences between the countries in estimates for the proportion of establishments that said they provided such training. In the Scottish survey, over half (54 per cent) of establishments said that some off-the-job training had been funded or arranged for employees over the past 12 months (Table 4.11). A similar proportion of establishments in Wales (53 per cent) said that they had provided such training. The reported incidence of such training at the establishments surveyed was much lower in Northern Ireland (41 per cent) and England (37 per cent).

Table 4.11 Provision of off-the-job training: Incidence and extent

	N. Ireland	England	Scotland	Wales	Rep. of Ireland
	%	*%*	*%*	*%*	*%*
Incidence					
% of establishments	42	37	54	53	n.a.
Extent					
% of employees	34	39	43	n.a.	25

Notes:
n.a. Not available.

Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Tables 8.4 and 8.5); Futureskills Scotland, 2002; Future Skills Wales, 2003; Hughes *et al*, 2002, 2003.

4.69 The disparities were narrower on the extent measure for the provision of off-the-job training, notably for comparisons between England and Scotland. Thus, the employment-weighted average proportion of workers receiving any off-the-job training in the previous 12 months was 39 per cent in England[19], just four percentage points below the Scottish figure.

[19] The ESS 2001 report (Hogarth *et al*, 2001) gives establishment-weighted results for the proportion of employees receiving off-the-job training. Hence, the employment-weighted figures given in Dickerson and Wilson (2003) are used in this comparative study.

4.70 In the case of Northern Ireland, one in three employees were estimated to have received off-the-job training in the previous 12 months, less than in both Scotland and England.

4.71 The extent measure for the Republic of Ireland indicates that about one in four employees received off-the-job training in the previous 12 months. This is lower than in any of the UK countries. At least in part, this is likely to reflect the different approach used to measure the provision of off-the-job training (see Appendix A).

4.72 It was not surprising to find Northern Ireland lagging behind Scotland and England in the proportion of employees receiving off-the-job training. For example, the UK Labour Force Survey (LFS)[20] consistently finds that employees in Northern Ireland are less likely to have received off-the-job training than are employees in England or Scotland.

4.73 Based on the LFS, however, the disparities between England and Scotland in the incidence and extent of off-the-job training would not have been expected. This is particularly true in respect of the incidence measure, where the gap was in the region of 17 percentage points. It is not immediately obvious why the difference should have been so large, even allowing for the fact that the Scottish survey was undertaken one year later than ESS 2001.

4.74 Nonetheless, the survey findings are mostly, though not entirely, consistent in terms of the patterns reported in the provision of off-the-job training by industry sector and establishment size. Before turning to the industry sector and establishment size comparisons, there are two further points to make regarding the headline indicators for the provision of off-the-job training.

4.75 First, ESS 2001 provides some analysis of the relationship between the provision of off-the-job training and the incidence of skills problems and recruitment difficulties. The main finding is that establishments reporting hard-to-fill vacancies, skill shortage vacancies and/or skills gaps (as measured by the narrow and broad proficiency measures described above) were, on average, more likely than the average to have provided off-the-job training. For example, 58 per cent of establishments with difficult-to-fill vacancies said that they had provided training in the past year, compared to 35 per cent of establishments without difficult-to-fill vacancies. Similarly, 61 per cent of establishments with skill-shortage vacancies said that they had provided off-the-job training, compared to 36 per cent of firms that did not have such vacancies.

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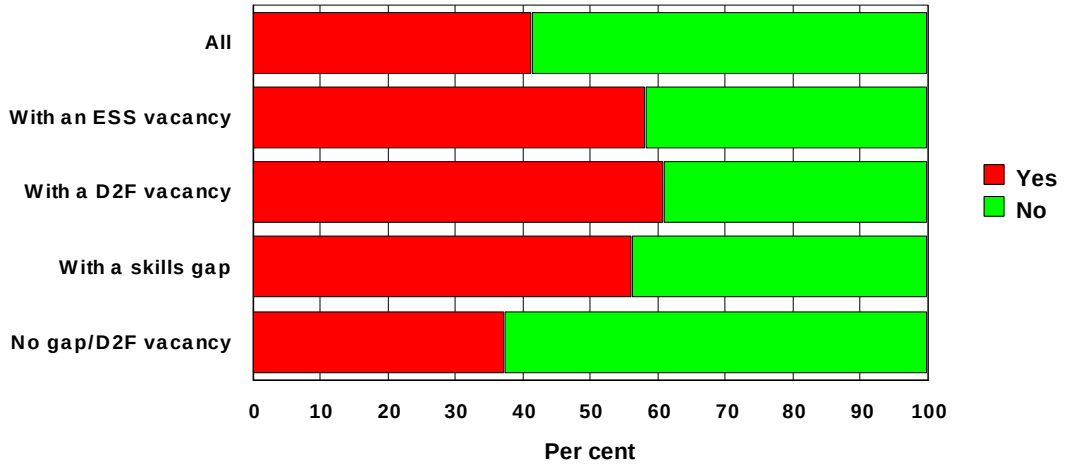
[20] This is a large quarterly survey of the population. Respondents saying that they are employees are asked to say whether or not they received various types of training in the four weeks preceding the survey.

4.76 ESS 2001 also reported that 56 per cent of firms with a skills gap (on the broad measure) had provided training, compared to 31 per cent of those saying that all of their staff were proficient.

4.77 A similar set of findings emerge from the Northern Ireland survey (Figure 4.5). The Scottish survey also finds that establishments that reported skill-shortage vacancies and/or skill gaps were more likely to have undertaken off-the-job training.

Figure 4.5 Provision of off-the-job training: N. Ireland
Per cent of establishments



Source: DEL, 2003.

4.78 That is, establishments with skills problems, however defined, tend to be more likely than other establishments to provide off-the-job training. Whether this is because such establishments are responding to skills problems that they have identified, or are more keenly aware of the need for training is a moot issue. In the UK employer skills surveys, such firms also receive the vast bulk of attention regarding skills-related issues, even though they comprise a relatively small minority of firms.

4.79 The second common finding from the UK employer skills surveys is that the proportion of staff receiving off-the-job training tends to follow a U-shaped pattern. Most establishments provide no off-the-job training at all, while significant proportions provide such training to most or all of their employees (Table 4.12).

4.80 This is, however, an incomplete picture of the provision of training, since it does not include on-the-job training. As noted above, only the Northern Ireland survey presently includes a module for on-the-job training.

Table 4.12 Proportion of staff receiving off-the-job training (per cent of establishments)

Per cent receiving training:	N. Ireland	Scotland	England
	%	%	%
None	59	47	63
1 to 20 per cent	7	5	9
21 to 40 per cent	9	7	5
41 to 60 per cent	7	6	5
61 to 80 per cent	5	5	2
81 to 99 per cent	2	27	2
100 per cent	10		15

Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Table 8.6); Futureskills Scotland, 2002.

Industry sector

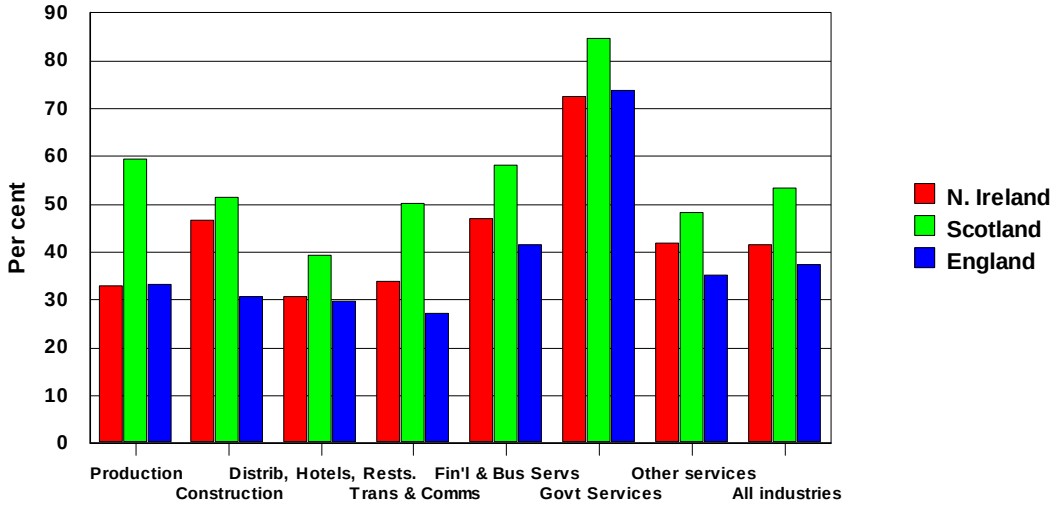
4.81 While the UK skills surveys differ considerably in the results for the percentage of establishments providing off-the-job training, the findings for the pattern of provision by industry sector tend to be broadly similar. Thus, each survey finds that establishments in the public sector were most likely to have provided off-the-job training in the previous 12 months (Figure 4.6 overleaf. See also Table B4.17[21]). In Northern Ireland and England, three in four public sector establishments said that they had provided off-the-job training. The percentage in both Scotland and Wales was in the region of 85-86 per cent.

4.82 The industry sectors in which the provision of off-the-job training was below-average were also very similar across the different surveys. Distribution, hotels and catering ranked lowest in the Northern Ireland, Scotland and Welsh surveys and second-lowest in ESS 2001.

4.83 There were some contrasts, notably the high incidence in the production industries in Scotland (60 per cent) compared to a below-average incidence in the remaining surveys.

[21] Table B4.17 contains the findings from the Welsh survey. These are not shown in Figure 4.6 as the Welsh report combines financial and business services and other services into one sector.

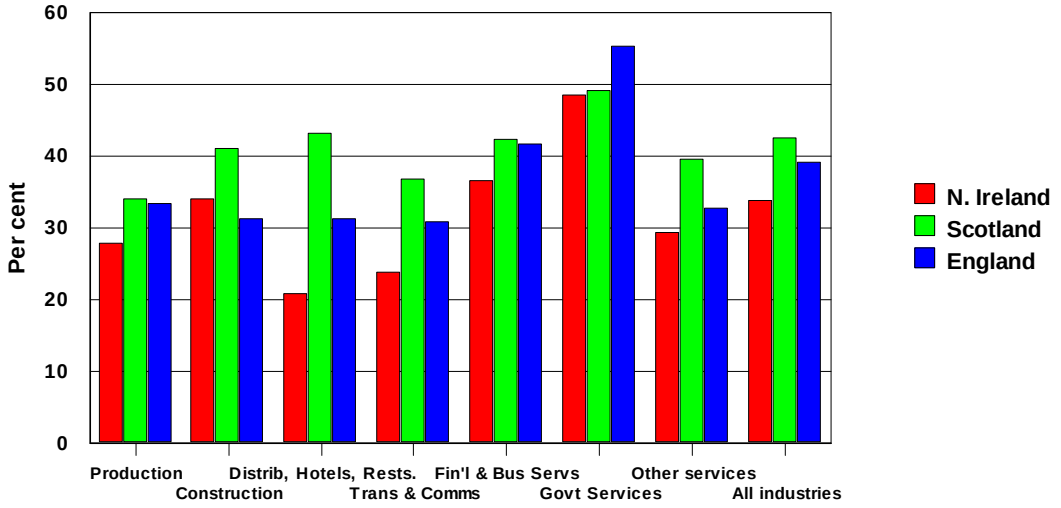
Figure 4.6 Provision of off-the-job training by industry sector



Sources: DEL, 2003; Futureskills Scotland, 2002; ESS 2001.

4.84 Regarding the proportion of employees estimated to have received off-the-job training, the UK surveys were again consistent in identifying government services as the industry sector where provision was highest (Figure 4.7. See also Table B4.18). This was a contrast with the Republic of Ireland, where the public sector ranked lowest in terms of the proportion of employees receiving structured training and development. Again, industries such as distribution, hotels and catering were below average in Northern Ireland and England. This was not, however, found to be the case in Scotland. In Scotland, the sector with the lowest proportion of employees receiving off-the-job training was the production industries. This is curious because this sector was reported as having an above average proportion of establishments providing such training (see Figure 4.6).

Figure 4.7 Employees receiving off-the-job training by industry sector



Sources: DEL, 2003; Futureskills Scotland, 2002; ESS 2001.

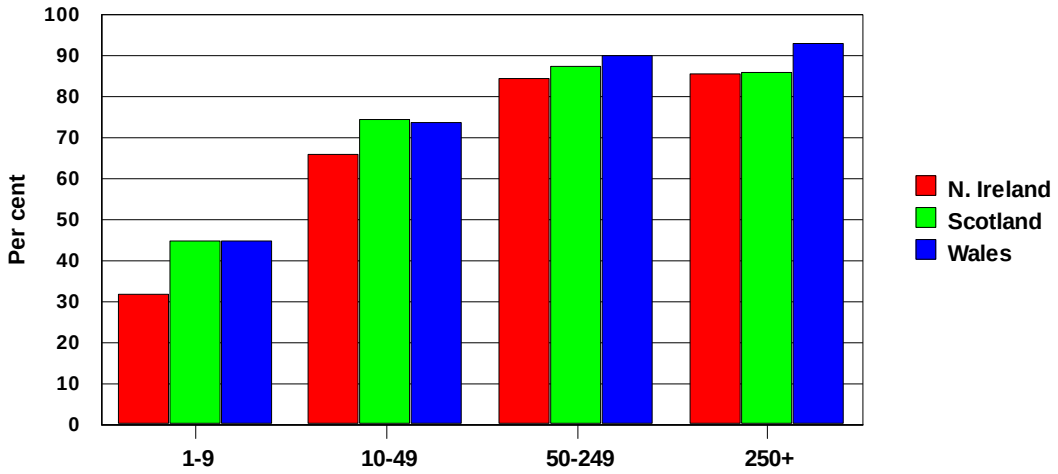
Establishment size

4.85 Each of the UK surveys found a clear-cut relationship between establishment size and the propensity to provide off-the-job training (Figures 4.8 and 4.9. See also Tables B4.19 and B4.20):

- Almost all establishments with 50 or more employees said that they provided off-the-job training.

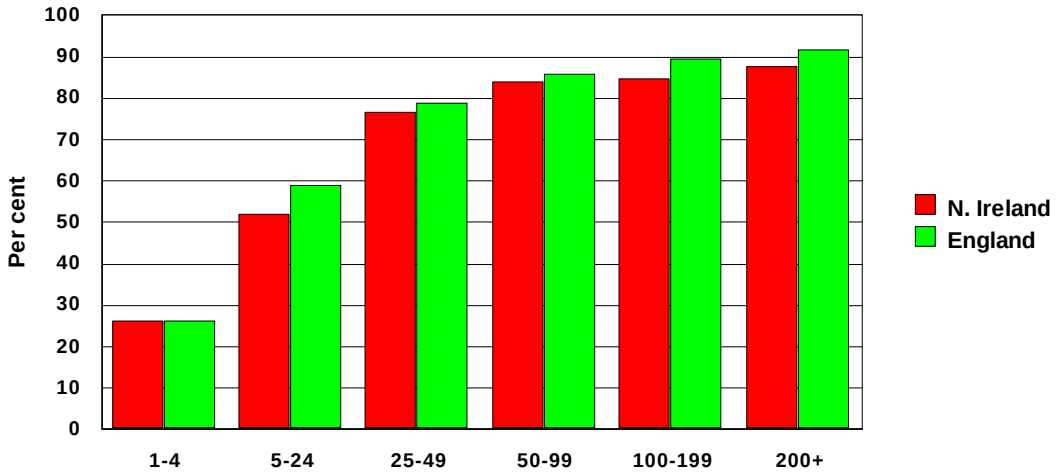
- Establishments with fewer than 50 employees were less likely to provide off-the-job training than were establishments with 50 or more employees. In particular, the provision of training was lowest in the very small establishment size bands.

Figure 4.8 Provision of off-the-job training by establishment size
Northern Ireland, Scotland and Wales



Sources: DEL, 2003; Futureskills Scotland, 2002; Future SKills Wales, 2003.

Figure 4.9 Provision of off-the-job training by establishment size
Northern Ireland and England

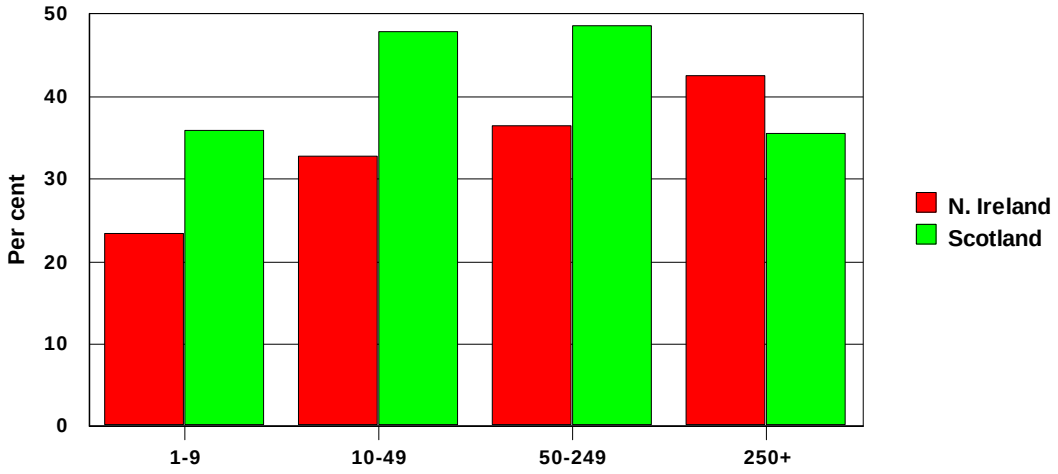


Sources: DEL, 2003; ESS 2001.

4.86 The surveys were less consistent in respect of the estimates for the proportion of employees receiving off-the-job training. Both Northern Ireland and England find that the proportion increases in a more or less linear fashion with establishment size (Figures 4.10-4.11. See also Tables B4.21 to B4.22).

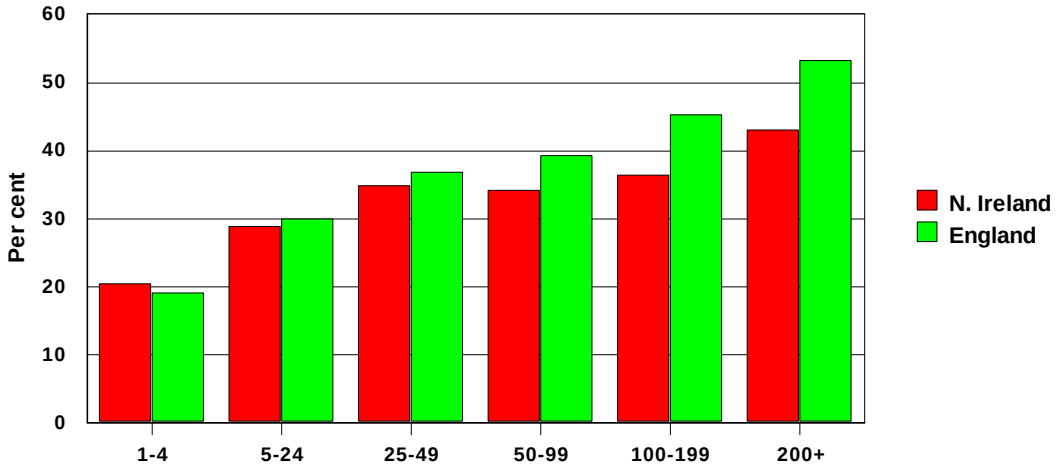
4.87 The pattern in the Scottish results was somewhat different. The proportion of employees receiving off-the-job training rises sharply for establishments with fewer than 50 employees, before levelling off and then declining for establishments with 250+ employees.

Figure 4.10 Employees receiving off-the-job training by establishment size
Northern Ireland and Scotland



Sources: DEL, 2003; Futureskills Scotland, 2002.

Figure 4.11 Employees receiving off-the-job training by establishment size
Northern Ireland and England



Sources: DEL, 2003; ESS 2001.

4.88 The contrast between the findings for Scotland and those for England and Northern Ireland is difficult to explain. It may partly reflect a different approach to measurement. In the Scottish survey, respondents are asked about the number of employees receiving training on an occupation by occupation basis, whereas Northern Ireland and England each pose a single question.

4.89 It is also the case that extent is more difficult to measure, regardless of the approach. As discussed in Appendix A, non-response to the question on the number of employees receiving training is correlated with establishment size. There is therefore a need to adjust for non-response and the way this is done may vary from one survey to another. Further, it is also likely to be the case that responses to questions on the number of employees receiving training are subject to a higher risk of measurement error due to respondents providing 'guesstimates' rather than precise numbers for those receiving training in the previous twelve months. This reinforces the need for a more uniform approach if the full benefits of comparability between the surveys are to be realised.

4.90 Finally, the variations by establishment size also throw some light on the large cross-country differences noted above between the headline indicators for the provision of off-the-job training. As shown in Table 4.13, the differences almost all reside in the estimates for establishments with fewer than 50 employees. Though, why this should be the case is not clear.

Table 4.13 Provision of off-the-job training by establishment size

	N. Ireland	England	Scotland
	%	%	%
% of establishments			
▪ Less than 50	40	35	52
▪ 50+	85	88	87
▪ All	42	37	54
% of employees			
▪ Less than 50	29	26	41
▪ 50+	40	46	45
▪ All	34	39	43

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Concluding Remarks

4.91 This Section has compared the findings from the UK employer skills surveys for the incidence and extent of external skill shortages and the provision of off-the-job training. Due to differences of approach between the surveys, it was not possible to do this also for internal skill gaps.

4.92 The surveys were unanimous in finding that skill-shortage vacancies affect relatively few establishments, only one in twenty-five in Northern Ireland, Scotland and England, and seven per cent in Wales. Relative to total employment, the number of skill-shortage vacancies was not large in any of the surveys, ranging from 0.5-0.8 per cent. There were no significant inter-country differences in the density of skill-shortage vacancies.

4.93 The surveys also reported a number of similarities in the pattern of skill shortage vacancies by industry sector and establishment size. Skill-shortage vacancies tend to be more highly concentrated in the smaller establishments. In each of the three countries, the smaller establishments' share of all skill-shortage vacancies was roughly 1.5 times greater than their share of total employment

4.94 There were, however, some differences between the countries in the skill-shortage share of all difficult-to-fill vacancies. Recruitment problems in Northern Ireland were less likely to be skill-related than was the case in England or Wales, and more likely to reflect a lack of applicants. The higher skill-shortage share of all difficult-to-fill vacancies in England was also observed across a range of industry sectors and establishment size bands.

4.95 A second contrast lay in the occupational composition of skill-shortage vacancies. In England, such vacancies were more highly concentrated in the higher skill occupations (professional and associate professional). By contrast, in Northern Ireland and Scotland, skill-shortage vacancies were more likely to be found in the less-skilled occupations (elementary occupations and operatives).

4.96 There were large disparities in the incidence and extent of off-the-job training. These are difficult to explain. Nonetheless, the survey findings are mostly, though not entirely, consistent in terms of the patterns reported in the provision of off-the-job training by industry sector and establishment size. Each of the UK surveys found that government services establishments were more likely to provide off-the-job training than other industry sectors and that smaller establishments were less likely to provide such training.

5 Conclusions

Introduction

5.1 This report has sought to compare and contrast the findings from employer skills surveys undertaken in each of the four UK countries and also the most recent Republic of Ireland vacancy survey. This concluding Section draws together some of the main findings in respect of recruitment difficulties, skill shortages and off-the-job training.

5.2 As was noted at a number of junctures in the report, differences in survey design and implementation, including definitions of key concepts, have hampered the degree to which conclusions can be drawn from observed differences in survey findings. Most notably, it was not possible to present comparisons in respect of the incidence and extent of internal skill gaps. But even where survey findings can reasonably be compared, uncertainty persists regarding the influence of differences in the approaches taken. Hence, this Section also makes some observations on survey design and implementation issues arising from the study. Primarily, this is from the perspective of achieving greater comparability between the surveys. In addition, the review also poses some wider questions regarding employer skills surveys.

Main Findings

5.3 The basic approach taken in this study has been to compare the survey findings for the incidence and extent of recruitment difficulties, skill shortages and off-the-job training, as these have varied both overall across the five countries and by industry sector, establishment size and occupations.

5.4 This concluding Section reports first on the cross-country comparisons for the incidence of vacancies. This focuses attention on establishments, enabling comparisons to be made in terms of the types of establishments that are most likely to experience recruitment problems and skill-shortage vacancies.

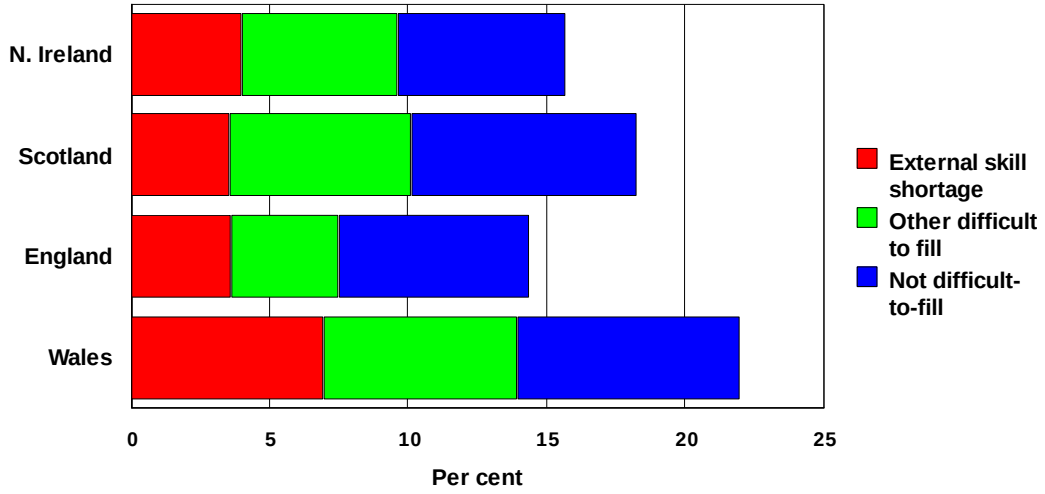
5.5 This is followed by a summary of the main findings for vacancies as a percentage of employment. This is a way of measuring the extent of recruitment problems and skill-shortage vacancies. In particular, to what extent do employers find it difficult to meet their skill needs from the external labour market? Does this tend to be more difficult in one country rather than another?

Establishments

5.6 The Republic of Ireland vacancy survey collects information from enterprises or organisations. By contrast, the UK employer skills surveys take the establishment or workplace as the basic unit of analysis. For that reason, it is not possible to compare the incidence of vacancies between the UK surveys and the Irish survey.

5.7 In the employer skills surveys compared for this study, the proportion of establishments with a current vacancy ranged from 14 per cent in England to 22 per cent in Wales (Figure 5.1. See also Table B5.1). The incidence in Wales was significantly higher than in England and Northern Ireland. The proportion with a vacancy was also significantly higher in Scotland than in England.

Figure 5.1 Establishments reporting one or more vacancies



Sources: DEL, 2003; Futureskills Scotland, 2002; ESS 2001; Future Skills Wales, 2003.

5.8 These disparities are difficult to explain, especially as England has experienced faster employment growth and lower unemployment than Wales or Scotland. One reason for the differences is the very large share of establishments in the 1-4 size band in England, estimated at 72 per cent of the total in the grossed-up results for England. This compares with 52 per cent in the grossed-up results for Northern Ireland. This is important because the incidence of current vacancies tends to be much lower in the 1-4 size band than in the larger size bands.

5.9 The review of the comparability of the skills surveys also noted, however, that the various surveys used different population databases for weighting and grossing. It is possible that this may be part of the explanation for the variations in the proportion of establishments that said they have a current vacancy.

5.10 Nonetheless, there were strong similarities between the various surveys in the reported patterns by industry sector and establishment size. Regarding the patterns by establishment size, the surveys were mutually consistent in finding that, the larger the size of the establishment, the more likely was it to have at least one current vacancy. The surveys were also consistent in finding that the incidence of current vacancies is highest in government services, while tending to be fairly uniform in other sectors.

5.11 The broad-brush patterns for the incidence of difficult-to-fill and skill-shortage vacancies also did not differ greatly between the surveys, with each finding that:

- The incidence of both difficult-to-fill and skill-shortage vacancies does not vary greatly by industry sector.

- The larger the establishment, the more likely was it to have a difficult-to-fill vacancy.

- The incidence of skill-shortage vacancies also increases with establishment size. But this relationship is not as pronounced as with difficult-to-fill vacancies.

- Few establishments reported having skill-shortage vacancies.

5.12 For a variety of reasons, it is difficult to compare the survey findings in relation to the reasons for, effects of and responses to recruitment problems and skill-shortage vacancies. There were, however, some contrasts to be drawn:

- In Northern Ireland, the reason most frequently cited by establishments with difficult-to-fill vacancies was that there were too few applicants. This contrasts with England and Wales, where respondents most often pointed to a lack of skills. Due to its different approach, the findings from the Scottish survey are not strictly comparable.

- Skill-shortage vacancies in Northern Ireland were most often ascribed to applicants lacking experience. In England, applicants were more often said to be lacking the required skills.

5.13 The main common finding from the surveys was that lack of applicants did not rank highly as a reason for difficult-to-fill vacancies, and ranked below too few applicants even in respect of skill-shortage vacancies.

5.14 While the survey findings were again difficult to compare, the main business effect of difficult-to-fill vacancies was to give rise to difficulties with customer service, followed by restrictions on business development activities, such as new product development.

5.15 The effects of skill-shortage vacancies were not greatly different, though there was a tendency for increased prominence to be given to restrictions on business development activities.

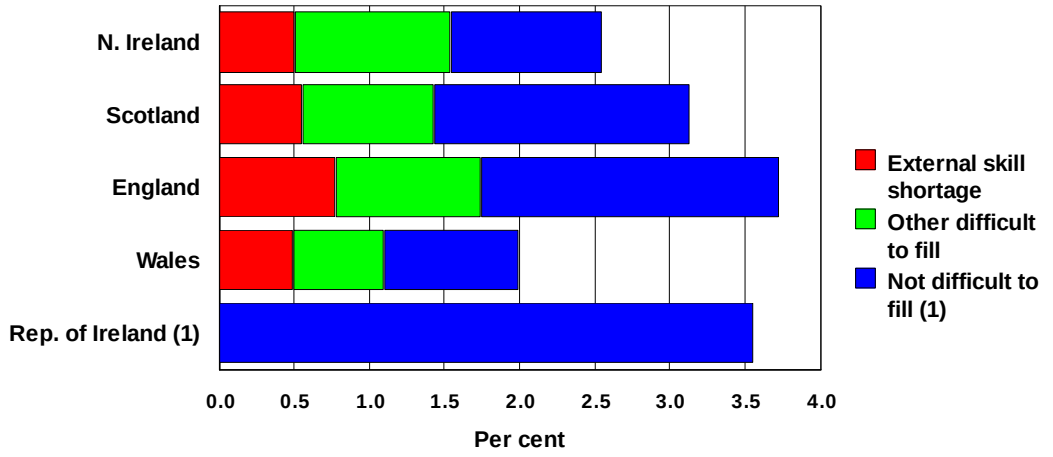
5.16 In England, Wales and Scotland, the measures taken by establishments in response to both difficult-to-fill and skill-shortage vacancies were mostly focused on the recruitment process (e.g. more expenditure on recruitment, more extensive range of channels). Offering higher pay also ranked highly in England and Scotland. Establishments in Northern Ireland also focused mostly on the recruitment process, though with less emphasis on offering higher pay and more emphasis on providing training to less qualified recruits. This may in turn reflect the greater importance attributed to lack of work experience as a reason for recruitment problems by establishments in Northern Ireland compared to those in Great Britain.

Vacancies

5.17 When measured relative to employment, the extent of current vacancies ranged from two per cent in Wales to 3.7 per cent in England, albeit at 3.6 per cent the Republic of Ireland estimate was only fractionally lower than in England (Figure 5.2. See also Table B5.2).

5.18 Vacancies as a per cent of employment were significantly lower in Northern Ireland (2.6 per cent) than in England, while Wales was significantly lower than both England and Scotland. The Welsh findings are somewhat anomalous in light of the much higher reported incidence of establishments with a vacancy.

Figure 5.2 Vacancies as per cent of employment



(1) What is shown for the Republic of Ireland is all vacancies as a % of employment.
External skill shortage vacancies are not estimated in the RoI survey.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003; Hughes et al, 2002, 2003.

5.19 Labour market 'tightness' can be measured as the ratio of the unemployment rate to the vacancy rate. On that basis, the cross-country differences in overall vacancy rates would ostensibly suggest that the tightest labour markets were in England and the Republic of Ireland, given the unemployment rates that prevailed at the time that the surveys were undertaken.

5.20 This should be an important factor to consider in contextualising the survey results for recruitment problems and skill-shortage vacancies. However, there are some differences between the surveys in the approach to measuring vacancies which acts to create some uncertainty regarding the cross-country differences in vacancy rates. Specifically, the Great Britain surveys do not provide a definition of vacancies whereas the Northern Ireland and Republic of Ireland surveys do provide respondents with a definition. This may result in higher vacancy rates being recorded in the Great Britain surveys than would be the case if a definition were to have been supplied.

5.21 In addition, the inter-country differences in vacancy rates will have been affected to some degree by the industry composition of employment and the size distribution of establishments.

5.22 Nonetheless, as with the incidence of vacancies, there were often very similar broad patterns by industry sector and establishment size in vacancies as a per cent of employment. In particular, the larger the establishment, the lower was the number of vacancies as a per cent of employment.

5.23 This relationship also held for difficult-to-fill vacancies and, though to a lesser extent, skill-shortage vacancies. Thus, each of the surveys found that the share of vacancies accounted for by smaller establishments was in excess of their employment share. That is, recruitment problems and skill-shortage vacancies tend to be disproportionately concentrated in the smaller establishments. This effect was more pronounced for England and Scotland when compared to Northern Ireland, because vacancies as a per cent of employment were significantly higher in the very small establishments in England and Scotland than in Northern Ireland. Why this should be the case is not at all clear.

5.24 There were other differences in the survey findings. Difficult-to-fill vacancies accounted for a much larger proportion of all current vacancies in Northern Ireland (60 per cent) than in Scotland (46 per cent) and England (47 per cent). That is, current vacancies were more likely to be difficult-to-fill in Northern Ireland. Based on the reasons given by respondents, this was primarily because of too few applicants rather than, for example, skill shortages.

5.25 It is a moot point as to whether this in turn means that the Northern Ireland labour market is less 'efficient' at matching people with jobs. As noted above, measurement differences between the surveys make it more difficult to draw such conclusions.

5.26 A further interesting difference between the surveys was the occupational composition of skill-shortage vacancies. In the English survey, these were concentrated in the professional and associate professional occupations and the skilled trades. In Northern Ireland and Scotland, such vacancies were also concentrated in skilled trades. But in contrast to England, they were also located in the less-skilled occupations such as operatives and elementary occupations.

Off-the-job training

5.27 There were large disparities in the provision of off-the-job training. These are difficult to explain. Nonetheless, the survey findings were consistent in a number of respects.

- Government services establishments were more likely to provide off-the-job training than other industry sectors.
- Smaller establishments were less likely to provide such training.
- Provision of training tends to follow a U-shaped pattern. A large proportion of establishments, often a majority, do not provide such training. Conversely, a significant proportion provides such training to all or most of their employees.
- Establishments with recruitment problems and experiencing skill-shortage vacancies were more likely to provide off-the-job training than were other establishments.

Issues Arising

5.28 The process of undertaking this comparative study has highlighted a number of areas that could usefully be addressed in future employer skills and vacancy studies. The issues arising can usefully be grouped into two categories, those that affect the surveys in general and those that have specific implications for the comparability of the surveys.

5.29 From the perspective of skills surveys in general, probably the most important issue to emerge is the need to review the measurement of internal skill gaps. As was noted on a number of occasions, the UK surveys differ too widely in their approaches to the measurement of skill gaps for any meaningful comparisons to have been made. More fundamentally, the findings of this study raise further doubts regarding the validity of the proficiency question approach as a means of measuring internal skill gaps.

5.30 This is not a new issue. The qualitative research reported in ESS 2002 led the authors to observe that:

Respondents tended to associate proficiency – the concept at the heart of the measurement of skills gaps – as much with performance as with the possession of skills, provoking questions as to what precisely is being measured. (Hillage *et al*, 2002).

5.31 The second major issue concerned the measurement of current vacancies. In the UK employer skills surveys, the vacancy question is central to the analysis of recruitment difficulties and skill-shortage vacancies. But in the England, Scotland and Wales surveys, respondents are not given a definition of current vacancies that clearly restricts vacancies to those for which the establishment is actively seeking to recruit from the external labour market. A common agreed definition of vacancies for use in the surveys studied for this report is clearly required from a comparability perspective. But this would also benefit the skills surveys more generally.

5.32 Related to the above, some further consideration might be given to the appropriate unit of analysis. The workplace is where the effects of skill-related problems are most keenly felt. But it is not necessarily in all cases the most appropriate unit for the collection of vacancy data, on which much of the analysis of the survey data hinges. This is a difficult issue, as the establishment remains central to the objectives of employer skills surveys.

5.33 The third issue arising is the use of a range of different coding frameworks by the various surveys for recording responses to questions about the reasons for, effects of and measures taken in response to difficult-to-fill vacancies. A consistent and uniform approach to such frameworks would clearly be beneficial from the perspective of comparability. But achieving a consistent approach would also help to sharpen and tighten up the frameworks that are currently in use, which can only benefit the analysis of skills problems.

5.34 Fourth, a common finding from the surveys is that relatively few firms are affected by skill-shortage vacancies. Also, based on the measures that are presently in use, internal skill gaps affect relatively small minorities of firms. These firms were also found to have a higher propensity to undertake off-the-job training than was the case for firms with no skill-shortage vacancies and/or internal skill gaps. This does pose the question of whether the skills surveys need to pay more attention to understanding the skill requirements of firms that do not have skill problems, however defined.

5.35 As a corollary of the above, the scope of the training questions could also fruitfully be reviewed. Of the surveys studied for this report, Northern Ireland was the only one to include a module for on-the-job training.

5.36 The issues that have specific implications for the comparability of the surveys, and particularly those undertaken in the UK, include the following:

- Weighting and grossing. The use of different populations for this purpose adds to the uncertainty surrounding comparisons of survey estimates.

- Treatment of missing data.

- The measurement and qualitative probing of skill-shortage vacancies.

- Skills sought. Curiously, this was a topic on which no comparisons were possible.

Concluding Remarks

5.37 A key message from this comparative study is the desirability of a more co-ordinated and common approach to the design and implementation of employer skills surveys and, where overlap occurs, the Republic of Ireland's vacancy survey. There are at least three benefits to be gained from such an approach.

5.38 First, the process of developing a common approach in key areas should benefit the individual surveys within each country. For example, the sharing of expertise and experience of what does and does not work can lead to better measurement instruments and questionnaire design.

5.39 Second, cross-country comparisons undertaken in the context of a common approach can facilitate the validation of the definition and measurement of key concepts.

5.40 Finally, and perhaps most importantly, a common approach that addresses the issues raised in this report would better enable countries to 'benchmark' key indicators based on commonly agreed definitions. This can only help to strengthen the analysis within each country and deepen the understanding of the nature of skills problems faced by businesses and organisation. As a corollary, such an approach would also facilitate pooling or sharing of data from the various surveys. Effectively, this would increase the overall sample size and thus enable more robust conclusions to be drawn in respect of skills-related issues.

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Appendix A Comparability of the Surveys

Introduction

1 The purpose of this Appendix is to assess the comparability of the surveys used in this report. The key issues are:

- The extent to which results from the surveys can or cannot be compared.
- Adjustments that may be required in order to compare results.
- Any caveats that may need to be borne in mind when making comparisons.

2 The Appendix commences with an outline of the surveys that have been undertaken to date. This provides the basis for choosing the surveys to be compared. The comparability of these surveys is then discussed under the following headings:

- Objectives.
- Structure of the questionnaire.
- Topics, especially those related to recruitment difficulties and skill gaps.
- Unit of analysis.
- Coverage.
- Sample frame.
- Sample design – sampling strategy and stratification.
- Data collection and survey outcomes.
- Coding and classification.
- Weighting and grossing.
- Standard errors and confidence intervals.
- Definitions.

Choice of surveys to be compared

3 The employer skills and vacancy surveys that have been undertaken to date in the five Home Countries are listed in Table A.1 below. A total of 11 surveys have been conducted. For the purposes of this study, the surveys to be compared should ideally meet a number of requirements. Specifically, they should be:

- Consistent in terms of coverage or scope, particularly in relation to employment size distribution as the incidence and extent of recruitment difficulties tends to vary substantially by size of workplace. This is the single main requirement.

- Large in scale. This is to allow for analysis by predictor variables such as industry sector, establishment size-band and occupation[22].

- Reasonably proximate in terms of timing, in order to control for differences in the putative impact of the economic cycle. This is a cross-sectional study, not an analysis of trends over time.

4 Considered against the above criteria, it is neither feasible nor practical to compare findings across each of these 11 surveys. As can be seen from Table A.1, *within* each country, the surveys conducted to date have varied in terms of scope (Northern Ireland, England and the Republic of Ireland) and/or scale (Scotland, England). Mainly for that reason, but also to obtain a reasonable degree of proximity in relation to the timing of the surveys to be compared, the following surveys are analysed in this study:

- **Northern Ireland** - the 2002 SMS (DEL, 2003).

- **England** – ESS 2001 (Hogarth *et al*, 2001).

- **Scotland** – the 2002 Skills in Scotland survey (Futureskills Scotland, 2002).

- **Wales** – the 2003 Generic Skills Survey (Future Skills Wales, 2003).

- **Republic of Ireland** – the 2001/02 Vacancy Survey (Hughes *et al*, 2002, 2003).

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[22] A further consideration in relation to this criterion is that, when comparing estimates from two independent samples, the standard error of the difference between the two estimates is a function of the *sum* of the variances of the two sample estimates. All other things equal, the variance of a sample estimate decreases with the size of the sample.

Table A.1 Employer skills and vacancy surveys *(the surveys compared in this study are those highlighted in italics)*

	N. Ireland	England	Scotland	Wales	Rep. of Ireland
First report					
Survey	2000	1999	*2002*	*2003*	1998/99
Coverage	Private, non-agric	5+ employees, non-agric	*All sizes, sectors*	*All sizes, sectors*	Private, non-agric
Units	Establish-ments	Establish-ments	*Establish-ments*	*Establish-ments*	Firms
Sample size	3,707	26,952	*8,507*	*6,020*	1,069
Publication	2001	2000	*2002*	*2003*	1999
Second report					
Survey	*2002*	*2000/01*	2003		1999/2000
Coverage	*All non-agric.*	*All sizes, sectors*	All sizes, sectors		Private, non-agric
Units	*Establish-ments*	*Establish-ments*	Establish-ments		Firms
Sample size	*4,504*	*27,031*	3,006		1,313
Publication	*2003*	*2001*	2003		2001
Third report					
Survey		2002			*2001/02*
Coverage		5+ employees			*All non-agric*
Units		Establish-ments			*Firms*
Sample size		4,012			*1,635 private 413 public*
Publication		2003			*2003 – Private & public separately*

Objectives

Northern Ireland

5 The key stakeholder in the Northern Ireland Skills Monitoring Survey (SMS) is the Northern Ireland Skills Task Force (NISTF), which was established in early-1999 to advise government on issues relating to the supply of, and demand for, skills in the Northern Ireland labour market.

6 The Skills Monitoring Survey (SMS) is the main vehicle for identifying current skills needs amongst employers. The 2002 Survey is the second such survey undertaken in Northern Ireland, following on from the inaugural 2000 Survey. The 2002 Survey differs from its predecessor in two respects:

- Coverage was extended to include public sector employers. The reason for this was that, with a tightening labour market, there was some evidence to suggest that public sector employers were experiencing recruitment difficulties, which had been unprecedented.

- The topic list was expanded to include an extensive module of training questions, covering both on-the-job and off-the-job provision by employers.

7 The overall aim of the SMS is:

- To provide a comprehensive snapshot of the current skill needs of Northern Ireland employers in the non-agricultural sector.

8 The primary objective of the SMS is as follows (DEL, 2001):

- To address the issues of current vacancies, recruitment difficulties, staff retention difficulties and skill gaps within the existing workforce.

England

9 In 1999, the Department for Education and Skills (DfES) commissioned the first Employers Skill Survey (ESS 1999) as part of a major inquiry into skill deficiencies on behalf of the National Skills Task Force (STF). ESS 1999 comprised a survey of almost 27,000 employers, focusing specifically on the extent, causes and implications of skill deficiencies, both internal skills gaps and external skill shortages.

10 The 2001 ESS largely replicated the 1999 ESS. Similar to the ESS 1999, the 2001 ESS was a very large-scale survey, of over 27,000 establishments. It differed from the 1999 ESS by including establishments with between 1 and 4 employees as well as those in the agricultural sector. In addition, new questions were added on training and e-commerce.

11 Similar to its predecessor, ESS 2001 was part of a wider investigation undertaken by the Skills Task Force (STF). The general aims and objectives of the wider investigation were:

- To focus on skill deficiencies, including recruitment difficulties reported by employers as well as 'skill gaps' (that is, problems with the skills of the existing workforce);
- To measure the extent and nature of current skill problems;
- To explore the causes of these problems;
- To assess implications of these difficulties for economic performance.

12 Within that broader context, the ESS study addresses the following questions regarding the skill needs of employers:

- How many employers face recruitment difficulties, and to what extent does a lack of available skills contribute to these?
- How do these problems vary by occupation, establishment size, industrial sector and region?
- What evidence is there about the existence of internal skill gaps within the employed workforce?
- What are the perceptions of employers about the causes of such (internal and external) skill deficiencies?

13 A particular feature of both the ESS 1999 and the ESS 2001 is that they have formed the basis for an extensive series of research studies. A synthesis of the findings from research studies based on ESS 1999 can be found in Hogarth and Wilson (2001). The volume edited by Mason and Wilson (2003) contains a number of research studies based on the 2001 ESS. An important context for the studies reported in Mason and Wilson was the need to address sectoral objectives, specifically the development of data to inform the new Sector Skills Councils (SSCs).

14 Other reports of interest include Hogarth *et al*'s analysis of skill shortages, vacancies and local unemployment (see also Green and Owen, 2002) and Dickerson's (2003) research on the relationship between vacancies and local unemployment. The sub-regional dimension is an important element of the ESS, particularly in relation to Learning and Skills Council (LSC) areas.

Scotland

15 The first Skills in Scotland survey was conducted in 2002. It was commissioned by Futureskills Scotland, which is operated jointly by Scottish Enterprise and Highlands and Islands Enterprise.

16 The main aim of the 2002 survey was to provide evidence from Scottish employers about issues connected with skill shortages, skill gaps and training. The specific objectives of the survey were to assess:

- The importance of skill-related issues compared with other challenges facing employers.
- The types of jobs, industries and regions in which skill deficiencies are most and least prevalent.
- The causes of skill deficiencies, their consequences and employers' responses to them.
- The nature and extent of training paid for by employers.
- How well prepared for work employers find recruits from school, college, and university to be.
- Employers' future recruitment intentions.

17 A follow-up survey was conducted in 2003. This was primarily an update at national (Scotland) level. With a reduced sample size (3,006 compared to 8,507 in the 2002 survey), the update was not designed to provide either detailed sectoral or local analysis. The sample was mainly drawn by re-contacting employers who participated in the 2002 survey and who agreed to be re-contacted. In addition, the sample included new start-up businesses and around 660 interviews with companies that had not participated in 2002 study.

18 An interesting feature of the Scottish approach to dissemination is that data relating to a selected subset of key indicators from the 2002 Survey have been made available as a database on the Futureskills Scotland web-site. This database has been used extensively in this study.

19 A second point to note regarding the 2002 Scottish survey is the importance attached to providing information to the 22 Local Enterprise Forums (LEFs) in Scotland. Obtaining geographic data was one of the objectives of the 2002 Survey and information on each of LEFs is also available from the Skills in Scotland survey database on the Futureskills Scotland web-site.

Wales

20 The Future Skills Wales Generic Skills Survey 2003 was conducted on behalf of the Future Skills Wales Partnership, which includes Education and Learning Wales (ELWa), the Welsh Assembly, the Welsh Development Agency and other public and private sector bodies.

21 The aim of 2003 survey was to investigate the nature of skill needs and the extent of hard-to-fill vacancies, skill shortages and skill gaps in the Welsh economy, together with their causes and implications.

22 A distinguishing feature of the Welsh approach was that the employers' survey was undertaken in tandem with a household survey. A similar model was employed for the 1998 Generic Skills Survey. Hence, for some indicators, the 2003 Welsh report provides comparisons with the 1998 survey.

23 A second distinctive aspect of the Welsh approach was that the employers' survey included a number of questions on current and future generic skills required by employers. These questions were posed to all respondents.

24 For both of the above reasons, the FSW report has less of a focus on recruitment problems than is the case for the other UK countries.

Republic of Ireland

25 The 2001/02 surveys of vacancies in the private non-agricultural sector and the public sector were the third in a series of national vacancy studies undertaken by the ESRI, who were appointed by Forfás and FAS acting on behalf of the Expert Group on Future Skill Needs.

26 The aim of the surveys was to assess the incidence, level, nature and consequences of vacancies. The surveys also sought to obtain information about firms experiencing difficulties in retaining staff, the extent of recruitment from abroad, perceptions of changes in skills and the regional variation in vacancies.

27 The report on the private sector documents changes in the number of reported vacancies, by sector and by occupation, and provides details on those occupations in which vacancies have either increased or decreased.

28 The public sector report was the first of its kind in the Republic, thus establishing a baseline against which future change can be assessed.

Summary

29 The main points to note regarding the objectives associated with the employer skills and vacancy surveys described above are as follows.

30 First, the UK studies share a broadly common set of objectives. Thus, each of the UK surveys has an explicit focus on skill needs of employers, being particularly concerned with external skill shortages and internal skill gaps and the impact of these on businesses. In each of the UK studies, the former are analysed with reference to:

- External skill shortages, essentially measured by recruitment difficulties that are skills-related.
- Internal skill gaps.

31 Each of the UK studies also seeks to obtain information on the causes of skills deficiencies, as well as their impacts and the responses made by employers. In addition, the UK surveys focus on recruitment difficulties more generally, as indicated by current vacancies and difficult-to-fill vacancies.

32 The RoI study is more focused on this latter issue, with the vacancy rate being a key focus of attention, along with the incidence of difficult-to-fill vacancies. It does not, for example, seek to measure external skill shortage vacancies or the incidence of skill gaps amongst the workforce. As the title of the study indicates, it is more a study of vacancies than of employers' skill needs. As will be seen below, this difference in the scope of the survey objectives is reflected in some important differences in the design of the Irish study as compared with those undertaken in the UK countries.

33 Second, each of the surveys has been implemented within a specific set of policy contexts that have in turn shaped certain key aspects of survey design. In particular, the English, Scottish and Welsh surveys have sought to meet the needs of interested parties at sub-regional level, notably the LSCs in England, the LEFs in Scotland and Unitary Authority areas in Wales.

Questionnaire structure

34 As represented by their main headings, the structure of the questionnaires used in the five surveys is summarised in Table A.2. In general terms, the UK questionnaires follow a fairly similar structure. This reflects the commonality of objectives that was noted above. There are some differences. For example, the NI SMS is the only one to seek information regarding on-the-job training. ESS 2001 has an extensive section on the relationship between product strategy and skills requirements. As was noted above, the Welsh survey includes questions on employers' perceptions of current and future generic skill needs. Finally, it can be noted that the Northern Ireland, Scottish and Welsh surveys elicit information on recruitment methods. This was not part of ESS 2001.

Table A.2 Structure of questionnaires

N. Ireland	England	Scotland	Wales	Republic of Ireland
2002	2001	2002	2003	2001/02
Background information	Background information	Background information	Background information	Background information
	Product market		Product market	Product market
Employee turnover	Employee turnover	Employee turnover		Employee turnover
	Employment in 1 year (qualitative)	Employment in 1 year		
	Product strategy and skills	Challenges		
Recruitment methods		Recruitment from schools, etc., Methods, Overseas	Recruitment from schools, etc Recruitment factors	Recruitment abroad
Recruitment problems	Recruitment problems	Recruitment problems	Recruitment problems	Current vacancies & recruitment problems
Staff retention				Staff retention
			Generic skills needed, now and in future	
Skill gaps	Skills & proficiency	Skill gaps	Skill gaps	Skill trends
Off-the-job training	Off-the-job training	Off-the-job training	Off-the-job training	Off-the-job training
On-the-job training				
Approach to training	Approach to training	Approach to training		
Initiatives – use of NVQs, IiP, Govt programmes	IiPs	Initiatives – use of NVQs, IiP		
		Classification & follow-up		

35 Considered in terms of main headings, the Republic of Ireland survey shows a comparable structure to those of the UK countries. It does not, however, include a section on skill gaps, which are a major concern of the UK studies. Further, the Irish study is much more focused on obtaining estimates of the number of vacancies by occupation rather than qualitative data on employers' perceptions of recruitment difficulties. This is apparent from the topics covered within key sections related to recruitment difficulties.

Topics

36 The main topic headings covered by the various surveys in relation to recruitment problems, skill gaps and off-the-job training are summarised in Table A.3.

37 The first point of note is the similarity in topics treated by the UK skills surveys under each of the headings shown in Table A.2. This is most pronounced in respect of the treatment of difficult-to-fill vacancies, as the UK surveys employ a broadly comparable methodological approach to the measurement and analysis of the incidence of such vacancies. For example, while there are some differences, the measurement of external skill shortage vacancies is very similar across the UK skills surveys. Nonetheless, it will be seen that there are a number of subtle, but important, differences between the UK surveys in the treatment of qualitative indicators for difficult-to-fill vacancies, that is, skills sought, reasons, effects and responses. This also holds for skill gaps.

38 Though it is not obvious from the topic lists shown in Table A.2, there is less coherence between the UK surveys in the measurement of internal skill gaps. This is discussed in detail below under the heading of definitions and indicators.

39 As was noted above, the Republic of Ireland focuses much more on estimating numbers of vacancies by occupational group. As will be seen below, it also employs a much different approach to data collection. For both of these reasons, the range of topics covered under the heading of difficult-to-fill vacancies in the Irish survey is rather less than in the UK surveys. In particular, the Irish survey does not ask respondents to identify reasons for difficult-to-fill vacancies and hence it is not possible to derive an estimate of the incidence and extent of skill shortage vacancies that is comparable to the UK surveys. In addition, skill gaps are not covered in the same fashion as in the UK surveys.

40 A final point to note is that each of the surveys seeks to obtain an estimate of the number of current vacancies.

Table A.3 Difficult-to-fill vacancies, skill gaps and training: Topics

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Current vacancies					
Number	√	√	√	√	√
Difficult-to-fill vacancies					
Number	√	√	√	√	√
Duration		√	√		
Skills sought	√	√	√		
Reasons	√	√	√	√	
Effects	√	√	√	√	√
Responses	√	√	√	√	√
Skill gaps/proficiency of the workforce					
Incidence	√	√	√	√	
Extent/number	√	√	√	√	
Reasons	√	√	√		
Skills sought	√	√	√	√	
Effects	√	√	√	√	
Responses	√	√	√	√	
Barriers		√			
Changes in skill needs		√	√	√	√
Off-the-job training					
Provision	√	√	√	√	√
Types	√	√	√		
External provider	√		√	√	
Qualifications	√		√		
Training					
Plan	√	√	√		
Accreditation	√	√	√		

Unit of analysis

41 There are two main options for the choice of the unit of analysis in an Employer Skills Survey:

- The establishment or workplace.
- The business enterprise or organisation.

42 In the vast majority of cases, the establishment and the business enterprise are one and the same. Clearly, however, some businesses can be spread over a number of different workplaces. Similarly, many public sector organisations operate from a number of different locations.

43 In each of the four UK countries, the establishment is the basic unit of analysis, and the level at which survey data are collected (Table A.3). The Irish survey takes a different tack, focusing on the enterprise or organisation. This has the immediate consequence that indicators for the *incidence* of recruitment difficulties *cannot* be compared with the UK countries.

Table A.3 Employer Skills Surveys: Unit of analysis and coverage

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Year	2002	2001	2002	2003	2001/02
Unit of analysis	Establish-ment	Establish-ment	Establish-ment	Establish-ment	Enterprise/ organisation
Size	All	All	All	All	All
Industry	Non-agricultural industries	All industries	All industries	All industries	Non-agricultural industries

44 Putting aside the practical issues of sampling strategies and the choice of sampling frame, the use of the establishment as the basic unit of analysis in the UK surveys largely reflects the concern with *qualitative assessment* of the causes and impacts of recruitment difficulties and skills deficiencies. The rationale for this is that it is at the establishment level that recruitment difficulties and skills deficiencies are likely to be most keenly felt in terms of causes and impacts. One drawback of this approach is that, in the case of multi-establishment organisations, it may be more difficult to obtain information on business performance (see Mason and Wilson, 2003, p. 19).

45 Whether this is also the most appropriate unit for the measurement of the *number* of vacancies is a moot point. In developing a methodology for its survey of job vacancies, the ONS has concluded that (Machin and Christian, 2002):

> *The information on total vacancies was, in most cases, best obtained at the level of reporting units (usually head offices) of enterprises rather than from local units* [that is, establishments or workplaces].

46 The ONS has, however, experienced difficulties in obtaining responses from very large organisations with multiple sites, notably in the hotels and restaurants, public administration and communication sectors (Machin and Christian, 2002). For that reason, the ONS is planning to set up a special methodology that will enable it to approach the local units of these large organisations for information on vacancies. This would, however, suggest that the 'optimal' unit for collection of data on *numbers* of vacancies (as opposed to perceptions of those that are difficult-to-fill and the effects of these on the business or enterprise) will vary from one set of circumstances to another. To that extent, the approach adopted in the UK employer skills surveys is not necessarily 'wrong', but the accuracy may vary from one sector to another.

47 While the measurement of the number of vacancies is not the primary objective of the UK skills surveys, this is nonetheless central to the analysis of the incidence and extent of recruitment difficulties, including difficult-to-fill vacancies and external skill shortage vacancies. The main danger posed by the use of the establishment as the basic unit for data collection is that there may be some double-counting of vacancies, for example, head office may include some local unit vacancies as well as vacancies arising at the head office workplace. It is not strictly possible to analyse this issue by comparing the skills survey estimates with the ONS data. This is because, as noted above, the ONS focus on the enterprise may lead to under-counting in those cases where information on vacancies is held at local unit rather than head office level.

Coverage

48 The surveys analysed in this report are very similar in terms of size and sectoral coverage.

49 Each of the surveys covers the full spectrum of employment size bands, by establishment in the UK and by business enterprise or organisation in the Republic. It should, however, be noted that coverage by employment size band tends to vary. In England, ESS 1999 and ESS 2003 excluded establishments with fewer than five employees. Mason and Wilson (2003) point to a trade-off between achieving full coverage by size band and the precision which is required for estimates of various indicators (see also Forth, 2003).

50 A second point to note is that the Great Britain surveys cover all industry sectors, whereas the NI and RoI surveys exclude agriculture. This is despite the fact that these are the two economies where agriculture still has a relatively high profile in terms of employment. In the case of NI, two reasons are given in DEL 2001:

- A large proportion of agricultural businesses have no or few employees (see DETI, 2003). Many would naturally be excluded from the Survey in any event.

- A separate study has recently been undertaken to assess the training needs of farmers (see Hughes, 2002).

Sample Frame

51 In the UK, there are two options for a choice of sample frame:

- The Inter-Departmental Business Register (IDBR).

- The BT Business Database (essentially, the Yellow Pages).

52 The IDBR is a UK-wide statistical register containing information on about 2m businesses. The list of businesses is drawn from two administrative sources, the Value Added Tax system from HM Customs and Excise and Pay As You Earn (PAYE) records from the Inland Revenue.

53 The main data held for each business on the IDBR are:

- Contact details – including name and address.

- Standard industrial classification.

- Number of employees.

- Employment.

- Turnover.

54 In addition, the IDBR holds information on the legal status of the company, parent company information, country of ownership details, and the value of goods traded with EU Member States from Intrastat.

55 The IDBR is specifically designed to enable Government both to produce analyses of business activity (e.g. business births and deaths) and to conduct surveys/inquiries (e.g. the Annual Business Inquiry, the ONS Vacancy Survey). Regarding surveys/inquiries, the IDBR is used to:

- Select the businesses to be included in surveys/inquiries.

- Mail forms.

- Enable estimates to be made for businesses who do not respond (imputation) or who were not asked to participate in any particular inquiry (grossing).

56 As can be seen from the above, one of the main functions of the IDBR is to provide a sample frame for mainly postal-based inquiries[23,24] by Government. It possesses a number of advantages in that regard:

- The IDBR covers all industry sectors.
- It provides a consistent frame for sample selection, imputation and grossing.
- The database itself holds useful background information on businesses.

57 The main disadvantages of the IDBR as noted by DEL in choosing a sample frame for the 2000 NI survey were as follows (DEL, 2001):

- Very small businesses and some non-profit-making organisations are not covered.
- Lack of a comprehensive listing of business telephone numbers.
- Organisation-based, not a site-based listing.

58 Regarding the last of the above points, a sampling suite of programmes on the IDBR has now been developed to allow selection of local units (workplaces) as well as reporting units (enterprises) (DETI, 2003, p. 58). This has been in response to an increasing number of requests from users for samples at the local unit level. The other two disadvantages are very important in the context of the UK employer skills surveys. As the data are collected by telephone interview (see below), a comprehensive listing of telephone numbers is a critical consideration. The coverage of very small businesses is also an important consideration in the case of surveys that aim to achieve comprehensive coverage across all size-bands.

59 The BT Business Database is a commercially available listing of all business entities with a business rate telephone line and which are listed in the Yellow Pages telephone directory. As such, the telephone number listings are up-to-date and readily accessible. In addition, all industry sectors and sizes of business are covered.

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[23] Though postal surveys often have low response rates, this tends not to be a particular problem in those Government surveys based on the IDBR where a response is compulsory under the terms of the Statistics of Trade Act. This applies, for example, to the Vacancy Survey, for which the reported response rate is 85 per cent (Machin and Christian).

[24] Data for the ONS Vacancy Survey are collected using a system of 'telephone data entry' (TDE) by which employers key in the total number of vacancies using their telephone keypad. The questionnaire is sent out by post. It should be noted that the Vacancy Survey only asks one question, albeit there is a page of guidance on defining a vacancy and lists of inclusions and exclusions.

60 The main disadvantages of the BT Business Database are as follows:

- Incomplete and/or missing information on employee numbers.
- Potential misclassification of industry sectors. For example, the Technical Report for the 2003 Welsh study reports that 37 per cent of respondents disagreed with the SIC information held on the Business Database when asked a series of questions about their service/business activity.
- Inclusion of both headquarters and branch sites of multiples.
- Not necessarily consistent with official Government statistics for employment by industry sector and size band.
- Does not provide a consistent basis for grossing employment-based indicators.

61 Notwithstanding the above drawbacks, and though the IDBR is specifically designed to serve as a sample frame, each of the UK surveys have used the BT Business Database as their sample frame (Table A.4). Partly, this choice was dictated by the need for an establishment-based sampling frame. Though, as noted above, the IDBR now facilitates the preparation of sampling frames on a local unit or establishment basis

62 In addition, however, the choice of the BT Business Database represents a pragmatic response to the need for a comprehensive and up-to-date listing of telephone numbers. As noted above, each of the UK surveys used telephone interviewing as a means of data collection.

Table A.4 Employer Skills Surveys: Sample frame and survey design

	N. Ireland	**England**	**Scotland**	**Wales**	**Republic of Ireland**
Year	2002	2001	2002	2003	2001/02
Sample frame	BT Business Database	BT Business Database	BT Business Database	BT Business Database	ESRI list of firms
Type	Random disproportionate	Quota sampling	Quota sampling	Quota sampling	Mixed follow-up with random selection
Stratification	Size	Region & LSC, industry sector, size	22 LEFs, industry sector, size	Unitary authority, industry sector, size	Private - Size, sector, region Public - Census
Targeting	Size	Larger firms with regional minima	Larger firms with LEF minima	Larger firms with UA minima	Size, sector

63 In the Republic of Ireland study, the sample frame was comprised of lists of firms maintained by the Economic and Social Research Institute (ESRI).

Sample design

64 Quota sampling was the most commonly used sampling methodology, being adopted in each of the three Great Britain surveys (Table A.3). In the English case, this reflected (Forth, 2003):

- The requirement for timely information.
- The need to deliver that information within budgetary limits.

65 These are fairly typical reasons for using the quota sampling methodology (Moser and Kalton, 1979). Though, it should be noted that the lack of a sampling frame, which is often one of the main arguments in favour of quota sampling, does not apply in the present context. Thus, in the Northern Ireland case, a random disproportionate sampling strategy was adopted. The ESRI used a more mixed approach, based on a follow-up survey of firms that had participated in the previous vacancy study (1999/2000) supplemented by a random selection of firms, disproportionately stratified by size and sector.

66 Quota sampling has been described as "stratified sampling with a more or less non-random selection of units within strata" (Cochran, 1977). The non-random element obviously affects the ability to apply standard formulas for the computation of standard errors and confidence intervals.

67 This is important in the present study since it would be useful to test whether observed differences between the five countries for key indicators are statistically significant. The feasibility of doing this is examined below in discussing standard errors.

68 At this point, it is more useful to focus on the approach to stratification in the various surveys. The main point to note is that the three Great Britain surveys adopted very similar approaches to stratification (Table A.4). Thus, in each of the three surveys using quota sampling, targets were set for strata defined in terms of geography, industry sector and employment size-band. For example, in the 2001 ESS in England, the quota matrix was comprised of a total of 720 cells (five size bands by 16 industry sectors by nine regions). In Scotland, the quotas were allocated to a matrix of 22 Local Enterprise Forums (LEFs), five industry sectors and five establishment size-bands. In the Welsh survey, quotas were set for 22 Unitary Authorities (UAs). Within each UA, quotas were set for five size bands and 15 industry sectors (though the number of sectors was reduced in some of the smaller UAs).

69 In addition, the three Great Britain surveys used disproportionate stratification to set quota targets within the cells of the quota matrix. In each case, this was done for two main reasons:

- To ensure minimum achieved sample sizes in the geographical areas of interest[25].

- To ensure a sufficient number of cases for statistical analysis in each size by industry combination.

70 The methodology adopted in ensuring a sufficient representation by establishment size was typically to allocate interviews in proportion to numbers employed within each size band rather than the number of establishments. In the achieved samples, this results in an under-representation of smaller workplaces and an over-representation of larger workplaces, relative to the size distribution of establishments in the sample frame. This is desirable on two accounts:

- Larger workplaces occur much less frequently in the population of establishments, and a proportionate allocation by number of establishments would run the risk of achieving too few interviews for statistical analysis.

- Skills surveys are interested in both workplace indicators (e.g. the incidence of hard-to-fill vacancies) and employment-based indicators (e.g. the number of hard-to-fill vacancies as a percentage of employment).

71 As Forth (2003) notes, disproportionate sampling of larger workplaces is a common strategy in establishment-based surveys. While the larger workplaces account for a relatively small proportion of the population of establishments, they will obviously account for a much larger share of employment.

72 This was also a consideration in the NI survey, which sampled disproportionately by employment size band. The NI sample for the 2002 survey was drawn as follows:

Size band:	**Selection:**	**Allocation:**
50 or more employees	Census	1,655
11-49 employees	Random	2,564
1-10 employees	Random	2,207
Unclassified	Random	529

[25] In the English survey, half the target number of interviews was distributed equally across the nine Regional Development Agency areas, giving a minimum of 1,500 interviews per region. Within each region, a target of 400 interviews per LSC was set. The Scottish survey adopted a broadly similar approach. In the Welsh survey, a minimum target of 200 interviews was set for each UA.

73 A point of note in the Northern Ireland survey is that the allocation to unclassified establishments reflects one of the difficulties in the use of the BT Business Database. This may not have affected the specification of interview *targets* in the quota cells of the Great Britain surveys, which were typically based on population data (such as the Annual Employment Survey in the English ESS 2001). But it is unclear if the selection of establishments from the BT Business Database for interview purposes was modified to take account of unclassified establishments.

74 A second point to note regarding the NI survey is the use of a relatively limited number of employment size bands. The Great Britain surveys typically sought greater discrimination between large and medium-sized workplaces. For example, the English quotas were set using size-bands of 1-4, 5-24, 25-99, 100-499 and 500 or more employees. This has implications for the relative precision of the estimates derived from the surveys, which are discussed below.

75 Similar to the NI survey, the Republic of Ireland vacancies survey used a design based on disproportionate stratification, albeit with a larger number of stratification factors. Thus, in the survey of private sector firms, the sample was first stratified by eight sectors. Within each of these sectors, the sample was stratified into two size-bands. Finally, firms were stratified by region within each of the sector by size strata.

76 The number of public sector organisations in the sample frame was such that a census was undertaken, with questionnaires being mailed to each of 571 organisations.

77 To summarise, there are important differences in sample design that need to be taken account of in comparing the results from the various surveys. In particular, the Great Britain surveys each made use of a quota sampling strategy, which does raise problems in respect of statistical comparisons.

78 Nonetheless, it is also apparent that the surveys share a number of common features, notably the use of disproportionate stratification to ensure that each size by sector stratum contained sufficient numbers of cases to allow for statistical analysis. Thus, in each survey, larger workplaces are over-represented compared to their shares of all establishments in the populations of interest.

79 Regarding the approach taken to stratification, the Great Britain surveys differ from those undertaken in Northern Ireland and Ireland insofar as they also sought to ensure minimum numbers of achieved sample sizes in specified geographical areas. This requirement tends to reduce the efficacy of the sample in representing the full range of variability in the population, that is, it is likely to result in less precise estimates than might be obtained with a purely random assignment.

Data collection and survey outcomes

80 The UK surveys adopted a broadly common approach to the task of data collection (Table A.5). In each case, there was some piloting of the questionnaire. In the Northern Ireland and England cases, this was more in the nature of fine-tuning since each of the surveys was largely replicating a previous study, albeit with increased scope and some additional questions.

81 Furthermore, each of the UK surveys employed Computer-Assisted Telephone Interviewing (CATI). In addition to facilitating complicated routing, CATI has the advantage of allowing internal validity and consistency checks at the interview stage. This also tends to standardise the process of data collection across the four surveys, though there will have been differences in terms of the actual validity checks employed and the routing through the questionnaire (some of these differences are discussed when considering the definitions of various concepts implied by the questions asked in the surveys).

82 Finally, the UK surveys were all directed specifically towards a senior person with responsibility for personnel issues at the establishment. In the NI survey, the person most often interviewed was the owner of the business or person in overall charge at the establishment (48 per cent in the private sector and 25 per cent in the public sector).

Table A.5 Employer Skills Surveys: Data collection and survey outcomes

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Year	2002	2001	2002	2003	2001/02
Pilot	30 (public sector)	102	40	20	-
Interview method	CATI[1]	CATI[1]	CATI[1]	CATI[1]	Postal w/telephone follow-up
Principal respondent	Person responsible for staff	Senior person responsible for HR/ Personnel	Senior person responsible for HR/ Personnel	Personnel Director/ Senior Manager recruitment	Postal
Achieved sample size	4,504	27,031	8,507	6,020	1,635 private 413 public
Response rate	73%	53%	55%	51%	42% private 72% public

1 Computer Assisted Telephone Interviewing.

83 As can be seen from Table A.5, a quite different approach was used in the Republic of Ireland survey. This was based on a postal survey with telephone follow-up to encourage a response. This largely reflects the different set of objectives of the Irish survey. In particular, much more detailed information was sought regarding numbers of vacancies at the organisation (17 occupations with up to four vacancy types per occupation). In addition, because the survey was on an enterprise/organisation basis, it is likely that respondents at multi-site organisations would have had to consult written records before supplying a response.

84 Each of the UK surveys resulted in relatively large sample sizes, ranging from 4,504 in Northern Ireland (the smallest country) to over 27,000 in England. Response rates were fairly uniform for the English, Scottish and Welsh surveys, with a range of just four percentage points from 55 per cent to 51 per cent. The response rate was higher in Northern Ireland, at 73 per cent. Surveys in Northern Ireland do tend to elicit higher response rates than those undertaken in Great Britain. In that context, it is a moot point as to whether the higher Northern Ireland response rate is also a function of the different sampling strategy employed, though it can be noted that the difference in response rates between NI and the GB countries is quite large (in the order of 20 percentage points).

85 As would be expected from a postal survey, the Irish response rate for the private sector survey (42 per cent) was below the rates that were obtained in the UK surveys. At 72 per cent, the public sector response was much better in the Republic.

86 Whatever the reasons for the differences in response rates, there are two main implications for this exercise:

- Non-response was an issue in each survey. This raises the issue of response bias. This is addressed in the RoI survey through the weighting and grossing procedure and is discussed in the NI survey.

- The Great Britain surveys had a higher incidence of non-response.

87 Both of the above have the effect of increasing uncertainty with respect to gauging the significance or otherwise of observed inter-country differences in survey-based estimates.

Weighting and grossing

88 Because they are based on disproportionate stratified sampling, the raw data in each of the five surveys needed to be weighted to reflect the composition of the population from which the samples were drawn and to provide a basis for grossing up to population totals. Furthermore, since each of the surveys analyse the data on both an establishment (enterprises in the RoI) and employment basis, it was necessary to construct separate weighting factors on each of these bases[26].

89 Considering first the weighting by establishment, the main elements in the approach used by each survey are summarised in Table A.6. The first point to note regarding the UK surveys is that they are each weighted back to a different population.

Table A.6 Employer Skills Surveys: Weighting and grossing – Establishments and businesses/organisations

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Year	2002	2001	2002	2003	2001/02
Weighting factors	Size & sector	Region, size, sector	Region, size, sector	UA, size and sector	Size & sector
Population	BT Business Database	AES[1] 1999	IDBR[2] 2002	ABI[3] 2001	Various sources[4]
Weighted base	43,320	2,058,713	144,314	88,640	98,600 private 571 public
Un-weighted base	4,504	27,031	8,507	6,020	1,635 private 413 public

1 Annual Employment Survey
2 Inter-Departmental Business Register
3 Annual Business Inquiry
4 Including, the Census of Industrial Production, Annual Services Enquiries, Labour Force Survey

90 The English survey, which is the earliest of the UK surveys, made use of the 1999 Annual Employment Survey (AES). The AES has since been replaced by the Annual Business Inquiry (ABI)[27].

[26] Essentially, the population in each stratum divided by the sample size.

[27] The first ABI employee jobs estimate was released in April 2001, based on the 1999 survey year. The ABI differs from the AES in two main respects: it collects information on employee jobs in December of each year, compared to September in the AES; the ABI is based on reporting by enterprises/organisations, whereas the AES had been based on workplaces.

91 The ABI was the source of the weights used in the 2002 ESS in England (Hillage *et al*, 2002). The 2002 ESS report also reports some comparisons between the 2001 ESS for selected headline indicators calculated using both AES and ABI weights (see Hillage *et al*, 2002, p. 7). The different weighting frames make relatively little difference to the headline indicators for establishments with 5+ employees. Whether this would also be the case for the entire sample, including the 1-4 size band, is not known. The ABI has also been used in the 2003 Welsh study. The Scottish survey took a different approach, using the IDBR 2002 as the source of population data for grossing up at the analysis stage.

92 Northern Ireland weights back to the BT Business Database, with the size distribution of unclassified establishments being imputed from the survey results. This approach to weighting and grossing is consistent with the use of the Business Database as a sampling frame, but the use of a different weighting frame does introduce a further degree of uncertainty in making comparisons with other UK countries for establishment-based indicators, such as the percentage reporting a hard-to-fill vacancy.

93 A further point to note in relation to weighting and grossing in the UK surveys is that, at least in Northern Ireland and England, the size and sector combinations used did not necessarily correspond with the strata used in the sampling process. In England, separate grossing factors were computed for workplaces with 1, 2, 3, 4, 5-10 and 11-24 employees. In the quota matrix, these size-bands had been grouped two categories. In the case of Northern Ireland, weights were derived by industry sector as well as by employment size band. Further, the size-bands used varied slightly by comparison with the stratification of the sample, being based on size-bands comprised of 1-4, 5-10, 11-49 and 50+ employees.

94 Table A.7 summarises the approach used for weighting and grossing to employment totals in each of the surveys. As with the establishment weights, the UK surveys used a variety of population sources. Again, however, the main point of contrast within the UK surveys is between Northern Ireland and the three other countries.

95 Specifically, the NI survey results for employee-based measures (such as numbers of vacancies) are derived from the establishment units of the BT Business Database. For the purposes of this study, and in order to enhance comparability with the other UK countries, employment at establishment level in the NI survey was re-weighted to be consistent with the 2001 Census of Employment[28]. These re-weighted data are used in this report to generate estimates of *employment-based* measures, such as total vacancies, and to calculate indicators such as difficult-to-fill vacancies as a percentage of total employment for comparisons between NI and the other countries. For establishment-based indicators, the study relies on the pre-existing BT Business Database weights.

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[28] Employee weights were calculated for each of 20 industry sectors, based on the 1992 SIC.

Table A.7 Employer Skills Surveys: Weighting and grossing – Employment

	N. Ireland	England	Scotland	Wales	Republic of Ireland
Year	2002	2001	2002	2003	2001/02
Weighting factors	Size & sector	Region, size, sector	Region, size, sector	UA, size, sector	Size & sector
Population	Units of BT Business Database	AES[1] 1999	Units of IDBR[2] 2002	ABI[3] 2001	Various sources[4]
Weighted base	none	20,497,974	2,060,300	c. 2.4m	1,181,500 private 280,900 public
Un-weighted base	none	2,195,131	n.a.	n.a.	Private not reported 198,400 public

1 Annual Employment Survey
2 Inter-Departmental Business Register
3 Annual Business Inquiry
4 Including, the Census of Industrial Production, Annual Services Enquiries, Labour Force Survey

Sampling error

96 Clearly, when comparing survey results it is of interest to be able to test for the significance of any differences that may be found. For example, if the vacancy rate for Northern Ireland differs from that found in England, is that difference statistically significant, at a specified level of confidence such as the 95 per cent or the 99 per cent level?

97 To answer that question, it is necessary to compute standard errors for estimates such as the proportion of establishments with a vacancy or difficult-to-fill vacancies as a percentage of employees. The standard error is in turn used to calculate confidence intervals around a sample estimate for the proportion in the population. Confidence intervals give the range within which the true population value is likely to fall. Thus, for example, the 95 per cent confidence interval is about two standard errors either side of the sample estimate. The sample estimate can be said to be within two standard errors of the population value with 95 per cent confidence.

98 In the present context, this is not at all straightforward. There are two main reasons for this:

- Differences in survey design, notably the use of a quota sampling strategy in England, Wales and Scotland and the enterprise/organisation approach in the Republic of Ireland.

- The use of disproportionate sampling, which in any event requires the computation of complex standard errors (Cochran, 1977).

99 As was noted above, while it has a clear parallel with stratified random sampling, quota sampling involves a 'more or less' non-random selection of units for interview. The element of non-randomness means that it is not strictly possible to estimate sampling errors for a quota sample (Moser and Kalton, 1979, p. 133).

100 The main point of criticism is that, with a quota survey, interviewers are typically given some degree of discretion in meeting quota targets. The greater the latitude allowed to the interviewer in that regard, the higher will be the risk of selection bias as interviewers seek to meet their quota targets, rather than necessarily adhering to the concept of random selection. Simply put, it may be easier to obtain interviews with some types of respondents than with others. For example, in opinion polling, it is often found that quota sampling tends to over-represent the most educated. The main problem with quota sampling is that this element of interviewer discretion may result in quota samples that are not representative of the population. In addition, the resulting 'between-interviewer' variability will lead to greater sampling variance as compared to a random sample of the same size.

101 In analysing the reliability and robustness of data from the ESS 2001, Forth (2003) commences from the position that:

> *…. if the element of discretion in the selection of units for interview is eliminated,* [quota sampling and stratified random sampling] *can be seen as equivalent. The implication of this … is that the rules governing bias and precision in stratified random sampling can be used to indicate the properties of the quota sample.*

102 Forth then goes on to assess the extent to which the implementation of the ESS 2001 methodology could be viewed as having promoted the principle of random selection within cells of the quota matrix. He concludes that the ESS 2001 methodology "closely resembles" stratified random sampling, for the following reasons:

- The selection of units from the sampling frame was random within each cell of the quota matrix – "this eliminates the risk of selection bias in the first stage of the quota sampling procedure".

- The use of the CATI system meant that units selected from the sampling frame could be loaded into the system in randomly-selected batches of around 2,000. Individual units were then randomly allocated to interviewers thus removing the element of interviewer discretion in the choice of establishments to approach for interview.

103 The foregoing considerations do not make the ESS 2001 equivalent to a random stratified sample (e.g. the quota sampling methodology draws quota samples in batches, until the targets are met, so the probability of a unit being selected in a later batch is dependent on the response rate achieved in earlier batches). But they do provide considerable reassurance regarding the putative effects of interviewer discretion on the representativeness of the sample and would also serve to minimise the effect of between-interviewer variability on sampling variability.

104 The same contractor was responsible for the Scottish 2002 Skills Survey, and it is reasonable to infer that Forth's observations also apply to the sampling methodology used for the Scottish survey. The CATI technology was also used in the Welsh survey, as was the BT Business Database sample frame.

105 Even if it is accepted that the English, Scottish and Welsh quota samples can be viewed as closely resembling stratified random samples, there are still problems to be addressed in making statistical comparisons. The reason for this is that the formula for computing standard errors in stratified random samples is not the same as that for a simple random sample (see Cochran, 1977). This issue applies equally to the Northern Ireland and Republic of Ireland surveys, which are stratified random samples.

106 The issues involved in calculating complex standard errors for the type of stratified random sampling used in employer skills and vacancy surveys are fully discussed in Forth (2003). The main points are summarised briefly below.

107 Proportional stratified sampling usually serves to reduce sampling error. Essentially, this is because it can be expected to yield a more representative sample than might be expected from simple random sampling. That is, the information gained from stratification serves to increase the precision of the sample estimates. This does not necessarily hold with disproportionate stratified sampling, where the sampling fractions will differ across the strata of the sample.

108 In particular, for the reasons discussed above, each of the employer skills surveys over-sample large establishments and under-sample smaller workplaces. As noted by Forth, this tends to reduce the precision of workplace-based estimates. Primarily, this is because the sample is capturing less of the variability in the population[29]. The effect of this is less pronounced on employee-based estimates (such as the vacancy rate) since the sample is drawn to more closely reflect the distribution of employment in the population.

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[29] For example, the great majority of larger workplaces tend to have at least one current vacancy. Though it meets other survey objectives, disproportionately sampling larger enterprises does not help greatly in estimating the incidence of vacancies at such workplaces. Conversely, smaller establishments are much more variable in the likelihood of a current vacancy existing at the workplace.

109 What this means is that the standard errors for disproportionate stratified samples of establishments are likely to exceed the standard errors that would be obtained from a simple random sample. The ratio of the standard error from the stratified sample to the standard error from a simple random sample is known as the design effect (Deff). Typically, also, the magnitude of the design effect will vary across different sample estimates, depending on factors such as the degree of homogeneity within strata. This will tend to make it more difficult to compare sample estimates across the different surveys in terms of detecting statistically significant differences. The implications are best seen by considering design effects in practice.

110 A selection of design effects calculated by Forth using the 2001 ESS is reproduced in Table A.8 below. Also shown are indicative estimates of design effects calculated for the Northern Ireland Skills Survey 2002[30]. These NI estimates are indicative because they do not allow for possible effects arising from the need to classify some establishments by size band on a post-hoc basis. The first point to note is that the design effects for each variable in each survey are in excess of unity. Partly, this reflects the point noted above, that disproportionately sampling the larger workplaces will tend to reduce the precision of sample estimates compared to simple random selection[31].

Table A.8 Employer Skills Surveys: Design effects for selected indicators – England and Northern Ireland

	N. Ireland	England
Establishment-based incidence measures (%)		
Current vacancies	1.11	3.09
Hard-to-fill vacancies	1.12	3.23
Skill-shortage vacancies	1.12	3.70
Employment-based rates (%)		
Current vacancies	1.23	n.a.
Hard-to-fill vacancies	1.27	n.a.
Skill-shortage vacancies	1.15	1.49

Sources: England – Forth, 2003, Table 2.2; N. Ireland – calculated by the author using data extracted from DEL's Skills Monitoring Survey SPSS Database.

[30] The standard errors were calculated using formulae set out in Cochran (1977) applied to the size by sector matrix for weighting back to population data.

[31] In the present context, while a proportionate stratification may increase precision, this would be at the expense of other survey objectives, including the desire to obtain sufficient numbers of larger establishments.

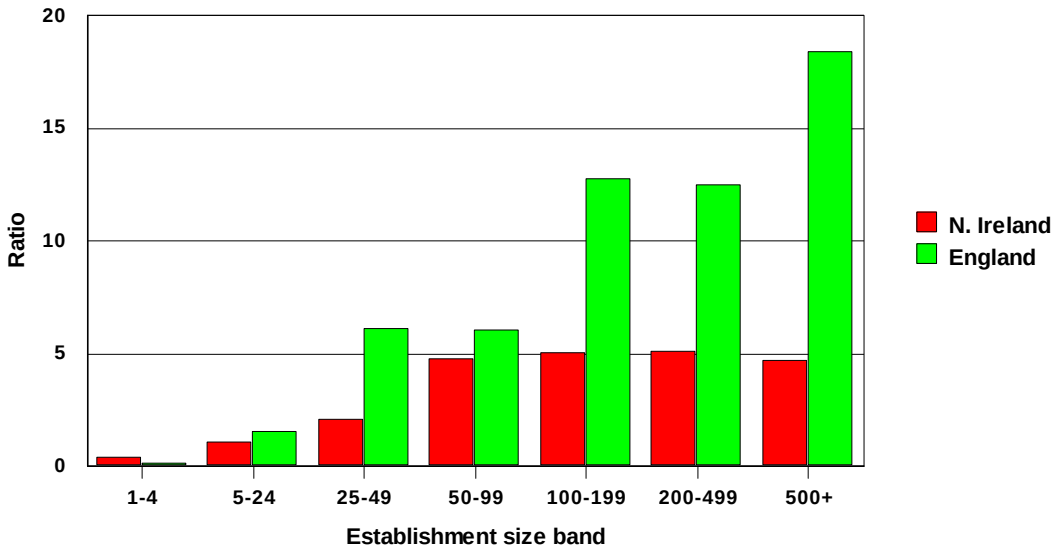
111 The second point to note is that the design effects for sample estimates in the Northern Ireland survey are all less than their counterparts in the English survey. This is not because the English survey used a quota sample design, as the ESS 2001 estimates in Table A.8 are predicated on Forth's conclusion that the sampling process closely resembled a random stratified design.

112 Insofar as it is possible to judge from the available information, the NI design effect is smaller for at least two reasons:

- There is less stratification of establishments by employment size band in the NI survey. This can be seen from Figure A.1, which compares sampling fractions by size band in the two surveys. In the 50+ size-band, sampling fractions are fairly constant in the NI survey. By contrast, in the English survey, sampling fractions increase sharply with employment size band. This indicates that the NI survey was closer to being a simple random survey, hence a lower design effect.

- The process for determining quota targets in the English survey was not solely concerned with disproportionately sampling larger establishments. In addition, minimum target sample sizes were specified for regions and sub-regions (see Table A.3 above). Effectively, this means that the English survey has to work harder to achieve a given degree of precision. Another way of looking at this is that, in the English survey, there is a trade-off between the overall precision of the survey estimates and the sample size required to meet the objective of achieving a geographical spread of achieved interviews so as to satisfy the desire of key stakeholders (the LSCs) for information about their local areas.

Figure A.1 Ratio of establishment survey share to population share



113 A further point to note is that design effects can vary not just across different indicators (as shown in Table A.8) but also for different sub-groups within the sample. For example, in the NI survey, the design effect for the proportion of establishments with difficult-to-fill vacancies amongst the sub-set of employers reporting any current vacancy is in the region of 1.35. For skill-shortage vacancies, the design effect is close to 1.5. But neither do design effects necessarily increase for sub-groups. For example, in the NI survey, amongst establishments in the 1-9 size-band, design effects are absent for the headline indicators listed in Table A.8. This is because such establishments were sampled on a random basis.

114 Regarding the other surveys, the following observations can be made.

115 Design effects are not reported for the Scottish Skills Survey 2002. The survey contractors have indicated that, as a rough order of magnitude, the design effect for establishment-based indicators calculated on the full sample is around two, rising to 3-3.5 for sub-groups such as those with a current vacancy. For employee-based estimates, the working assumption is for a design effect of 1.5-2. Notwithstanding the similarities in survey design and quota target-setting, the assumed full sample design effect for establishments is less than reported by Forth for England, suggesting that it would need to be used cautiously. The assumption for employee-based indicators is in line with Forth's results.

116 The Technical Report for the Welsh survey gives a single overall design effect of 1.423 when account is taken of weighting for location, size-band and sector. This is an establishment-based estimate. It is noticeably less than any of Forth's estimates for establishment-level indicators, notwithstanding the similarities discussed above in terms of survey design and the process for setting quota targets.

117 Because it is based on business enterprises and organisations rather than establishments, the Republic of Ireland estimates for the incidence of vacancies cannot in any event be compared with the UK surveys. Regarding employment-based estimates, standard errors are not given in the published survey reports. Though, given the different approach to survey design and data collection, it would not be appropriate in any case to attempt to draw conclusions on the statistical significance of observed differences.

118 What conclusions can be drawn from the above? In the first place, estimates for standard errors are available for the NI and English surveys. Statistical tests for the significance of differences in proportions can therefore be applied. Nonetheless, the fact that the English survey 'closely resembles', but is not identical to, a random stratified sample does suggest a degree of caution. This can be built into the statistical tests to a certain degree by choosing the 99 per cent confidence level, rather than the more usual 95 per cent level.

119 The choice of a 99 per cent confidence interval largely reflects the uncertainty that must necessarily persist with a quota sampling strategy[32], and also the possible under-estimation of design effects in the NI survey due to the need to post-classify some responses by establishment size band. It should, however, be emphasised that this degree of caution does not mitigate any potential errors due to, for example, selection or any other source of bias. The use of a 99 per cent confidence interval is purely a reflection of uncertainty regarding the level of *sampling* variability.

120 Less information is available for the Scottish and Welsh surveys. For the reasons discussed above, a cautious approach is warranted. This suggests using the English design effect estimates for estimating standard errors on selected headline indicators, which is the approach adopted here.

121 The results from applying the foregoing approach to testing for differences in headline indicators between the surveys is summarised in Table A.9 below. This gives standard errors and 99 per cent confidence intervals based on the following:

- N. Ireland – computation of complex standard errors from the DEL Skills Monitoring Survey Database.
- England – use of the standard errors reported in Forth (2003).
- Scotland and Wales – based on the similarities in survey design and approach to setting quota targets, the design effects from the English ESS 2001 are used to compute standard errors.
- Republic of Ireland – no estimates prepared.

122 The standard errors shown in Table A.9 are primarily of benefit in facilitating statistical tests for the significance of inter-country differences in the selected headline indicators. In that context, what really matters is the resulting confidence intervals around the observed inter-country differences. Based on the estimates shown in Table A.9, confidence intervals for inter-country differences have been prepared for selected headline indicators for:

- The incidence of vacancies (Table A.10).
- Vacancies as a per cent of employment (Table A.11).

[32] In other words, the choice of a 99 per cent confidence interval rather than 95 per cent hedges against the possibility that the calculated standard errors may be under-estimating design effects, albeit for reasons that cannot be quantified. For example, there is no explicit imputation for non-response in the various surveys.

Table A.9 Employer Skills Surveys: Estimated standard errors and 99 per cent confidence intervals for selected headline indicators

	N. Ireland	England	Wales	Scotland
Sample size	4,504	27,031	6,020	8,507
Weighted base	43,320	2,058,713	88,640	144,314
Incidence of vacancies (% of establishments)				
Current vacancies	15.7	14.4	22.0	18.3
▪ Standard error	0.6%	0.7%	1.6%	1.3%
▪ Confidence interval	1.5%	1.7%	4.1%	3.2%
Hard-to-fill vacancies	9.7	7.5	14.0	10.1
▪ Standard error	0.5%	0.5%	1.4%	1.0%
▪ Confidence interval	1.2%	1.3%	3.6%	2.6%
Skill-shortage vacancies	4.0	3.6	7.0	3.6
▪ Standard error	0.3%	0.4%	1.2%	0.7%
▪ Confidence interval	0.8%	1.1%	3.0%	1.9%
Vacancies as % of employment				
Current vacancies	2.6	3.7	2.0	3.1
▪ Standard error	0.2%	0.2%	0.3%	0.3%
▪ Confidence interval	0.6%	0.4%	0.7%	0.7%
Hard-to-fill vacancies	1.5	1.7	1.1	1.4
▪ Standard error	0.2%	0.1%	0.2%	0.2%
▪ Confidence interval	0.5%	0.3%	0.5%	0.5%
Skill-shortage vacancies	0.5	0.8	0.5	0.6
▪ Standard error	0.1%	0.1%	0.1%	0.1%
▪ Confidence interval	0.3%	0.2%	0.3%	0.3%

Table A.10 Employer Skills Surveys: Confidence intervals at 99% (shaded) and 95% (non-shaded) for inter-country differences in selected headline indicators – incidence of vacancies

	N. Ireland	England	Wales	Scotland
Current vacancies				
N. Ireland	-	±2.2%	±4.4%	±1.7%
England	±1.7%	-	±4.4%	±3.7%
Wales	±3.3%	±3.4%	-	±5.2%
Scotland	±1.3%	±2.8%	±4.0%	-
Difficult-to-fill vacancies				
N. Ireland	-	±1.8%	±3.8%	±2.9%
England	±1.4%	-	±3.8%	±3.0%
Wales	±2.9%	±2.9%	-	±4.5%
Scotland	±2.2%	±2.3%	±3.4%	-
Skill-shortage vacancies				
N. Ireland	-	±1.4%	±3.1%	±2.0%
England	±1.0%	-	±3.2%	±2.2%
Wales	±2.4%	±2.5%	-	±3.6%
Scotland	±1.5%	±1.6%	±2.7%	-

123 Considering first the incidence indicators in Table A.10, which are establishment-based, the shaded portion of the Table gives the intervals at 99 per cent. For example, the estimated confidence interval for the difference between Northern Ireland and England in the percentage of establishments saying that they have a current vacancy is ±2.2 percentage points. The observed difference is 1.3 percentage points (see Table A.9 above), which is within the 99 per cent confidence interval and hence is not significantly different from zero.

124 The confidence intervals for the employment-based estimates of vacancies as a per cent of employment have a similar interpretation. For example, there is a 1.2 percentage point difference between Northern Ireland and England in current vacancies as a per cent of employment (see Table A.9). This is greater than the estimated confidence interval of ±0.8 (Table A.11), and hence the difference is assessed to be significant at 99 per cent.

Table A.11 Employer Skills Surveys: Confidence intervals at 99% (shaded) and 95% (non-shaded) for inter-country differences in selected headline indicators – Vacancies as % of employment

	N. Ireland	England	Wales	Scotland
Current vacancies				
N. Ireland	-	±0.8%	±0.9%	±0.9%
England	±0.6%	-	±0.8%	±0.8%
Wales	±0.7%	±0.6%	-	±1.0%
Scotland	±0.7%	±0.6%	±0.7%	-
Difficult-to-fill vacancies				
N. Ireland	-	±0.6%	±0.7%	±0.7%
England	±0.4%	-	±0.6%	±0.6%
Wales	±0.5%	±0.4%	-	±0.7%
Scotland	±0.5%	±0.4%	±0.5%	-
Skill-shortage vacancies				-
N. Ireland	-	±0.3%	±0.4%	±0.4%
England	±0.2%	-	±0.4%	±0.4%
Wales	±0.3%	±0.3%	-	±0.5%
Scotland	±0.3%	±0.3%	±0.3%	-

125 Two final points can be made regarding the confidence intervals shown in Tables A.10 and A.11. First, while the preference in this report is for a 99 per cent confidence interval, readers may choose to adopt a less cautious approach and hence 95 per cent confidence intervals are also reported in the Tables.

126 Second, it must be emphasised that the confidence intervals refer to selected headline indicators. They should not be applied to sub-groups, such as individual industry sectors or employment size-bands. At the very least, sample sizes in sub-groups will be smaller and hence subject to larger standard errors with wider confidence intervals than those shown in Tables A.10 and A.11.

Classifications

127 The three main classification variables used in this report are as follows:

- Industry sector.
- Employment size band.
- Occupations.

128 Each of these is discussed in turn under the following headings:

- Classification system used (this applies to industry sector and occupations, but not to employment size band).
- Classifications adopted in the various survey reports. This determines the presentation of results on a comparable basis that is feasible for this report.

Industry sector

129 As would be expected from the weighting and grossing schemes employed, each of the UK surveys classifies industry sectors on the basis of the SIC92. The Republic of Ireland uses the NACE system for its private sector report. This is very similar to SIC92. However, the Irish report on the public sector is primarily in terms of functional areas (see Table A.12, footnote 2) rather than industry classification.

130 The main differences between the surveys relate to the classifications adopted in the various survey reports[33]. These are shown in Table A.12 for each of the five countries. One point to note in regard to the presentation of data is that the Northern Ireland database was made available in its entirety for this study. This made it possible to classify NI data by industry sector so as to align with what is feasible for the other countries.

131 The first point to note about the industry sector classifications used in the skills sector reports is that, while they are broadly similar, there are some important differences of detail. On the coverage side, Northern Ireland and the Republic of Ireland did not gather data for the agriculture industry. Regarding the classifications actually reported, Wales includes other services alongside banking, finance and insurance. The single largest category reported by the Republic of Ireland is that titled 'Transport, personal & other services'. This includes transport and communications, hotels and restaurants and other services.

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[33] In the case of Scotland, this refers to the classification used in the Futureskills Scotland web-site database.

Table A.12 Industry sector classifications used in skills survey reports

N. Ireland	England	Wales	Scotland[1]	Republic of Ireland
	Agriculture	Agriculture, etc	Agriculture & fishing	
Mining & quarrying		Energy & water	Energy & water	
Utilities				
Manufacturing	Manufacturing	Manufacturing	Manufacturing	Traditional & hi-tech Manfg.
Construction	Construction	Construction	Construction	Construction
Wholesale & Retail	Wholesale & retail	Distribution, hotels & catering	Distribution, hotels & restaurants	Distributive services
Hotels & Restaurants	Hotels & restaurants			
Transport & communication	Transport & communication	Transport & communication	Transport & communication	Transport, personal & other services
Financial Services	Finance	Banking, finance, insurance & Other services	Banking, finance & insurance etc	Finance, insurance, business services
Business Services	Business services			
Public Administration	Public admin	Public administration, education & health	Public administration, education & health	Public[2]
Education	Education			
Health & Social Care	Health & social care			
Other Services	Other services		Other services	

1 These are the sectors used for the Skills Survey Database on the Futureskills Scotland web-site.
2 The ESRI public sector report gives the following breakdown for public sector:

- Civil service
- Regional bodies
- Non-commercial semi-state
- Health
- Gardai/defence/education

These do not map directly to SIC92

132 Overall, while the classification systems used across the different surveys are comparable, the actual reporting by industry sector varies between the five countries to the extent that a fully consistent cross-country set of industry sector comparisons is not feasible.

133 It is, however, possible to present data by industry sector on a consistent basis for Northern Ireland, England and Scotland in respect of the following categories:

- Production (comprised of manufacturing, energy and water) – SIC92 Sub-sections C, D, E.
- Construction. SIC92 Sub-section F.
- Distribution (including retail and wholesale), hotels and catering. SIC92 Sub-sections G and H.
- Transport and communications. SIC92 Sub-section I.
- Banking, finance and insurance, etc (alternatively, financial and business services). SIC92 Sub-sections J and K.
- Public administration, education and health (alternatively, government services). SIC92 Sub-sections L, M and N.
- Other services. SIC92 Sub-section O.

134 For the key indicators of interest in this report, the sectoral detail available in the Welsh and Republic of Ireland reports is less than for Northern Ireland, Scotland and England. Where possible, Wales and the Republic are included in industry sector comparisons, with differences in classifications noted as appropriate.

Employment size

135 The employment size classifications used in the five country reports are shown in Table A.13. The first point to note is that the classifications used in the Republic of Ireland reports are relatively limited and vary by broad sector. Size-band comparisons are therefore not possible for the Republic, though this would hold in any event due to the use of the enterprise or organisation as the basic unit of analysis rather than establishments or workplaces.

136 With a total of eight categories, the English report uses a relatively extensive set of size bands. Unfortunately, these cannot be combined to give direct comparisons with Wales and Scotland. The availability of the NI SMS database for this study does, however, mean that a comparable size-band classification could be derived for Northern Ireland. Hence, the approach used in this study is as follows:

- Northern Ireland, Scotland and (where data are available) Wales are compared using the Welsh and Scottish classifications shown in Table A.13.
- Northern Ireland and England are compared using the English classifications shown in Table A.13.

Table A.13 Size-band classifications used in skills survey reports

N. Ireland	England	Wales	Scotland	Republic of Ireland
1-4	1-4	1-9	1-9	Manufacturing:
5-10	5-24	10-49	10-49	▪ 0-99
11-49	25-49	50-249	50-249	▪ 100+
50+	50-99	250+	250+	Other private sector industries:
	100-199			▪ 0-9
	200-499			▪ 100+
	500-999			
	100+			

137 The foregoing approach makes for a somewhat awkward and cumbersome presentation of employment size-band differences between the four UK countries. Nonetheless, establishment size is such an important predictor of the incidence and extent of vacancies that this two-stranded approach was considered essential.

Occupations

138 Each of the UK surveys classifies occupations on the basis of the SOC 2000 and reports on the nine Major Groups of SOC 2000 (Table A.14). The Republic of Ireland uses a broadly similar, but not identical, classification system. Only a very few comparisons were possible between the Republic and the UK countries using occupational data. Where this occurs, the Republic of Ireland data have been mapped to the SOC 2000 Major groups in the fashion shown in Table A.14. It should be emphasised that this mapping is approximate and, where used, needs to be interpreted with considerable caution, especially in the personal services and elementary SOC 2000 Major groups.

Table A.14 Classifications- Occupations

UK Countries	Republic of Ireland
Managers & senior officials	Managers/Proprietors
Professionals	Engineering professionals
	Science professionals
	Computer professionals
	Other professionals
Associate Professionals	Engineering technicians
	Science technicians
	Computer tech & associate professional
	Other associate professional
Administrative & secretarial	Clerical & secretarial
Skilled trades	Skilled maintenance & production
Personal services	Personal services
	Transport & communications
Sales	Sales
Operatives	Production operatives
Elementary occupations	Labourers & security

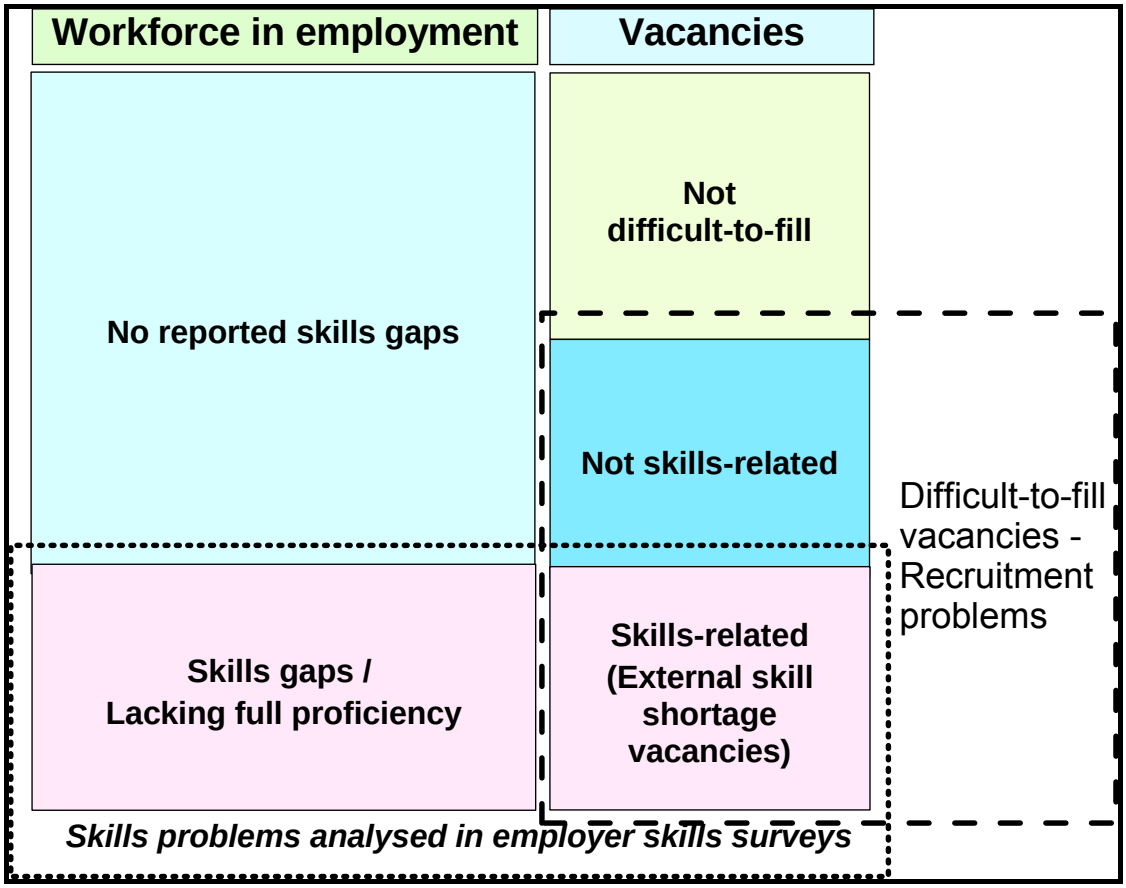
Definitions

139 The comparability of findings from different surveys is not just a function of design issues such as sampling strategy and data collection methods. Equally important is the definition and measurement of key variables or indicators relevant to the objectives of the survey. In this study, the main variables of interest are as follows:

- Difficult-to-fill vacancies (also called hard-to-fill vacancies).
- External skill shortage vacancies.
- Internal skill gaps.

140 The first two of these are a subset of all current vacancies (Figure A.2). Current vacancies *per se* are not the primary object of study in the UK employer skills surveys. Nonetheless, they provide the critical point of entry for the suite of questions within each survey aimed at identifying the incidence and extent of difficult-to-fill and skill-shortage vacancies. Hence, this review of definitions commences with a consideration of the comparability of the reported measures of current vacancies. Following this, the review turns to the three key variables listed above and also considers training provision.

Figure A.2 Recruitment problems and skill gaps



Vacancies and Recruitment Problems

Current vacancies

141 The approaches taken by each of the surveys to the measurement of the incidence[34], number and type of current vacancies is summarised in Box A.1.

142 The English, Scottish and Welsh surveys each adopt the same approach to the measurement of the incidence and number of current vacancies. That is, in each survey, the respondent is simply asked how many vacancies, if any, currently exist at the establishment. In those cases where there are one or more vacancies, the English and Scottish surveys also obtain information on the type or types of vacancies, as indicated by the occupation(s) that the employer is seeking to recruit. This is not done in the Welsh survey.

143 The Northern Ireland and Republic of Ireland surveys adopt a somewhat different approach to the measurement of the number of vacancies. First, and before asking for the number of vacancies, the respondent is asked to say if they have any current vacancies at all. This is likely to be a minor point of difference.

144 The second contrast is that, unlike their Great Britain counterparts, both the Northern Ireland and Republic of Ireland surveys provide a brief definition of a current vacancy. As can be seen from Box A.1, these definitions correspond with the economic concept of a vacancy, that is, a job which is unfilled, presently available and that has been notified to external applicants (note that both surveys refer to actions being taken to fill the vacancy).

145 The absence of any definition at all in the Great Britain surveys means that judgements made by the respondent are likely to have a greater impact on the measurement of the incidence and number of vacancies (see Dickerson, 2003, for a fuller discussion). In particular, the failure to specify that a vacancy refers to a post that is available externally may lead some respondents to include posts that are only advertised internally. The effect of this may therefore be to impart an upward bias in the estimates for numbers of vacancies in the Great Britain surveys.

146 Nonetheless, it is also the case that the definitions supplied in the Northern Ireland and Republic of Ireland surveys are fairly limited. They still perhaps require some degree of judgement to be made by respondents, for example, as to whether temporary contracts should be included as well as permanent posts. Though, it is not known if this results in any measurement bias in the resulting survey estimates.

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[34] That is, whether or not a vacancy exists at the establishment or, in the case of the Republic of Ireland, the enterprise or organisation.

Box A.1 Current vacancies: Survey questions for incidence, number and type

Country	Survey question
N. Ireland	Incidence - *I would now like to ask you about current vacancies at your business. By current vacancies we mean vacancies for which actions are being taken to recruit from the external labour market. Do you currently have any vacancies for either full or part-time staff?* Number and type - Respondents saying that currently have vacancies are asked about the types of jobs for which vacancies currently exist. For each such job type, the respondent is asked to say *how many vacancies* currently exist. The number of job types is unrestricted. In the NI survey, between one and nine job types were reported.
England	Incidence and number - *How many vacancies, if any, do you currently have at this establishment?* Type - If one or more current vacancies respondent is asked to say in which specific *occupations* vacancies currently exist, as well as the number of vacancies in each such occupation. Coding frame allows for up to six occupations/vacancy types.
Scotland	Incidence - *Do you currently have any vacancies for either full-time or part-time staff?* Number and type - If respondent says currently has any vacancies, then asked to state *how many vacancies*. - Respondent is then asked to say in what *occupations*, up to a maximum of six, do vacancies currently exist, as well as the number of vacancies in each occupation for which a vacancy exists.
Wales	Incidence and number - *How many vacancies, if any, do you currently have in this organisation?* If respondent is unsure, s/he is prompted for an approximate number of vacancies or best estimate. If still can't say, then asked to select from a pre-coded set of ranges. - Further questions by type of vacancy only in relation to hard to fill vacancies. Note that this means cannot estimate the incidence of current vacancies by occupation.
Republic of Ireland	Incidence - *Do you currently have any vacancies in your company? By vacancies we mean unmet demand for labour where the positions are currently unoccupied, available immediately and where the company is actively searching for workers.* Number and type - If respondent states that organisation currently has vacancies, s/he is then asked to state how many vacancies currently exist in each of *17 occupational categories*

147 There are clearly weaknesses in the definition and measurement of vacancies in the surveys considered in this report, particularly in the Great Britain surveys where considerable latitude is permitted in terms of how respondents may construe what is meant by a vacancy. The need for greater clarification in that regard is already known (see, for example, Mason and Wilson, 2003). Indeed, it was within that context that a series of more detailed follow-up interviews were conducted for the ESS 2002 in order to obtain qualitative information on respondents' understanding of concepts such as a vacancy (Hillage *et al*, 2002). The main finding was that:

> *Interviewees had a fairly clear idea of what a vacancy was. Generally, there was a degree of formality attached to it. There was a specific slot to fill, which may have required approval, especially where there was a defined staffing level or establishment. A vacancy referred to permanent positions and involved active recruitment, rather than taking people 'on spec'.*

148 The ESS 2002 findings provide some re-assurance, at least insofar as they suggest that respondents view a vacancy as involving active recruitment. Dickerson (2003) concludes that, while weaknesses persist, the Hillage *et al* findings "lend greater confidence to the interpretation and analysis of the ESS 2001 vacancy data".

149 However, it remains the case that the ESS 2001 gives rather higher vacancy estimates when compared to the ONS vacancy survey, about 40 per cent according to the comparisons reported in Machin and Christian (2002). This difference is likely to reflect, at least in part, differences in definition between the two surveys. As can be seen from Box A.2, the ONS 'single-question' vacancy survey is based on a relatively tight definition of what should and should not be included in employers' vacancy returns[35]. Machin and Christian (2002) note that "the lack of restrictive conditions on the active search for recruits from outside the organisation could be especially important" in explaining the difference between the ESS 2001 and the ONS Vacancy Survey estimates.

150 It is a moot point as to whether *all* of the difference between ESS 2001 and the ONS Vacancy Survey is due to differences in the degree to which vacancies are, or are not, defined in the two surveys. A second possible source, as discussed above, is that the UK employer skills surveys are on an establishment basis rather than on an enterprise basis as is the case with the ONS vacancy survey. The issue in that regard is that establishment-based surveys may run the risk of double-counting vacancies if head offices and local units of the same enterprise are included in the survey. This is probably not as important as the absence of a definition.

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[35] The difference has very little to do with the fact that the ONS survey is GB-wide, whereas ESS refers only to England. Pooling the employer survey estimates for all four UK countries gives a mean weighted vacancy rate of 3.6 per cent, just 0.1 per cent below ESS 2001.

Box A.2 The ONS Vacancy Survey question

Data required	-	How many job vacancies did your business or organisation have on [insert date] for which you were actively seeking recruits from outside your business or organisation?
Definitions supplied	-	A vacancy is an unoccupied or soon to be vacated post, or a newly created post open to people from outside your business or organisation.
	-	Actively seeking recruits means that the business or organisation is already looking for a recruit e.g. by advertising, approaching a public or private employment agency, displaying on a public notice board or by approaching potential recruits directly.
Coverage	-	The number of vacancies at all sites of the business/organisation. Unless otherwise specified, vacancies at other subsidiary companies are not to be included.
Inclusions	-	Vacancies for currently occupied posts for which have already been taking active steps to seek a replacement
	-	Vacancies for both full-time and part-time posts
	-	Vacancies for permanent and fixed-term posts
	-	Vacancies for casual staff employed to cover temporary absences e.g. maternity leave, long-term sickness
	-	Vacancies with a long recruitment process e.g. graduate recruitment
	-	Vacancies for newly-created posts
Exclusions	-	Temporary absences where intend leaving the post empty
	-	Vacancies due to re-organisation within the business/organisation i.e. if the vacancy does not become open to external applicants
	-	Unpaid or voluntary jobs
	-	Vacancies for which a job offer has already been accepted
	-	Vacancies for work to be undertaken by sub-contractors
	-	Vacancies for positions outside the UK

151 Machin and Christian also report on an industry sector comparison between the ONS Vacancy Survey and ESS 2001. These comparisons are shown in Table A.15 overleaf. There are two points of note. First, the difference between the ESS and the ONS estimates for vacancies as a per cent of employment are especially high (over two percentage points) in construction and financial and business services.

152 Nonetheless, the sectoral pattern of vacancy rates is broadly similar between the two surveys. While there are some exceptions, those sectors with relatively high vacancies as a proportion of employment in the ONS Vacancy Survey also tend to have relatively high proportions in ESS 2001. As a consequence, the composition of vacancies by industry sector in ESS 2001 is reasonably well correlated with the sectoral composition reported in the ONS survey. This provides some additional reassurance, alongside the qualitative results from ESS 2002, regarding the validity and reliability of the estimates generated by the vacancy question on ESS 2001.

Table A.15 Vacancy measures by industry sector: ESS 2001 compared to the ONS Vacancy Survey

	Vacancies as per cent of employment[1]			Vacancy shares		
	ONS	ESS	*Diff.*	ONS	ESS	*Diff.*
	%	*%*	*pps*	*%*	*%*	*pps*
Production industries	1.9	2.2	*0.3*	11	10	*-1*
Construction	2.3	4.4	*2.1*	4	5	*1*
Wholesale & retail trade	2.8	3.3	*0.5*	18	16	*-2*
Hotels & restaurants	3.8	5.3	*1.5*	9	8	*-1*
Transport, storage & communications	3.1	4.3	*1.2*	7	7	*-0*
Financial & other business services	3.0	5.3	*2.3*	23	28	*5*
Public administration & defence	1.7	2.3	*0.6*	2	4	*2*
Education & health	2.5	3.1	*0.5*	19	15	*-4*
Other services	3.4	4.8	*1.4*	7	6	-1
All industries	**2.7**	**3.7**	***1.0***	**100**	**100**	

1 Shaded numbers are above the average for their respective surveys.
Source: Extracted from Machin and Christian, 2002.

153 One final point of contrast between the surveys can be noted. The English and Scottish surveys impose restrictions on the number of occupations for which vacancy information is collected. Such restrictions are not imposed by the Northern Ireland or Republic of Ireland surveys. This contrast does not affect the estimates for incidence and total number of vacancies, which precede the questions on types of vacancies. The contrast does, however, pose an issue in respect of the estimation of difficult-to-fill vacancies. This is discussed further in considering the definition of such vacancies.

154 The following conclusions can be drawn regarding the comparability of the survey results with respect to estimates for the number and incidence of current vacancies. First, the overall approach is broadly similar across the five surveys. Respondents are simply asked to say if they have any vacancies and, if so, how many. All except the Welsh survey also seek to extract information on the types of current vacancies, typically in terms of occupations that respondents are seeking to fill the posts.

155 Second, only the Northern Ireland and the Republic of Ireland surveys provide respondents with a definition of a current vacancy. Based on comparisons with the ONS Vacancy Survey, the absence of a definition in the

Great Britain surveys may have the effect of producing higher estimates of vacancy rates than would occur if a definition were to be provided. In particular, the Great Britain surveys do not explicitly restrict vacancies to those for which the establishment is actively seeking to recruit from the external labour market.

156 Third, while the foregoing discussion raises important issues regarding the validity and reliability of the vacancy question in the Great Britain surveys especially, some encouragement can be gleaned from the findings of the qualitative research undertaken for ESS 2002 regarding respondents' understanding of what constitutes a vacancy. These follow-up interviews suggest that, in general, respondents view a vacancy as involving active recruitment. In addition, ESS 2001 estimates of vacancy shares by industry sector show a broadly similar pattern to the industry composition of vacancies from the ONS Vacancy Survey.

157 Overall, the above findings do not invalidate inter-country comparisons of measures for the incidence and extent of vacancy rates. But they do suggest a considerable degree of caution in interpreting the findings. In addition, the analysis indicates the desirability of a more tightly-defined and common definition of vacancies for use in the various surveys.

Difficult-to-fill vacancies – Incidence and extent

158 The set of questions used in each of the surveys to identify difficult-to-fill vacancies are shown in Box A.3. In each of the surveys, the approach is based upon simply asking respondents to say if current vacancies are difficult-to-fill. This does have the benefit of ensuring a uniform approach to the concept of a difficult-to-fill vacancy, albeit this is left undefined.

159 The findings from the ESS 2002 follow-up qualitative survey suggests that it would not be at all straightforward in any event to provide a succinct definition of a difficult-to-fill vacancy. Some of those interviewed for the ESS 2002 follow-up talked about too few applicants with the right skills or experience. A minority of respondents defined difficult-to-fill vacancies more in terms of the recruitment process, for example, a vacancy that had to be re-advertised or which was taking a particularly long time to fill.

160 These findings indicate that, not unexpectedly, respondents think about difficult-to-fill vacancies in terms of the reasons for the difficulties encountered. This emphasises the importance of subsequent questions on the reasons for difficult-to-fill vacancies. To that extent, the difficult-to-fill vacancy question in the employer skills surveys can be viewed primarily as a filter through which the surveys can identify skills-related problems faced by employers. Such questions appear in each of the surveys, except for the Republic of Ireland vacancy survey. They are discussed further below.

Box A.3 Current vacancies that are difficult to fill: Survey questions for incidence and number

Country	Survey questions
N. Ireland	Incidence - For each job type for which one or more vacancies currently exist, the respondent is asked: *Is the <job type> difficult to fill, yes or no?* - A business unit is deemed to have a difficult to fill vacancy if it answers "yes" to the above for *any* job type for which a vacancy currently exists. Number - For each business unit, this is the total number of vacancies in job types where the respondent identified that the vacancy was difficult to fill.
England	Incidence - For each occupation for which one or more vacancies currently exist (maximum of six occupations discussed), the respondent is asked: *Are any of the vacancies you currently have for <occupation> proving hard-to-fill, yes or no?* - A business unit is deemed to have a hard to fill vacancy if it answers "yes" to the above for *any* occupation for which a vacancy currently exists. Number - For each occupation to which the respondent answers "yes" in relation to whether any vacancies are proving hard to fill, the respondent is then asked to say how many hard-to-fill vacancies there are in that occupation.
Scotland	Incidence - Similar to England, that is, for each of up to six occupations for which one or more vacancies currently exist, the respondent is asked: *Are you finding it hard to fill this vacancy (if only one vacancy exists)/any of these vacancies (if more than one vacancy in the occupation)?* Number - Then asked, for each occupation with more than one vacancy and where any are hard to fill, how many is the organisation finding it hard to fill.
Wales	Incidence - If respondent says has one or more vacancies, then asked: *Would you consider any of these vacancies to be hard to fill, yes or no?* Note that this is referring to all vacancies, rather than a type of vacancy. Number - If respondent says any vacancies are hard to fill, then asked to say in which occupations have hard to fill vacancies. For each occupation in which respondent says have hard to fill vacancies, then asked to say how many of the vacancies within the occupation are hard to fill.
Republic of Ireland	For each occupation in which vacancies currently exist, the respondent is asked: *Do you consider current vacancies are difficult to fill in this category, yes or no?*

161 While the five countries pose the incidence question in the same basic fashion, there are some differences of detail between the surveys in the measurement of the number of difficult-to-fill vacancies. The English and Scottish surveys ask respondents to say how many vacancies are difficult-to-fill within each occupational grouping in which vacancies currently exist.

162 By contrast, in the Northern Ireland survey, respondents are asked to say if particular job types are difficult-to-fill. Where the respondent answers in the affirmative, all of the current vacancies of that type are classified as difficult-to-fill. A similar approach is used in the Republic of Ireland survey, albeit based on occupations rather than job types. In principle, this may give a higher estimate of the number of difficult-to-fill vacancies than would be obtained with the English or Scottish approaches. It is not possible to say conclusively if the Northern Ireland and Republic of Ireland estimates are biased upwards. This cannot be discounted. But it is also likely to be the case that the use of job types in Northern Ireland and the more detailed occupational groupings in the Republic of Ireland survey are perhaps more appropriate to the identification and measurement of difficult-to-fill vacancies. This should reduce the possibility of bias arising from the blanket assignment of all vacancies in a particular job type as being difficult-to-fill or otherwise.

163 Furthermore, as was noted in discussing current vacancies, the number of job types in the Northern Ireland survey and occupations in the Republic of Ireland vacancy surveys are unrestricted. By contrast, in the English and Scottish surveys, the number of occupations on which information is sought is restricted to six. In principle, this may also result in higher estimates being obtained for the total number of difficult-to-fill vacancies in Northern Ireland and the Republic of Ireland than would be the case if the English or Scottish approaches were used. In this instance, it is more likely that the English and Scottish approaches are biased downwards. In practice, this may not be the case. Given the broad occupational groupings used in the English and Scottish surveys, the surveys are unlikely to miss out on too many vacancies.

164 The Welsh approach is a variation on the English and Scottish approaches. Respondents with one or more current vacancies are first asked a ‘global’ question on the incidence of difficult-to-fill vacancies. If they say that they have any such vacancies, the number is estimated along the same lines as the English and Scottish approaches. Doubtless, this approach stems from the absence of an occupational profile for all current vacancies.

165 Overall, then, the surveys adopt a broadly similar approach to the identification and measurement of difficult-to-fill vacancies. While the incidence question is posed in a relatively uniform fashion, no formal definition of a difficult-to-fill vacancy appears in any of the surveys. To that extent, the surveys simply measure respondents’ subjective perceptions of what vacancies are difficult-to-fill or not.

166 There are, however, some differences of detail in the implementation of the survey approaches. In particular, it might be expected that the Northern Ireland and Republic of Ireland approaches would result in higher estimates for the number of difficult-to-fill vacancies by comparison with the approaches used in Great Britain. Thus, as with current vacancies, it is reasonable to compare the findings from the different surveys, but this must be done with some caution.

Difficult-to-fill vacancies – Reasons given

167 In the UK surveys, the measurement of difficult-to-fill vacancies is not just of interest in its own right, but is also a fundamental pre-requisite for the identification and measurement of external skill shortage vacancies, that is, vacancies which are difficult-to-fill for skills-related reasons (see Figure A.2 above). This is accomplished by asking employers to identify the reason or reasons for vacancies being difficult-to-fill.

168 It is, however, also of interest to make cross-survey comparisons of the reasons given by employers for vacancies being difficult-to-fill. For example, to what extent are vacancies difficult-to-fill due to lack of applicants, or for wage-related reasons, as opposed to skills-related reasons? Such comparisons are, however, very difficult to make. There are three reasons for this, deriving from variations between the surveys in:

- The approach.
- Frameworks used for coding responses and reporting.
- The units in which responses are reported.

169 The first of these points can be seen from Box A.4, which gives the format of the questions used in each of the surveys. The Republic of Ireland does not ask for reasons why vacancies are difficult-to-fill. Northern Ireland and England employ a very similar approach. That is, for each type of difficult-to-fill vacancy, respondents are simply asked to give the reasons for the vacancy being difficult-to-fill. There is, however, a difference in the phrasing of the question used for this purpose, with ESS 2001 looking for 'main causes' while the Northern Ireland approach is more open-ended.

170 Wales also asks the respondent to identify the causes of their difficult-to-fill vacancies. In this case, however, the question is of a 'global' nature and is not tied to specific occupations in which vacancies are difficult-to-fill. One implication of this is that, in the Welsh case, reporting of responses to the question is inevitably at the establishment level, rather than in terms of vacancies *per se*.

171 The main contrast within the UK countries is between Scotland and the rest. In the Scottish survey, respondents are first asked to say if the vacancy is difficult-to-fill for 'quality' and/or 'quantity' reasons. The specific quality and quantity reasons are then probed separately in subsequent questions.

Box A.4 Reasons for difficult-to-fill vacancies - Format of questions asked

N. Ireland	Why is the <type of> vacancy difficult to fill? CODE ALL THAT APPLY.
England	What are the main causes of having a hard to fill vacancy for <occupation>? DO NOT READ OUT. CODE ALL MENTIONED.
Scotland	Are you finding the vacancy/vacancies for <occupation> hard to fill because …. ? READ OUT: a) Applicants have not been of sufficient quality b) Because there have been few or no applicants c) Or for both of these reasons. If b) or c), applicant is then asked: Why do you think you have not had enough applicants for <occupation>? DO NOT READ OUT. If a) or c), applicant then asked: You said that you have had problems with the quality of the candidates for <occupation>. Would you say that they have been lacking …. ? READ OUT. CODE ALL MENTIONS.
Wales	*All with hard-to-fill vacancies asked:* Please could you tell me what are the causes of your hard-to-fill vacancies? PROBE: Any others? MULTI-CODE.
Rep. of Ireland	Not asked.

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003; Hughes et al, 2003.

172 As can be seen from Box A.4, the questions asked are generally unprompted, apart from the filter and quality questions in the Scottish survey. There are, however, marked differences between the surveys in the coding frameworks used for reporting purposes. These differences are illustrated in Table A.16. For example, both England and Scotland distinguish between a generally low number of applicants and not enough people interested. This distinction is not made in the Northern Ireland and Welsh surveys. Similarly, Northern Ireland distinguishes between lack of practical and technical skills amongst applicants, whereas the English and Welsh surveys simply refer to lack of skills required for the job[36].

173 Table A.16 also illustrates the third difficulty that is encountered in making comparisons, that is, different units in which responses are reported. Northern Ireland and England report in terms of vacancies that are difficult-to-fill, whereas Wales and Scotland report in terms of establishments. As it is vacancies that are difficult-to-fill, the former approach seems more apposite.

[36] Due to the availability of the NI SMS for this study, it has been possible to generate a NI estimate that is consistent with England and Wales. This is shown in Table A.16.

Table A.16 Reasons given by employers for difficult-to-fill vacancies

	N. Ireland	England	Scotland	Wales
Units in which reported:	Vacancies	Vacancies	Establish-ments	Establish-ments
	%	%	%	%
Lack of skills	18	35	Lack of quality -29% Lack of quality and quantity – 32%	32
▪ Lack of practical skills	13	-		-
▪ Lack of technical skills	9	-		-
Lack of qualifications	9	8		16
Lack of work experience	20	9		23
Attitudes, motivation, personality.	18	15		13
Lack of basic ability to build upon.	5	-	-	-
Not enough people interested	46	21	22[1]	-
Low number of applicants generally	-	26	19[1]	-
Lack of applicants/people willing to work for market rate/interested in type of work	-	-	-	25
Wages lower than other firms	15	15	10[1]	*
Benefits trap/problem w/benefits	16	1	12[1]	-
Location of the firm	12	3	17[1]	*
Unattractive terms and conditions of employment	7	1	10[1]	-
Lack of/poor career progression	6	2	5[1]	*
Long/unsocial/irregular hours	18	2	6[1]	*
Competition from other employers	15	14	11[1]	*
Staff don't want long-term commitment	3	-	-	-
Problem with industry	-	1	-	-
Don’t know/not specified	-	2	23[1]	*
Other	20	1	8[1]	*

1 Per cent of establishments with a difficult-to-fill vacancy due to lack of applicants.
- Not a response option.
* Not reported.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW, 2003.

174 Given the foregoing difficulties in comparing actual percentage responses for reasons why vacancies are difficult-to-fill, the approach adopted in this report has been to look more at the ranking of reasons given by respondents. This provides a common basis for making comparisons, albeit one that is not wholly satisfactory. For example, within an individual survey, there may be a very wide gap between, say, the first and second ranked reasons and a very narrow gap between the second and third ranked reasons. But this will not be obvious from a simple ranking of reasons.

Difficult-to-fill vacancies – Effects

175 As can be seen from Box A.5, the surveys adopt quite similar approaches to eliciting the effects of difficult-to-fill vacancies. There are, nonetheless, some important differences of detail that again pose difficulties in drawing meaningful comparisons. There are two main problems, which are inter-related:

- Use of different coding frameworks.
- Whether the responses are prompted or unprompted.

176 Both of these problems are evident from the findings shown in Table A.17 overleaf. Both Scotland and England use prompted coding frameworks (see Box A.5). The Republic of Ireland also, effectively, uses a prompted coding framework. Thus, what is reported in these surveys depends on what is included in the coding framework. In the Republic of Ireland, far and away the most commonly cited effect of difficult-to-fill vacancies was to place more strain on management of existing staff (81 per cent of firms). This is also the single main effect reported in the Northern Ireland survey (74 per cent of vacancies said to have this effect).

Box A.5 Effects of difficult-to-fill vacancies - Format of questions asked

N. Ireland	How have difficulties in filling this <type of> vacancy affected your business? CODE ALL THAT APPLY.
England	Are hard-to-fill vacancies in <occupation> causing this establishment ….? READ OUT. CODE ALL MENTIONED.
Scotland	Is this hard to fill vacancy/Are these hard to fill vacancies causing this establishment t ….? READ OUT AND CODE ALL MENTIONED.
Wales	What impact, if any, have hard-to-fill vacancies had on this establishment? INCLUDE BOTH SHORT-TERM AND LONG-TERM IMPACT. PROBE: Any others? MULTI-CODE.
Rep. of Ireland	*Asked of vacancies which were "particularly difficult-to-fill in the last year".* Did these difficult-to-fill vacancies cause: (Tick all that apply) *A set of response options is provided for the respondent.*

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003; Hughes et al, 2003.

Table A.17 Effects of difficult-to-fill vacancies

Units in which reported:	N. Ireland Vacancies	England Vacancies	Scotland Establish-ments	Wales Establish-ments	Rep. of Ireland[1] Firms
	%	%	%	%	%
Loss of business to competitors	15	36	34	16	29
Restrictions to business development activities	23	-	-	14	56
Delays developing new products	-	40	35	*	-
Withdrawing products and services	-	25	20	*	-
Increased running/operating costs	18	35	27	*	37
More strain on management of existing staff	74	-	-	-	81
Increased workload/hours/stress	-	-	5	13	-
Increase in recruitment costs	18	-	-	*	28
Difficulties with quality	13	27	33	13	53
Difficulties with customer service	27	46	46	*	-
Loss of efficiency or increased wastage	10	-	-	13	-
Difficulties with accommodating technological change	2	16	15	*	-
Difficulties with introducing new working practices	3	23	16	*	-
Other	3	*	3	*	-
No effect on the business	7	-	25	*	-
Don't know	-	*	6	-	-

- Not a response option.
* Not reported.
1 Private sector
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW, 2003; Hughes *et al*, 2003a.

177 Arguably, the Scottish and English surveys are focused solely on specific business impacts in relation to product market position, costs, and so on. The result obtained in the Northern Ireland and Republic of Ireland surveys perhaps reflects more the way in which respondents cope with difficult-to-fill vacancies. But, of course, this does pose the question of what kinds of effects the surveys should be testing for, and whether there may be a need to distinguish immediate 'coping' effects from effects that are more specifically to do with business development.

178 The difficulties of interpretation that arise from different coding frameworks *per se* are also evident from the comparison between the English and Scottish findings. The latter uses the same set of business development impacts as the English survey, but in addition specifically asks respondents if their difficult-to-fill vacancies are causing them no particular problems or some other problem. Neither of these options was presented to the respondents to ESS 2001. But in the Scottish survey, one in four of those with a difficult-to-fill vacancy said that it was not causing the establishment any particular problems.

179 Whether the response frame is read out or is administered unprompted also has an effect on the results. For example, the proportion saying that difficult-to-fill vacancies had resulted in loss of business to competitors was much less in Northern Ireland (15 per cent) and Wales (16 per cent) than in England (36 per cent), Scotland (34 per cent) or the Republic of Ireland (29 per cent). Thus, it is very difficult, if not impossible, to compare survey findings in terms of actual percentages in cases where responses are read out rather than unprompted.

180 A final point to note is that the pattern of responses in any individual survey may not actually vary greatly according to the units in which the findings are reported. This can be seen from the Northern Ireland results, which are presented in Table A.18 on both a vacancies and an establishment basis. For the most part, the ranking of effects is relatively unaffected by the choice of a unit of measurement.

181 The conclusion to be drawn from the above is that, as with reasons for difficult-to-fill vacancies, comparison of actual magnitudes of effects is not feasible. For that reason, the approach adopted is to consider the ranking of the reported effects. Though, again, this is not wholly satisfactory and the limitations discussed above need to be borne in mind.

Table A.18 Effects of difficult-to-fill vacancies – results for per cent of vacancies compared to per cent of establishments : Northern Ireland

	Vacancies	Establishments
	%	%
Loss of business to competitors	15	16
Restrictions to business development activities	23	23
Increased running/operating costs	18	13
More strain on management of existing staff	74	70
Increase in recruitment costs	18	12
Difficulties with quality	13	11
Difficulties with customer service	27	17
Loss of efficiency or increased wastage	10	10
Difficulties with accommodating technological change	2	1
Difficulties with introducing new working practices	3	3
Other	3	2
No effect on the business	7	11

Source: DEL, 2003.

Difficult-to-fill vacancies – Measures taken

182 The problems identified in comparing the effects of difficult-to-fill vacancies also arise in respect of survey findings for the measures taken by respondents to overcome their difficult-to-fill vacancies.

183 As illustrated in Box A.6, the English and Republic of Ireland surveys used prompted responses. The effect of this can be seen from the results reported in Table A.19. For example, in both ESS 2001 and the Republic of Ireland survey, half of the respondents said that they had offered higher pay in seeking to overcome difficult-to-fill vacancies. In Northern Ireland and Scotland, fewer than one in five gave this as an unprompted response.

184 As with reasons for and effects of difficult-to-fill vacancies, the use of different coding frames also makes it difficult to compare survey findings in respect of measures taken. In light of these variations, the approach of ranking responses has again been adopted.

Box A.6 Measures taken in respect of difficult-to-fill vacancies - Format of questions asked

N. Ireland	What measures, if any, have you taken to overcome the recruitment difficulties for the <type of> vacancy? CODE ALL THAT APPLY.
England	Are hard-to-fill vacancies in <occupation> causing this establishment to ….? READ OUT.
Scotland	What measures, if any, have you taken to overcome the recruitment difficulties for <each hard-to-fill occupation>? DO NOT READ OUT. CODE ALL MENTIONED.
Wales	What measures, if any, have you taken to tackle the problem of hard-to-fill vacancies? MULTI-CODE.
Rep. of Ireland	*Asked of vacancies which were "particularly difficult-to-fill in the last year".* What steps did you take to fill these difficult-to-fill vacancies ? (Tick all that apply) *A set of response options is provided for the respondent.*

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW 2003; Hughes et al, 2003.

Table A.19 Measures taken to overcome difficult-to-fill vacancies

	N. Ireland[2]	England[1]	Scotland[2]	Wales	Rep. of Ireland[1]
	Vacancies	Vacancies	Establish-ments	Establish-ments	Firms
	%	%	%	%	%
Offered higher pay	16	50	17	*	51
Enhanced terms & conditions	-	-	11		
Considered a wider range of people	25	-	13	-	43
Been prepared to provide more training to less qualified recruits	20	33	3	*	26
Retrain existing staff / increase training	8	35	2	6	12
Hired part-time or contract staff	15	-	3	6	30
Built links with schools/colleges	15	-	4	-	11
Highlighted problem to local providers	-	-	-	7	-
Giving some of the tasks to other staff / Re-define existing jobs	5	36	12	-	11

Continued overleaf

Table A.19 Measures taken to overcome difficult-to-fill vacancies

	N. Ireland[2]	England[1]	Scotland[2]	Wales	Rep. of Ireland[1]
	Vacancies	Vacancies	Establish-ments	Establish-ments	Firms
	%	%	%	%	%
Changed the job specification by automating some of the tasks	1	12	1	*	3
Used more extensive range of recruitment channels than normal	17	59	19	40	-
Spent more on recruitment or used more expensive methods	6	61	7	-	-
Recruited from different geographical areas				11	-
Other	16	-	4	*	10
No measures taken	18	15	26	*	*
Don't know / not stated	-	3	15	*	*

- Not a response option.
* Not reported.
1 Response options *read out* in succession (included in coding frame in RoI questionnaire).
2 Response options *not read out* – interviewer codes all mentioned.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; FSW, 2003; Hughes et al, 2003a.

Skill-shortage vacancies – Incidence and extent

185 As illustrated in Figure A.2 above, skill-shortage vacancies are a subset of difficult-to-fill vacancies and are defined as such in the UK surveys[37]. Survey respondents are not asked explicitly if they have any such vacancies. Rather, skill-shortage vacancies are identified by considering the reasons given by respondents for their difficult-to-fill vacancies.

186 The basic approach is broadly the same across the UK surveys (Box A.7). Difficult-to-fill vacancies are categorised as external skill shortage vacancies if the reasons given by the respondent (see foregoing discussion) include lack of skills *or* lack of qualifications *or* lack of experience. Thus, there is a uniform approach to the conceptual definition of what constitutes an external skill shortage vacancy.

[37] As has been noted, the Republic of Ireland survey does not seek to measure skill shortage vacancies.

Box A.7 Difficult to fill vacancies attributed to external skill shortages

Country	Method of assignment
N. Ireland	For each job type that is proving difficult to fill, the respondent is asked to say why the vacancy is difficult to fill. The job type vacancy is categorised as an external skills shortage vacancy, if the reasons given include any *one* of the following: ▪ Lack of practical skills. ▪ Lack of technical skills. ▪ Lack of qualifications required. ▪ Lack of work experience required.
England	For each occupation with a hard to fill vacancy, the respondent is asked to identify *the main causes* for the difficulty. Responses are unprompted, with all mentioned being coded. Skill-shortage vacancies are identified if the main causes identified by the respondent include *any one* of the following: ▪ Low number of applicants with the required skills. ▪ Lack of work experience the company demands. ▪ Lack of qualifications the company demands.
Scotland	For each occupation with one or more hard to fill vacancies, the respondent is asked if this is because of one or both of the following: ▪ The applicants have not been of sufficient quality. ▪ There have been few or no applicants. If the first of these reasons is cited, the respondent is then asked to say which of the following have been lacking in the applicants (the interviewer codes all mentioned): ▪ The skills you look for. ▪ The qualifications you look for. ▪ The experience you look for. ▪ Or do applicants tend to have poor attitudes, motivation and/or personality. If the respondent mentions *any one* of the first three, then the hard to fill vacancies in the occupation are attributed to external skills shortages.
Wales	All those with hard to fill vacancies are asked to identify the causes of their hard to fill vacancies and the main cause. Judging from the questionnaire, the question is not asked separately for each occupation in which hard to fill vacancies exist. It is therefore not clear how the *number* of skill shortage vacancies is derived.
Republic of Ireland	Not asked

187 As can be seen from Box A.7, there are some variations in approach. The Scottish model has already been discussed, involving as it does a two-stage approach. It is a moot point as to whether this affects the comparability of the Scottish approach with the other surveys. The particular point of concern is respondents' understanding of what is meant by *the applicants have not been of sufficient quality*. This is intended to encompass all skills-related reasons perceived by the respondent. So long as respondents share this interpretation, and do not conflate skills issues with *few or no applicants*, the Scottish approach should give broadly comparable results.

188 But some concerns must persist regarding comparability, as the survey questionnaire does not explicitly associate *quality* with *skills*.

189 A second point of concern regarding comparability is that, as noted above, the Welsh survey asks a global question regarding reasons for difficult-to-fill vacancies. This is not a particular problem in comparing results for the *incidence* of skill shortage vacancies (that is, whether such a vacancy exists at an establishment or not). But it does make it more difficult to compare results for indicators based on the *number* of skill shortage vacancies.

190 Overall, while there are some differences in approach, comparability of results for skill-shortage vacancies is positively affected by the fact that the surveys share a common conceptual definition of what constitutes a skill shortage vacancy. The main constraints on comparing results across the different surveys reside in the different approaches used in eliciting the reasons for vacancies being difficult-to-fill and for determining the overall number of vacancies at the establishment. As with other indicators, a cautious approach is warranted in making comparisons.

Skill shortage vacancies – Skills sought

191 Because skill shortage vacancies are a sub-set of difficult-to-fill vacancies, the analysis of the effects of and responses to such vacancies is also derived from the responses given for all difficult-to-fill vacancies. This is not the case for skills sought in respect of skill shortage vacancies. In the Scottish survey (Box A.8), a question regarding skills sought is only asked of those identifying lack of skills as a reason for their difficult-to-fill vacancies. By contrast, the English survey poses this question for all difficult-to-fill vacancies. In the Northern Ireland survey, the question of skills sought is posed in respect of *all* current vacancies and follows on directly from a set of questions regarding qualifications sought. The question is not asked in the Welsh or Republic of Ireland surveys.

Box A.8 Skills sought in respect of skill shortage vacancies - Format of questions asked

N. Ireland	*Asked for all vacancies, both difficult-to-fill and other* Follows on from questions regarding qualifications sought. What other skills or attributes do you require for the <type of> vacancy?
England	*Asked only for occupations with difficult-to-fill vacancies.* Which particular skills or qualities have you found difficult to obtain from applicants for <occupation>? READ OUT. CODE ALL MENTIONED.
Scotland	ASK FOR ALL HARD-TO-FILL VACANCIES CAUSED BY LACK OF SKILLS Which of the following skills have you found applicants for <occupation> to be lacking? READ OUT AND CODE ALL THAT APPLY.
Wales	Not asked.
Republic of Ireland	Not asked

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

192 These variations in approach clearly act as a constraint on the comparability of the results across the various surveys. Thus, the Northern Ireland results are not comparable to the English and Scottish surveys, for two reasons:

- The question is phrased in terms of both skills and attributes that are *required*, whereas the English and Scottish questions focus on skills that are *lacking* or proving *difficult to obtain*. This reflects the different role and positioning of the skills sought question in the Northern Ireland survey, but it also reduces the relevance to the analysis of skill-shortage vacancies.

- The Northern Ireland coding framework includes items such as personal attributes and experience. These are not generic skills, which are the focus of the English and Scottish surveys.

193 The second of the above contrasts could perhaps be handled by simply focusing on generic skills. However, this would not eliminate the problem that arises from the very different tenor of the Northern Ireland question as compared with England and Scotland. A good illustration of this is the large difference that exists in the responses for numeracy skills. In the Northern Ireland survey, 30 per cent of skill-shortage vacancies were said to require this skill. In the English and Scottish surveys, only about one in ten respondents highlighted numeracy skills (Table A.20). But this is in respect of numeracy skills being difficult to obtain, whereas in the Northern Ireland survey all that is known is that respondents view these as desirable, rather than hard to obtain. In the context of skill-shortage vacancies, identifying what skills are hard to obtain or not is more interesting from a policy perspective. But this is not possible from the Northern Ireland survey.

194 In principle, the English and Scottish results could be compared. But the coding frameworks differ in a number of important details. Thus, for a number of skills, such as communication, the Scottish survey breaks these down into sub-components compared to the less specific approach adopted by the English survey.

195 For all of the above reasons, it is concluded that there is little to be gained from comparing the survey findings regarding skills sought in relation to skill shortage vacancies. This is an unfortunate omission.

Table A.20 Skills sought in connection with skill-shortage vacancies

Measurement:	N. Ireland Vacancies %	England Vacancies %	Scotland Establish-ments %	N. Ireland Establish-ments %
Basic computing	14	7	11	20
Advanced IT	7	20	15	9
Other technical/practical	10	34	24	15
Communication	42	13	-	50
Oral communication	-	-	47	-
Written communication	-	-	35	-
Customer handling	40	16	50	44
Team-working	46	11	43	45
Foreign language	2	2	-	1
Problem-solving	27	8	42	25
Management	10	7	-	14
Planning & organising	-	-	36	-
Strategic management	-	-	14	-
Numeracy	30	9	12	28
Literacy	21	7	10	23
Company-specific	21	*15*	-	25
Sales/marketing	5	*1*	-	7
Personal attributes	28	*8*	*4*	30
Experience	61	*5*	*6*	60
Driving	14	*3*	-	15
Other	4	-	*2*	5
No other skills	5	-	-	4
Don't know / Not specified	0	13	-	0

- Not a response option.
* Not reported.
Numbers in italics – responses derived from other (write-in).
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Skill gaps

Incidence

196 In the UK employer skills surveys[38], skill gaps are measured and reported on in one or both of two ways:

- Incidence i.e. the proportion of establishments saying that a skill gap exists amongst their workforce or saying that not all of their employees are fully proficient at their current jobs.

- Extent i.e. the proportion of employees that the respondent feels are lacking in full proficiency at their current jobs.

197 Focusing first on the measurement of the incidence of skill gaps, a number of problems arise in comparing the survey findings. The first and most important is that a range of approaches is adopted by the UK surveys. There are two basic models used for measuring the incidence of skill gaps:

- The single question approach (Northern Ireland and Wales).

- The proficiency question approach (England and Scotland).

198 The implementation of these two approaches is shown in Box A.9. Both Northern Ireland and Wales measure the incidence of skill gaps by means of a single question, whereby the respondent is asked to say if there is a gap between the types of skills that their employees currently possess and those that are required to meet their business objectives.

199 This is quite a different approach to that taken by the English and Scottish surveys. Both of these surveys use lack of full proficiency within the workforce as a proxy indicator for the incidence of skill gaps. However, the way in which this is done varies between the two surveys.

200 For each occupation in which one or more persons is employed at the workforce, ESS 2001 asks respondents to say what proportion of employees are fully proficient at their jobs. As shown in Box A.9, respondents are offered a range of options for describing the proficiency level of employees in each occupation at the establishment.

201 Based on the answers to the proficiency question, ESS 2001 derives two skills gap measures. The broad definition of a skills gap includes those establishments where not all employees are felt to be fully proficient. The narrow definition of a skills gap in ESS 2001 includes those establishments where a 'significant' proportion of employees in any one occupation are felt to lack full proficiency (see Box A.10).

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[38] The Republic of Ireland does not have a skills gap section.

Box A.9 Skill gaps: Establishment-based incidence measure

Country	Survey questions
N. Ireland	The following question is posed to the respondent: *Thinking about your current employees, would you say that there is a gap between the types of skills that your current employees have now, and those that your company needs to meet its business objectives, yes or no?*
England	The English approach is based on *the proficiency question*. For each occupation in which there is some employment at the establishment, the respondent is asked to say what proportion of employees s/he would regard as being fully proficient at their current job. Allowable responses include: ▪ All ▪ Nearly all ▪ Over half ▪ Some, but under half ▪ Very few ▪ None. Based on the answers to the proficiency question, two definitions of the incidence of skills gaps amongst establishments are derived, as follows. ▪ Broad definition – All establishments reporting that at least some of their staff lacked full proficiency i.e. where the respondent reported the following proficiency level for any one or more occupations – nearly all, over half, some but under half, very few or none (the last category is not specifically listed in the ESS 2001 report, but it is implicit in the definition). ▪ Narrow definition – Establishments reporting a 'significant proportion' of their workforce as lacking in proficiency. Such employers are those identifying lack of proficiency involving a third or more of staff in at least one occupational area. In ESS 2001, this is identified as occurring where employers reported the proficiency level in any occupation as being over half, some but under half, very few or none.
Scotland	For each occupation in which there are employees at the establishment, the respondent is asked to say *how many* of the existing staff s/he would regard as being fully proficient at their current job. An establishment is identified as having a skills gap if any employee is not fully proficient.
Wales	The following question is posed to the respondent: *I would like you to now think about your overall workforce. Would you say there is a significant gap between the type of skills that your employees have now, and those they need to meet your current business objectives.* The allowable responses are: "Yes, gap exists", "No", "Don't know".
Republic of Ireland	Not asked

202 In the Scottish approach, respondents are asked to say *how many* employees are fully proficient at their jobs. An establishment is identified as having a skills gap if fewer than all employees are said to be fully proficient.

203 In principle, the Scottish approach should be comparable with the broad measure used in ESS 2001. In practice, this may not be the case, as the two approaches produce divergent estimates for the incidence of skill gaps. In the Scottish survey, 16 per cent of employers were estimated to have a skills gap, based on the proficiency question, compared to 23 per cent on the broad measure of skill gaps in ESS 2001. Apart from the different methods used, there is no obvious reason why there should be such a large difference between the two estimates.

204 More fundamentally, there has recently been some discussion about the extent to which the proficiency question is actually measuring skill gaps. Thus, in the follow-up interviews that were undertaken for ESS 2002, it was found that (Hillage *et al*, 2002):

> *Employers strongly associated the concept of proficiency … with personal performance. A lack of proficiency was often described in terms of poor performance rather than with reference to the absence of a particular skill.*

205 One consequence of this is that proficiency-based measures of skill gaps can rise over time as a consequence of rising expectations amongst employers in relation to personal performance (or deployment of skills), as opposed to the workforce possessing fewer skills. This in turn poses an issue of construct validity of the proficiency measure, that is, what exactly does the proficiency question enable the surveys to measure?

206 While it is very simple, the single question approach has the advantage of directly posing the issue of skill gaps to the respondent. As can be seen from Box A.9, the single question approach refers both to a *gap* and to *skills* possessed by employees. Neither of these terms actually features directly in the proficiency question, which is an indirect method of imputing the existence or otherwise of a skills gap.

207 In the Northern Ireland survey, the proficiency question is also asked of respondents, though it is only posed to those who say that there is a gap between the skills their employees possess and what is needed to meet their business objectives. For that sub-group of respondents, it is therefore possible to derive the narrow and broad measures of proficiency that are reported in ESS 2001.

208 The results of this exercise are shown in Table A.21. The main point of interest is that not all of those saying they had a skills gap also reported a lack of proficiency amongst their employees. In particular, when the narrow measure of proficiency is used, only a little over one in three (36 per cent) of those saying they had a skills gap also reported a lack of proficiency amongst their workforce.

Table A.21 Incidence of the narrow and broad proficiency measures for Northern Ireland – Per cent of all saying had a skills gap

	Broad measure	Narrow measure
	%	%
Yes	68	36
No	32	64
All saying had a skills gap	**100**	**100**

Source: DEL, 2003.

209 The broad measure of proficiency is more highly correlated with the single question approach to the incidence of a skills gap. Just over two-thirds of those saying that there was a skills gap amongst their employees also reported a lack of proficiency, using the broad measure.

210 Mason and Wilson (2003) note that the ESS 2002 research "has also cast some doubt on the use of the term 'proficiency' itself, in that respondents may understand 'proficiency' to mean very different things". The findings reported in Table A.21 strengthen that conclusion, At least in the case of Northern Ireland, almost one in three (32 per cent) of those saying that there was a gap between the types of skills that their current employees have now and those that are needed to meet business objectives, also said that all of their employees were fully proficient.

211 This finding does not necessarily mean that the proficiency question is not a valid measure of the incidence of 'skill gaps'. An alternative perspective is that the single question approach may be too crude an instrument for measuring the incidence of skill gaps. But it does cast some doubt on the validity of using the proficiency question as a proxy indicator for 'skill gaps'. One conclusion to be drawn from this is that there is a need to give further consideration to the measurement of skill gaps, including the use and interpretation of the proficiency question. This conclusion echoes that drawn in Mason and Wilson (2003), who point to the need to reconsider the precise wording of the set of proficiency questions.

212 This also means that it would not be appropriate to apply any statistical tests for differences between the various survey estimates for the incidence of skill gaps. The evidence is that the surveys are not all measuring the same concept, so it would not be clear exactly what hypothesis was being tested. In addition, it cannot safely be presumed that the Scottish approach to measuring the existence or otherwise of a skills gap is equivalent to the English approach, even though they share a common conceptual underpinning.

Extent

213 The approaches taken in the various surveys to measuring the extent of skill gaps amongst the workforce are summarised in Box A.10.

214 The English and Scottish surveys use the proficiency question to produce estimates of the proportion of the workforce that lacks full proficiency. In the Scottish case, respondents are asked to directly estimate the number in each occupation. In the English approach, it is necessary to derive estimates by assigning numerical weights to the proficiency question responses, as described in Box A.10.

Box A.10 Skill gaps: Employee-based extent measure

Country	Survey questions
N. Ireland	Not estimated. Since NI also asks the proficiency question (see Box A.9), it is feasible to adopt the English approach. The resulting estimates are not fully comparable with ESS 2001 because the proficiency question in the NI survey is only asked where the respondent states that a skills gap exists within the workforce.
England	The number of employee skills gaps for each occupation in an establishment is estimated by assigning numerical weights to the proficiency question responses, as follows: ▪ All – zero per cent with skills gap. ▪ Nearly all – 15 per cent. ▪ Over half – 35 per cent. ▪ Some, but under half – 65 per cent. ▪ Very few – 85 per cent. ▪ None – 100 per cent. These imputed percentages per occupation are then applied to the total number of employees in the occupation to get an estimate of the number of skills gaps in the occupation. Summing over all occupations gives the estimated total number of skills gaps at the establishment.
Scotland	As described in Box 4.B above, for each occupation in which there are employees at the establishment, the respondent is asked to say *how many* of the existing staff s/he would regard as being fully proficient at their current job.
Wales	If the respondent says that a gap exists in relation to the overall workforce, s/he is then asked to estimate how many employees within each occupation at the establishment have a skills gap. Note that the term 'proficient' is not used in the Welsh approach.
Republic of Ireland	Not asked

215 The Welsh survey also includes questions from which it should be possible to provide estimates of the extent of skills gaps amongst the workforce, as perceived by survey respondents. The report on the Welsh survey, which was issued in December 2003, does not include estimates for the extent of skill gaps.

216 Nonetheless, given the conclusions drawn above in respect of the measurement of the incidence of skill gaps, the Welsh results are unlikely in any event to be directly comparable with the English and Scottish estimates. This is because the latter are based on the proficiency question whereas the Welsh survey asks respondents directly about skill gaps, rather than proficiency. But the analysis of the Northern Ireland survey results indicate that the proficiency question and the direct skills gap question are not entirely congruent, that is, they are probably measuring different things.

217 Since the Northern Ireland survey also poses the proficiency question, it is possible to apply the ESS 2001 methodology for measuring extent. This would then give a set of estimates for the extent of lack of proficiency for Northern Ireland, Scotland and England. The problem is that, in the Northern Ireland survey, the proficiency question is only posed when the respondent answers in the affirmative to the NI skills gap question. As was noted above, a large proportion of such respondents to the NI survey also say that their workforce does not lack proficiency (one in three for the broad ESS 2001 measure, rising to two in three for the narrow measure). This lack of a perfect correlation between the proficiency measure and the direct skills gap measure means that it could not be presumed that respondents saying they did not have a skills gap would not also say that their workforce lacked full proficiency. In other words, since it could only be done for those answering 'yes' to the NI skills gap question, applying the ESS 2001 methodology to the NI survey dataset would suffer two problems:

- Under-estimation of the extent of lack of proficiency.
- Potential for bias in estimating the industry sector, establishment size band and occupational composition of employees lacking full proficiency.

218 The first of these problems is immediately apparent from the results that are obtained when the number of NI establishments saying their workforce lacked full proficiency is expressed as a percentage of all establishments and compared to the ESS 2001 estimates (Table A.22).

Table A.22 Establishments saying their workforce lacks full proficiency – Northern Ireland compared to ESS 2001 measures

	ESS 2001 Narrow	ESS 2001 Broad
	%	%
N. Ireland	5	9
England	7	23

Source: DEL, 2003; ESS 2001.

219 Thus, when the ESS 2001 methodology is applied to the NI dataset, the estimated proportion of establishments where one or more occupations is lacking in full proficiency is nine per cent on the broad ESS 2001 measure. This compares with the 23 per cent of establishments reported in ESS 2001. But the size of the difference certainly owes more to the fact that, in the NI survey, the proficiency question is only applied to a sub-set of respondents.

220 Overall, then, the surveys lack comparability in respect of measures of the extent of skill gaps or the proficiency of the workforce:

- The Welsh survey poses a different kind of question as compared to the English and Scottish proficiency-based measures.

- The NI proficiency question is only applied to a sub-set of respondents.

221 These conclusions hold regardless of which methodology is to be preferred for measuring skill gaps, that is, the direct question of the proficiency approach.

Qualitative indicators

222 This discussion of the comparability of skill gaps concludes with some observations on the qualitative indicators used in the various surveys. The main point that is made here is that, even if the survey estimates for incidence and extent were to be comparable, problems would still arise in comparing the results of the qualitative indicators used in the various surveys for assessing issues such as the reasons given for lack of proficiency or the effects of lack of proficiency or skills sought in relation to skill gaps or lack of proficiency.

223 These problems can be summarised as follows:

- Methods used to select out occupations for further probing.

- The use of different frameworks for coding and reporting on responses.

224 Regarding the selection of occupations for further probing, the Scottish, English and Welsh surveys each use a different set of criteria. In both the Scottish and English surveys, a maximum of two occupations are selected for further probing.

225 The Scottish survey selects occupations where some staff are not fully proficient (effectively using the broad definition of lack of proficiency described above). If there are more than two occupations in which staff are not fully proficient, selection is based upon the occupations with the greatest number of employees lacking proficiency.

226 By contrast, in the English survey, the selection is based on occupations where respondents said that a significant proportion of their staff lacked full proficiency (this corresponds to the narrow definition of lack of proficiency), up to a maximum of two occupations.

227 In the Northern Ireland survey, further probing is done in respect of *all* occupations where the respondent said that at least some staff lack proficiency. This corresponds to selection based on the broad definition of lack of full proficiency. In addition, the proficiency question is only posed to respondents saying that their establishment has a skills gap.

228 In the Welsh survey, one occupation is selected. This is the occupation that the respondent identifies as having had the most significant impact on the organisation.

229 These differences in the approach to selecting occupations for further probing are compounded by the use of different coding frameworks. This is evident from Table A.23, which shows the reasons given for lack of full proficiency. For example, according to the NI survey results, the main reason given for lack of proficiency is lack of experience (42 per cent of occupations). A similar, though not identical, finding is reported in the Scottish survey, with 50 per cent saying that the main reason for lack of proficiency was that people had not been in the job long enough. This would suggest that most skill gaps are transitory. But this is not the message that comes through from the English survey, which instead highlights, for example, failure to train and develop staff.

230 The question that arises is whether the disparity is due to:

- Differences in the coding framework. In the English survey, lack of experience is not a prompted response option, the figure shown in Table A.23 being based on coding of other-write in responses.

- The fact that the English survey uses the narrow rather than the broad measure of proficiency in selecting occupations for further probing.

231 In short, even if the surveys could safely be compared in respect of skill gaps or lack of proficiency, cross-national comparisons would still be severely constrained by the absence of a common approach to the design and measurement of qualitative indicators.

Table A.23 Reasons given for skill gaps/lack of proficiency

	N. Ireland[1,2]	England[1,3]	Scotland[1,2]
	Occupations	Employees	Establishments
	%	%	%
New skills needed for the development of new products or services	27	-	-
New skills needed for the development of new working practices	26	-	-
Introduction of new technology	28	-	-
Failure to train and develop staff	19	34	37
Training programmes only partially completed	-	-	32
Recruitment problems	8	29	13
Poor labour retention	5	28	12
Inability of the workforce to keep up with change	13	30	17
Inability of older staff to acquire the necessary new skills & knowledge	12	-	-
Lack of experience	42	*9*	*3*
People not been in job long enough	-	-	50
Lack of motivation	19	*7*	*3*
High workload/time	-	-	*3*
Other	11	-	2
Don't know	*	-	15

- Not reported as a response option.
* Not reported.
1 Responses are read out and all that apply are coded. Responses not read out but derived from *other-write-in* are shown in italics.
2 Based on broad measure of lack of proficiency.
3 Based on narrow measure of lack of proficiency.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Off-the-job Training

Provision

232 The questions used in each of the five surveys to obtain information on whether or not off-the-job training is provided at the workplace (or by the business/enterprise in the case of the Republic of Ireland) are shown in Box A.11. Regarding the UK surveys, the main point to note is the similarity in the approach. Respondents are simply asked to say if they provide any such training. Furthermore, each survey provides a very similar definition of what is meant by 'off-the-job' training, that is, training that is delivered away from the immediate work position, at the employers' premises or elsewhere, and comprising all sorts of courses.

233 Comparability with the Republic of Ireland in relation to provision is hindered in any event by the use of the enterprise/organisation as the unit of analysis, compared to the establishment-based focus of the UK surveys. In addition, however, the Republic also uses a somewhat different question regarding the provision of off-the-job training with a shorter definition that refers to 'formal, structured training courses'. No specific examples are given of what is meant by such training, other than that it is not on-the-job training. Further, the Republic refers to all those working in the company, including the owner-manager or proprietor, but excluding apprentices. By contrast, the UK surveys refer to 'any employees'.

Extent

234 As shown in Box A.12 overleaf, there are some differences in the approach used to derive estimates of the number of employees receiving off-the-job training. Wales does not ask this question. Northern Ireland and England each ask respondents to say how many of their employees have received such training in the past 12 months. In the Scottish survey, the same question is posed, but for each occupational grouping. In principle, this should yield comparable results to the Northern Ireland and England surveys, but this cannot be guaranteed in the context of a telephone interview. The Republic of Ireland also asks a single question regarding the number receiving off-the-job training. Again, the scope is different to the UK surveys, as apprentices are excluded.

235 Notwithstanding the comparability of the questions asked, there are still some difficulties in comparing the survey results. First, in ESS 2001, the proportion receiving off-the-job training is recorded as a series of banded measures (Dickerson and Wilson, 2003). These have been converted to a continuous measure using the mid-points for each band by Dickerson and Wilson, the results of which are reported in Tables 8.4 and 8.5 of their 2003 article. As the ESS 2001 report also uses establishment-weighted means for the proportion receiving training, the Dickerson and Wilson measures have been used in this report to measure the extent of off-the-job training in England.

Box A.11 Training: Establishments funding/providing off-the-job training

Country	Survey questions
N. Ireland	The incidence of off-the-job training is estimated from the responses to the following question: I am now going to ask you some questions about off-the-job training. By off-the-job training, we want you to include all training that was delivered away from the immediate work position. It can be given at your premises or elsewhere. In includes all sorts of courses – full- or part-time; correspondence or distance learning; Health and Safety training and so on – as long as it is funded or arranged by your business at this location. Has your business funded or arranged any off-the-job training for any of your employees in the last 12 months? Yes or no. This question is prefaced by a series of questions designed to ensure that the respondent is in a position to answer the training question.
England	The incidence question is posed as follows: I'd now like to ask you some questions about off-the-job training. By off-the-job training we are including all training away from the immediate work position. It can be given at your premises or elsewhere. It includes all sorts of courses – full or part-time; correspondence or distance learning; Health & Safety training and so on – as long as it is funded and arranged by you. Has this establishment funded or arranged any off-the-job training for any of your employees over the past 12 months? [If in operation less than 12 months, substitute "since you have been in operation"] Yes, no or don't know.
Scotland	The incidence question is posed as follows: I'd now like to ask you some questions about training that is conducted away from the immediate workplace given at your premises or elsewhere. It can include all sorts of courses – full or part-time; correspondence or distance learning; health and safety training and so on – as long as it is funded and arranged by you. *The interviewer may add if necessary*: By immediate workplace I mean the individual's desk, work station or normal working location within your establishment. Have you funded or arranged any training of this sort for any of your employees over the past 12 months? Yes, no or don't know.
Wales	The incidence question is posed as follows: I now have some questions about off-the-job training. By off-the-job training, we are including all training away from the immediate work position. It can be given at your premises or elsewhere. In the past 12 months, have your funded or arranged any off-the-job training for any employees at this location? Yes, no, don't know. Respondents are also asked to say which occupational groups were provided with off-the-job training.
Republic of Ireland	The incidence question is posed as follows: Apart from any apprentices, did anyone working in the company (including the owner-manager or proprietor) attend any FORMAL, STRUCTURED TRAINING COURSES in the past 12 months, either on the company's premises or at locations outside the company? We are talking here about systematic, supervised training during which the trainees are not engaged in production – this excludes "on-the-job" training. Yes or no.

Box A.12 Training: Employees receiving off-the-job training

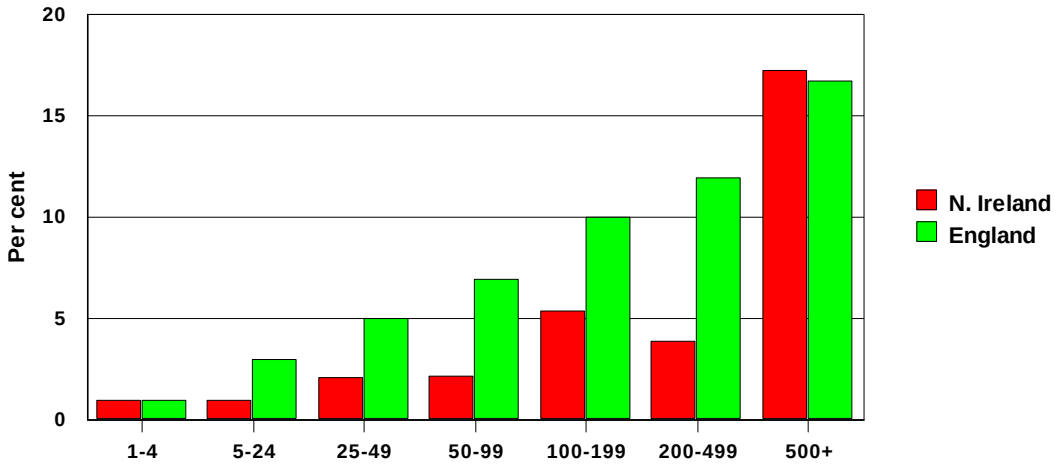
Country	Survey questions
N. Ireland	Respondents are asked to say for *how many* of their employees the establishment has funded or arranged for off-the-job training over the past 12 months.
England	All those providing off-the-job training are asked to say what proportion of their employees the establishment has funded or arranged training for over the past 12 months. If the respondent does not know, s/he is prompted with a pre-coded set of ranges (<10%, 10-19%, etc). No details are sought regarding occupations.
Scotland	In *each* of the nine major occupational groupings, respondents are asked to say for *how many* of their employees the establishment has funded or arranged for off-the-job training over the past 12 months.
Wales	Not asked.
Republic of Ireland	The question posed is as follows: Approximately how many people from your company (excluding apprentices) went on formal, structured training courses in the past 12 months?

236 The second major difficulty that arises in comparing results for the number or proportion of employees receiving off-the-job training is the problem of missing values. In ESS 2001, two per cent of establishments were unable to say what proportion of employees had received off-the-job training in the previous twelve months. The percentage of establishments that were unable to say how many employees had received off-the-job training was one per cent in Northern Ireland[39].

237 These are not large percentages. The problem, however, is that the percentage of such 'don't knows' increases with establishment size (see Figure A.3). This means that the percentage of total *employment* for which the information is missing or not known will exceed the percentage of establishments. In the case of Northern Ireland, the one per cent of establishments that were unable to provide information on the number of employees receiving off-the-job training accounted for 6.4 per cent of total employment. This percentage also varies with establishment size. In the Northern Ireland survey, the range was from 0.6 per cent of employment in establishments with 1-4 employees to 25 per cent of employment in establishments with 500+ employees.

[39] This comprises those establishments that could not say whether any such training had taken place in the last 12 months plus those who said that such training had taken place, but were then unable to say how many employees had received such training. The former category comprised 0.7 per cent of establishments. Hence, the NI *incidence* measure is little affected by non-response.

Figure A.3 Establishments unable to say how many staff received off-the job training, by size of establishment



Sources: DEL, 2003; ESS 2001.

238 One implication of the correlation between non-response and establishment size is that it is necessary to adjust the survey data for non-response to the question on the proportion of or number of employees receiving off-the-job training. For the purposes of this study, the Northern Ireland results have been adjusted by excluding cases for which the number receiving training is not known. This is a very simple *pro rata* adjustment which implicitly assumes that the average proportion receiving training in establishments for which the data are missing is equivalent to that in establishments for which the data are present. This is not entirely satisfactory, but likely to give a clearer picture than if no adjustment was made.

239 Overall, the UK surveys would appear to be broadly comparable with respect to indicators for the provision of off-the-job training, though less so in respect of the number of employees receiving such training. The Republic of Ireland uses a differently phrased definition of such training, and there are some differences in scope (apprentices are excluded, while owner-managers and proprietors are included).

240 As discussed above, the main problem that arises in comparing indicators for the proportion of employees receiving training is that the probability of a non-response or missing data is correlated with establishment size. That is, the larger the establishment, the more likely is it that the respondent is unable to say how many employees were in receipt of off-the-job training. It is possible to adjust for non-response. But from the perspective of comparing survey findings, a uniform approach to this would be desirable.

Appendix B Statistical Tables

Table A2.1 Industry composition, 2002

	N. Ireland	England	Wales	Scotland	Republic of Ireland
	%	%	%	%	%
Agriculture	2	1	1	2	7
Production industries	15	15	18	15	17
Construction	5	4	5	5	10
Wholesale & retail trade	17	18	16	16	14
Hotels & restaurants	6	7	7	8	6
Transport, storage & communications	4	6	4	6	6
Financial & other business services	11	20	11	17	13
Public administration & defence	9	5	7	7	5
Education & health	25	19	24	20	15
Other services	5	5	5	6	6
All industries	**100**	**100**	**100**	**100**	**100**

Sources: ONS, Labour Market Trends; CSO.

Table B3.1 Employer Skills Surveys: z-scores (shaded) for inter-country differences (non-shaded) in selected indicators for incidence of vacancies (% of establishments) – significant differences at 99% in italics

	N. Ireland	England	Wales	Scotland
Current vacancies				
N. Ireland	-	1.490	*-3.722*	-1.895
England	1.3	-	*-4.408*	*-2.759*
Wales	-6.3	-7.6	-	1.815
Scotland	-2.6	-3.9	3.7	-
Difficult-to-fill vacancies				
N. Ireland	-	*3.110*	*-2.943*	-0.422
England	2.2	-	*-4.367*	-2.303
Wales	-4.3	-6.5	-	2.225
Scotland	-0.5	-2.6	3.9	-
Skill-shortage vacancies				
N. Ireland	-	0.679	-2.464	0.559
England	0.4	-	*-2.680*	0.094
Wales	-3.0	-3.4	-	2.489
Scotland	0.4	0.1	3.4	-

Note: z-scores are read row-wise, differences (in percentage points) are read column-wise. For example, the percentage points difference in the incidence of current vacancies between Northern Ireland and Scotland is -2.6 (the NI incidence is 2.6 points *below* the Scottish incidence). The z-score associated with this difference is -1.895.

Table B3.2 Employer Skills Surveys: z-scores (shaded) for inter-country differences (non-shaded) in selected indicators for vacancies as per cent of employment – significant differences at 99% in italics

	N. Ireland	England	Wales	Scotland
Current vacancies				
▪ N. Ireland	-	*-4.001*	1.557	-1.604
▪ England	*-1.2*	-	*5.574*	1.859
▪ Wales	0.6	*1.7*	-	*-3.013*
▪ Scotland	-0.6	0.6	*-1.1*	-
Difficult-to-fill vacancies				
▪ N. Ireland	-	-0.893	1.614	0.406
▪ England	-0.2	-	*2.843*	1.414
▪ Wales	0.4	*0.6*	-	-1.240
▪ Scotland	0.1	0.3	-0.3	-
Skill-shortage vacancies				
▪ N. Ireland	-	-2.199	0.040	-0.355
▪ England	-0.3	-	1.861	1.574
▪ Wales	0.0	0.3	-	-0.350
▪ Scotland	-0.1	0.2	-0.1	-

Note: z-scores are read row-wise, differences (in percentage points) are read column-wise. For example, the percentage points difference in the vacancy rate between England and Wales is 1.7 (the rate in England is 1.7 points *above* the Welsh rate). The z-score associated with this difference is 5.574.

Table B3.3 Incidence of current vacancies by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	16	13	15
Construction	13	14	9
Distribution, hotels & restaurants	15	19	14
Transport & communications	13	19	17
Banking, finance & insurance etc	13	14	14
Public admin., education & health	24	23	24
Other services	13	30	13
All industries	**16**	**18**	**15**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.4 Current vacancies as per cent of employment by industry sector[1]

Industry sector:	N. Ireland	Scotland	England	Rep. Of Ireland
	%	%	%	%
Production	2.1	2.5	2.2	2.2
Construction	2.3	2.5	4.4	6.4
Distribution, hotels & restaurants	3.2	3.7	3.8	3.3
Transport & communications	2.5	3.3	4.3	3.0[2]
Banking, finance & insurance etc	2.9	3.4	5.3	4.0
Public admin., education & health	2.2	2.5	2.9	4.3
Other services	3.1	4.7	4.8	3.0[2]
All industries	**2.6**	**3.1**	**3.7**	**3.6**

1 Agriculture not included.
2 Transport and communications, hotels and restaurants and other services reported as one sector in RoI study.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Hughes *et al*, 2002, 2003.

Table B3.5 Composition of current vacancies by industry sector[1]

Industry sector:	N. Ireland	Scotland	England	Wales	Rep. of Ireland
	%	%	%		
Production	14	12	10	9	13
Construction	5	4	5	9	17
Distribution, hotels & restaurants	29	32	24	29	15
Transport & communications	4	5	7	5	15[2]
Banking, finance & insurance etc	12	20	28	18[3]	18
Public admin., education & health	30	20	19	31	23
Other services	6	7	6	(3)	(2)
All industries	**100**	**100**	**100**	**100**	**100**

1 Agriculture not included.
2 Transport and communications and other services reported as one sector in RoI study.
3 Banking, finance & insurance and other services reported as a combined sector in Welsh report.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003; Hughes *et al*, 2002, 2003.

Table B3.6 Establishment size and vacancies: N. Ireland, Scotland and Wales

Number of employees:	Incidence			Per cent of employment		
	N. Ireland	Scotland	Wales	N. Ireland	Scotland	Wales
	%	%	%	%	%	%
1-9	10	13	17	3.5	6.1	n.a.
10-49	28	29	35	3.0	3.3	n.a.
50-249	50	49	65	2.1	2.6	n.a.
250+	72	67	71	1.8	2.0	n.a.
All	**16**	**18**	**22**	**2.6**	**3.1**	**2.0**

Sources: DEL, 2003; Futureskills Scotland, 2002; FSW, 2003.

Table B3.7 Establishment size and vacancies: N. Ireland and England

Number of employees:	Incidence		Per cent of employment	
	N. Ireland	England	N. Ireland	England
	%	%	%	%
1-4	8	10	3.9	10.5
5-24	18	21	3.2	4.1
25-49	39	35	2.8	3.1
50-99	50	47	2.6	3.0
100-199	48	54	1.5	2.7
200-499	66	63	1.9	2.2
500+	72	69	1.7	2.1
All	**16**	**14**	**2.6**	**3.7**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B3.8 Composition of vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland		Scotland	
	Vacancies	Employ-ment	Vacancies	Employ-ment
	%	%	%	%
1-9	25	19	30	15
10-49	37	31	29	28
50-249	20	25	23	28
250+	17	25	18	29
All	**100**	**100**	**100**	**100**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B3.9 Composition of vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland		England	
	Vacancies	Employ-ment	Vacancies	Employ-ment
	%	%	%	%
1-4	13	8	29	11
5-24	32	26	24	22
25-49	17	16	10	13
50-99	12	12	11	13
100-199	6	10	7	10
200-499	7	9	9	16
500+	12	18	9	15
All	**100**	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001.

Table B3.10 Composition of vacancies by occupation

Occupation:	N. Ireland	Scotland	England	Rep. Of Ireland
	%	*%*	*%*	*%*
Managerial & senior official	3	4	5	5
Professional	6	8	9	13
Associate professional	13	11	16	12
Administrative & secretarial	11	10	13	12
Skilled trades	13	8	11	16
Personal service	9	12	9	14
Sales & customer service	12	18	15	9
Process, plant & machine operatives	12	11	9	8
Elementary occupations	20	16	14	11
All occupations	**100**	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Hughes et al, 2002, 2003.

Table B3.11 Employer Skills Surveys: z-scores (shaded) for inter-country differences (non-shaded) in difficult-to-fill vacancies as per cent of all current vacancies – significant differences at 99% in italics

	N. Ireland	England	Scotland	Wales
▪ N. Ireland	-	*6.954*	*5.961*	2.141
▪ England	14	-	0.562	*-4.245*
▪ Scotland	15	1	-	*-3.790*
▪ Wales	5	5	-9	-

Note: z-scores are read row-wise, differences (in percentage points) are read column-wise. For example, the percentage points difference between N. Ireland and England is 14 (the rate in N. Ireland is 14 percentage points *above* the English rate). The z-score associated with this difference is 6.954.

Table B3.12 Incidence of difficult to fill vacancies by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	11	7	8
Construction	10	9	5
Distribution, hotels & restaurants	10	10	7
Transport & communications	7	8	9
Banking, finance & insurance etc	8	8	9
Public admin., education & health	12	11	14
Other services	8	22	8
All industries	**10**	**10**	**8**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.13 Establishments with a current vacancy also reporting a difficult to fill vacancy by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	67	51	51
Construction	76	64	61
Distribution, hotels & restaurants	66	54	50
Transport & communications	54	43	52
Banking, finance & insurance etc	62	55	60
Public admin., education & health	51	46	56
Other services	60	73	59
All industries	**62**	**55**	**55**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.14 Difficult to fill vacancies as per cent of employment by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	1.3	1.1	1.0
Construction	1.8	1.8	2.6
Distribution, hotels & restaurants	1.8	1.6	1.6
Transport & communications	1.6	1.5	1.9
Banking, finance & insurance etc	1.7	1.4	2.6
Public admin., education & health	1.4	1.1	1.4
Other services	1.6	3.0	2.1
All industries	**1.5**	**1.4**	**1.7**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.15 Difficult to fill vacancies as per cent of all vacancies, by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	61	42	46
Construction	78	69	60
Distribution, hotels & restaurants	56	44	42
Transport & communications	62	44	44
Banking, finance & insurance etc	61	39	48
Public admin., education & health	63	45	48
Other services	50	65	45
All industries	**60**	**46**	**46**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.16 Composition of difficult-to-fill vacancies, by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	14	11	10
Construction	7	6	7
Distribution, hotels & restaurants	27	30	22
Transport & communications	4	5	6
Banking, finance & insurance etc	12	17	30
Public admin., education & health	31	20	19
Other services	5	11	6
All industries	**100**	**100**	**100**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.17 Incidence of difficult to fill vacancies by establishment size: N. Ireland, Scotland and Wales

Number of employees:	N. Ireland	Scotland	Wales
	%	%	%
1-9	6	8	11
10-49	17	15	21
50-249	27	25	34
250+	40	24	31
All	**10**	**10**	**14**

Sources: DEL, 2003; Futureskills Scotland, 2002; FSW, 2003.

Table B3.18 Incidence of difficult to fill vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	5	5
5-24	12	11
25-49	24	17
50-99	28	24
100-199	29	25
200-499	35	27
500+	49	35
All	**10**	**8**

Sources: DEL, 2003; ESS 2001.

Table B3.19 Difficult to fill vacancies as per cent of employment by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	2.2	3.7
10-49	1.8	1.5
50-249	1.1	1.1
250+	1.2	0.5
All	**1.5**	**1.4**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B3.20 Difficult to fill vacancies as per cent of employment by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	2.3	5.6
5-24	2.1	2.0
25-49	1.6	1.3
50-99	1.3	1.5
100-199	0.9	1.0
200-499	0.6	0.8
500+	1.4	0.8
All	**1.5**	**1.7**

Sources: DEL, 2003; ESS 2001.

Table B3.21 Difficult to fill vacancies as per cent of all vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	64	61
10-49	59	46
50-249	54	42
250+	65	24
All	**60**	**46**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B3.22 Difficult to fill vacancies as per cent of all vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	58	53
5-24	65	49
25-49	58	44
50-99	51	51
100-199	57	38
200+	64	36
All	**60**	**47**

Sources: DEL, 2003; ESS 2001.

Table B3.23 Composition of difficult to fill vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland			Scotland		
	Employ-ment	Vacancies		Employ-ment	Vacancies	
		All	D2F		All	D2F
	%	%	%	%	%	%
1-9	19	25	27	15	30	40
10-49	31	37	36	28	29	30
50-249	25	20	18	28	23	21
250+	25	17	18	29	18	10
All	**100**	**100**	**100**	**100**	**100**	**100**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B3.24 Composition of difficult to fill vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland			England		
	Employ-ment	Vacancies		Employ-ment	Vacancies	
		All	D2F		All	D2F
	%	%	%	%	%	%
1-4	8	13	13	11	29	34
5-24	26	32	35	22	24	25
25-49	16	17	16	13	10	10
50-99	12	12	10	13	11	12
100-199	10	6	6	10	7	6
200+	28	19	20	31	18	14
All	**100**	**100**	**100**	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001.

Table B3.25 Difficult-to-fill vacancies as per cent of all vacancies, by occupation

Occupation:	N. Ireland	Scotland	England
	%	%	%
Managerial & senior official	38	24	34
Professional	46	32	60
Associate professional	80	54	49
Administrative & secretarial	46	31	26
Skilled trades	83	66	69
Personal service	55	66	57
Sales & customer service	43	37	39
Process, plant & machine operatives	69	53	48
Elementary occupations	58	41	43
All occupations	**60**	**46**	**47**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B3.26 Composition of difficult-to-fill vacancies by occupation

Occupation:	N. Ireland	Scotland	England
	%	%	%
Managerial & senior official	2	2	4
Professional	5	6	11
Associate professional	17	13	17
Administrative & secretarial	9	7	7
Skilled trades	18	12	16
Personal service	8	18	11
Sales & customer service	9	15	13
Process, plant & machine operatives	13	13	9
Elementary occupations	19	15	13
All occupations	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.1 Incidence of external skill shortage vacancies by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	6	4	4
Construction	5	4	7
Distribution, hotels & restaurants	4	3	2
Transport & communications	4	4	4
Banking, finance & insurance etc	5	3	5
Public admin., education & health	4	4	4
Other services	2	6	3
All industries	**4**	**4**	**4**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.2 External skill shortage vacancies as per cent of employment by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	0.7	0.7	0.6
Construction	0.9	0.8	1.7
Distribution, hotels & restaurants	0.5	0.5	0.5
Transport & communications	0.7	0.8	0.6
Banking, finance & insurance etc	0.7	0.5	1.4
Public admin., education & health	0.3	0.4	0.5
Other services	0.4	0.8	0.8
All industries	**0.5**	**0.6**	**0.8**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.3 External skill shortage vacancies as per cent of difficult-to-fill vacancies by industry sector[1]

Industry sector:	N. Ireland	Scotland	England
	%	%	%
Production	54	62	61
Construction	47	45	65
Distribution, hotels & restaurants	29	34	32
Transport & communications	43	57	32
Banking, finance & insurance etc	43	34	54
Public admin., education & health	20	39	37
Other services	23	27	39
All industries	**33**	**39**	**45**

1 Agriculture not included.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.4 Skill shortage vacancy shares relative to employment shares, by industry sector (ratio of shares)

Industry sector:	N. Ireland		Scotland		England	
	D2F	ESS	D2F	ESS	D2F	ESS
Production	0.8	1.4	0.7	1.2	0.6	0.8
Construction	1.2	1.7	1.2	1.4	1.5	2.2
Distribution, hotels & restaurants	1.2	1.0	1.1	1.0	0.9	0.7
Transport & communications	1.0	1.4	1.0	1.5	1.1	0.8
Banking, finance & insurance etc	1.1	1.5	0.9	0.8	1.5	1.8
Public admin., education & health	0.9	0.5	0.8	0.8	0.8	0.7
Other services	1.0	0.7	2.1	1.5	1.2	1.1
All industries	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.5 Incidence of external skill shortage vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	3	2
10-49	8	6
50-249	10	11
250+	12	15
All	**4**	**4**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B4.6 Incidence of external skill shortage vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	2	3
5-24	5	5
25-49	10	7
50-99	10	11
100-199	8	12
200-499	14	13
500+	12	18
All	**4**	**4**

Sources: DEL, 2003; ESS 2001.

Table B4.7 External skill shortage vacancies as per cent of employment by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	0.9	1.2
10-49	0.7	0.5
50-249	0.3	0.6
250+	0.2	0.2
All	**0.5**	**0.6**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B4.8 External skill shortage vacancies as per cent of employment by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	0.9	3.0
5-24	0.9	0.8
25-49	0.5	0.5
50-99	0.4	0.6
100-199	0.2	0.5
200-499	0.2	0.3
500+	0.2	0.4
All	**0.5**	**0.8**

Sources: DEL, 2003; ESS 2001.

Table B4.9 External skill shortage vacancies as per cent of all difficult-to-fill vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	39	32
10-49	40	37
50-249	28	52
250+	14	50
All	**33**	**39**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B4.10 External skill shortage vacancies as per cent of all difficult-to-fill vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	39	53
5-24	42	39
25-49	34	38
50-99	28	38
100-199	27	54
200-499	27	35
500+	13	45
All	**33**	**44**

Sources: DEL, 2003; ESS 2001.

Table B4.11 Composition of external skill-shortage vacancies by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland				Scotland			
	Empl.	Vacancies			Empl.	Vacancies		
		All	D2F	ESS		All	D2F	ESS
	%	%	%	%	%	%	%	%
1-9	19	25	27	32	15	30	40	32
10-49	31	37	36	44	28	29	30	27
50-249	25	20	18	16	28	23	21	28
250+	25	17	18	8	29	18	10	12
All	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B4.12 Composition of external skill-shortage vacancies by establishment size: N. Ireland and England

Number of employees:	N. Ireland				England			
	Empl.	Vacancies			Empl.	Vacancies		
		All	D2F	ESS		All	D2F	ESS
	%	%	%	%	%	%	%	%
1-4	8	13	13	15	11	29	34	40
5-24	26	32	35	45	22	24	25	22
25-49	16	17	16	17	13	10	10	8
50-99	12	12	10	9	13	11	12	10
100-199	10	6	6	5	10	7	6	7
200+	28	19	20	10	31	18	14	12
All	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Sources: DEL, 2003; ESS 2001.

Table B4.13 External skill shortages as per cent of difficult-to-fill vacancies by occupation

Occupation:	N. Ireland	Scotland	England
	%	*%*	*%*
Managerial & senior official	52	41	58
Professional	43	63	71
Associate professional	21	33	48
Administrative & secretarial	31	63	43
Skilled trades	47	51	55
Personal service	20	30	39
Sales & customer service	24	22	32
Process, plant & machine operatives	43	56	44
Elementary occupations	28	28	18
All occupations	**33**	**39**	**44**

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.14 Reasons given by employers for skill shortage vacancies[1] (per cent of vacancies)

	N. Ireland		England	
	ESS	D2F	ESS	D2F
Lack of skills	53	18	78	35
▪ Lack of practical skills	40	13	-	-
▪ Lack of technical skills	27	9	-	-
Lack of qualifications	27	9	17	8
Lack of work experience	60	20	21	9
Attitudes, motivation, personality.	22	18	14	15
Lack of basic ability to build upon.	7	5	-	-
Not enough people interested	42	46	13	21
Low number of applicants generally	-	-	20	26
Wages lower than other firms	12	15	7	15
Benefits trap/problem w/benefits	14	16	^	1
Location of the firm	9	12	2	3
Unattractive terms and conditions of employment	8	7	^	1
Lack of/poor career progression	10	6	^	2
Long/unsocial/irregular hours	11	18	^	2
Competition from other employers	9	15	12	14
Staff don't want long-term commitment	4	3	-	-
Problem with industry	-	-	^	1
Don’t know/not specified	-	-	^	2
Other	7	20	^	1

1 The results for England and Northern Ireland are not directly comparable. See discussion in Appendix A.
- Not a response option.
^ Less than 0.5%.
Sources: DEL, 2003; ESS 2001.

Table B4.15 Effects of external skill shortage vacancies[1] (per cent of vacancies)

	N. Ireland		England	
	ESS	D2F	ESS	D2F
Loss of business to competitors	21	15	34	36
Restrictions to business development activities	33	23	-	-
Delays developing new products	-	-	50	40
Withdrawing products and services	-	-	29	25
Increased running/operating costs	15	18	39	35
More strain on management of existing staff	69	74	-	-
Increase in recruitment costs	15	18	-	-
Difficulties with quality	12	13	30	27
Difficulties with customer service	23	27	51	46
Loss of efficiency or increased wastage	11	10	-	-
Difficulties with accommodating technological change	2	2	19	16
Difficulties with introducing new working practices	4	3	24	23
Other	3	3	*	*
No effect on the business	9	7	-	-
Don't know/not specified	-	-	14	*

1 The results for England and Northern Ireland are not directly comparable. See discussion in Appendix A.
- Not a response option.
* Not reported.
Sources: DEL, 2003; ESS 2001.

Table B4.16 Measures taken to overcome skill-shortage vacancies

	N. Ireland Vacancies	England[1] Vacancies	Scotland[2] Establish-ments	N. Ireland Establish-ments
	%	%	%	%
Offered higher pay	26	49	16	29
Enhanced terms & conditions	-	-	8	-
Considered a wider range of people	32	-	9	26
Been prepared to provide more training to less qualified recruits	36	37	5	31
Retrain existing staff / increase training	11	36	4	11
Hired part-time or contract staff	14	-	4	14
Built links with schools/colleges	14	-	5	13
Giving some of the tasks to other staff / Re-define existing jobs	6	36	8	6
Changed the job specification by automating some of the tasks	1	10	1	2
Used more extensive range of recruitment channels than normal	13	59	23	12
Spent more on recruitment or used more expensive methods	8	59	11	9
Recruited from overseas	-	-	4	-
Other	5	-	1	7
No measures taken	16	19	19	17
Don't know / not stated	-	1	15	0

- Not a response option.
* Not reported.
1 Response options *read out* in succession
2 Response options *not read out* – interviewer codes all mentioned.
Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002.

Table B4.17 Establishments providing off-the-job training[1] by industry sector[2]

Industry sector:	N. Ireland	Scotland	England	Wales
	%	%	%	%
Production	33	60	34	51
Construction	47	52	31	49
Distribution, hotels & restaurants	31	40	30	42
Transport & communications	34	50	27	50
Banking, finance & insurance etc	47	58	42	56[3]
Public admin., education & health	73	85	74	86
Other services	42	48	35	(3)
All industries	**42**	**54**	**37**	**53**

1 Per cent of all establishments, including 'don't know'.
2 Agriculture not included.
3 Wales reports Banking, finance & insurance and Other Services as one sector.
Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Table 8.4); Futureskills Scotland, 2002.

Table B4.18 Proportion of staff receiving off-the-job training by industry sector[1]

Industry sector:	N. Ireland	Scotland	England	Rep. Of Ireland
	%	*%*	*%*	*%*
Production	28.1	34.1	33.6	25.9
Construction	34.1	41.2	31.4	23.9
Distribution, hotels & restaurants	21.0	43.2	31.3	23.9
Transport & communications	24.0	36.9	30.9	32.6[2]
Banking, finance & insurance etc	36.8	42.5	41.9	26.6
Public admin., education & health	48.7	49.3	55.4	20.4
Other services	29.6	39.6	32.8	32.6[2]
All industries	**34.0**	**42.7**	**39.4**	**25.4**

1 Agriculture not included.
2 Transport and communications and other services treated as one combined industry sector.
Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Table 8.5); Futureskills Scotland, 2002; Hughes *et al*, 2002, 2003.

Table B4.19 Establishments providing off-the-job training by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland	Wales
	%	%	%
1-9	32	45	45
10-49	66	75	74
50-249	85	87	90
250+	86	86	93
All	**42**	**54**	**53**

Sources: DEL, 2003; Futureskills Scotland, 2002; FSW 2003.

Table B4.20 Establishments providing off-the-job training by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	26	26
5-24	52	59
25-49	77	79
50-99	84	86
100-199	85	90
200+	88	92
All	**42**	**37**

Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Table 8.4); Futureskills Scotland, 2002.

Table B4.21 Proportion of staff receiving off-the-job training by establishment size: N. Ireland and Scotland

Number of employees:	N. Ireland	Scotland
	%	%
1-9	23.5	35.8
10-49	32.8	48.0
50-249	36.5	48.7
250+	42.6	35.5
All	**34.0**	**42.7**

Sources: DEL, 2003; Futureskills Scotland, 2002.

Table B4.22 Proportion of staff receiving off-the-job training by establishment size: N. Ireland and England

Number of employees:	N. Ireland	England
	%	%
1-4	20.5	19.1
5-24	28.8	30.0
25-49	34.9	36.9
50-99	34.2	39.2
100-199	36.4	45.2
200+	43.1	53.1
All	**34.0**	**39.2**

Sources: DEL, 2003; ESS 2001 (Dickerson and Wilson, 2003, Table 8.5).

Table B5.1 Establishments reporting one or more vacancies

	N. Ireland	Scotland	England	Wales
	%	*%*	*%*	*%*
Current vacancies				
One or more	16	18	14	22
Difficult-to-fill vacancies				
One or more	10	10	8	14
% of all with a current vacancy	62	55	52	64
External skill-shortage vacancies				
One or more	4	4	4	7
% of all with a current vacancy	26	19	25	32
% of all with a difficult-to-fill vacancy	41	35	49	50

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003.

Table B5.2 Vacancies: Summary

	N. Ireland	Scotland	England	Wales	Rep. of Ireland
	%	%	%	%	%
Current vacancies					
% of employment	2.6	3.1	3.7	2.0	3.6
Difficult-to-fill vacancies					
% of employment	1.5	1.4	1.7	1.1	n.a.
% of current vacancies	60	46	47	55	n.a.
External skill-shortage vacancies					
% of employment	0.5	0.6	0.8	0.5	n.a.
% of current vacancies	20	18	21	25	n.a.
% of difficult-to-fill vacancies	33	39	44	45	n.a.

Sources: DEL, 2003; ESS 2001; Futureskills Scotland, 2002; Future Skills Wales, 2003; Hughes *et al*, 2002, 2003.

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