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The Extent to Which Employer Data on Employment and Skill Issues in the UK are Fit for Purpose

(Contributing to the Debate: Assessing the Evidence Base on Skills and Employment in the UK)

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Contents

Summary

Summary

The question
This paper addresses the extent to which employer data on employment and skill Issues in the UK are fit for purpose. This appears at first glance to be a quite straightforward question. However, as one begins to unpick what the question means it soon becomes clear that things may not be quite so simple. What do we mean by employer data? Where do we draw the line in defining data that are relevant to employment and skills issues, and how should fitness for purpose be defined? To provide useful answers to the main question requires that these other issues be addressed.

Uses and users
The fitness for purpose question is obviously dependent upon the uses to which the data will be put and who will use it. For many years labour market information (LMI) was seen as primarily aimed at policy makers and key stakeholders, for use in planning and managing labour markets and educational and training systems. While it may still play such a role in some countries, it is increasingly being seen as even more important for ensuring that individual citizens and organisations are as well informed as they can be about the choices and decision that they make. It is not therefore about centralised planning and control but about empowering individual people and organisations by informing them about what is going on around them.

LMI is in many respects a public good, and as such the State has key role to play in ensuring that it is provided. It is interesting that the country that invests most in LMI is the USA. This is done, not with the aim of central control of the labour market and education and training systems, but with the objective of providing its citizens and organisations with the best possible information about the economic and labour market environment they face. This includes detailed quantitative projections of where things might go in the future, as well as where we have been.

Information obtained from employers is a key element in this. There are many different kinds of data that can be obtained from employers. These serve many different purposes. There are some difficult decisions to be made about priorities, and what represents best value for money.

Concepts, classifications, definitions and measurement
Scientific progress is dependent upon precision in defining and measuring whatever it is we are trying to understand. It is therefore important to ensure some clarity in the terms being used. The paper provides a brief summary of some key conceptual and definitional issues. It defines the meaning of a job and skills, focussing attention the central role of occupation. It also discusses the problems involved in trying to define skill shortages and gaps skills needs.

The importance of achieving consistency over time as well as across geographical boundaries is emphasised, if meaningful analysis and comparisons are to be made. The paper cautions against the temptation to reinvent the wheel or to reject standard systems of classification which have taken many years to develop. The key role of SIC and SOC, as well as systems to classify qualifications and other aspects of skill is highlighted

A Proliferation of surveys?
Even a cursory review suggests that there are many surveys of employers in the UK. These have many different aims, not all of which are related to directly to employment and skills. In addition to the well established Employer Skills Survey (ESS) series, there are many others which (either directly or indirectly) have an important bearing on the understanding of skills and employment issues. There also many other sources of LMI that are important to employment and skills issues other

than those based on surveying employers. It is apparent however that there are some data needs that can only be served by approaching employers directly.

Having said that, not all the questions that we might like to ask about skills and employment issues can be answered by direct questions to employers. Often indirect approaches are necessary to get robust insights into socioeconomic behaviour, looking at how employers and other labour market participants behave rather than focusing on their perceptions or opinions.

Setting up a new survey is often a knee jerk reaction to a problem. It generates immediate information and ticks various boxes in terms of being seen to be addressing the issue. It is however not always the right long-term solution. While asking employers direct question might seem like the obvious way to approach a problem it does not guarantee the right answers. Perceptions and responses may be biased (explicitly and deliberately to influence government actions, or implicitly). They may also be ill informed and mistaken. Careful design of survey instruments can avoid some (but maybe not all) of these problems. But at the end of the day many social scientists (especially economists) will argue that we should judge not by what individuals (people or organisations) say, but by what they do. There is strong case therefore for focussing survey questions on matters of fact, rather than opinions and perceptions.

It is also plain that there are many different data requirements in this general area, and that it is not possible for a single instrument to cover all these needs. The paper suggests some issues to be considered in prioritising these (sometimes conflicting) requirements, and assessing how they can best be met.

Beyond ESS

In recent years the UK has invested large sums of public money in Employer Skills Surveys. This has generated an enormous amount of data and information. While some of this is undoubtedly useful, this paper raises some questions about whether such surveys have addressed the top priority questions that an ideal LMI system should be focused upon.

Getting the right LMI from employers is not just about Employer Skills Surveys. We need much more than this, including basic data on economic activity levels, employment and pay. There are some key gaps in these areas

Critics of the ESS series have argued that they are focused too much on marginal groups and marginal questions. With almost 10 years experience of such surveys now available it is clear that:

- only a relatively small % of employers and employees are affected;
- not very much has changed over this period;
- where change has taken place it suggest that problem of skill deficiencies may be largely ephemeral, appearing as external shocks impact on the labour market, but then disappearing as the labour market adjusts;
- where problems are persistent they often reflect well known problems of market failure, especially the involvement of the State in various parts of the public sector;
- the focus of such surveys is generally on only the small % of employers with skill shortage vacancies or skill gaps, with little or no information about the changing skill needs of the vast bulk of the labour market;
- Although there are some differences at a detailed level by sector and by geographical area, there are many more common issues and trends.

The ESS series may not be the most cost effective way of obtaining the very detailed information that is most needed (as opposed to what is currently collected).

Beyond national borders

It is no longer possible to focus on purely national boundaries. Within the UK there is a need for much greater consistency between countries and to benefit from economies of scale in generating basic LMI.

There is also a need to question the benefits of local level data when many (most?) problems, trends and issues are common and generic. Of course, every local area and individual sector has its own specific issues, and in an ideal world with unlimited resources… .but in the real world with limited funding, we need to prioritise.

Beyond the UK's boundaries, we need to recognise that we are now operating in global labour markets and that, in particular with Europe, our borders are increasingly porous. People at all levels now see the whole of Europe as their potential job market. They will not be constrained by national boundaries. LMI, and thinking about such issues, needs to reflect this. Information needs to be comparable and consistent across such boundaries. Further harmonisation should be a top priority.

Understanding links between skills and performance
As noted already, it is clear that one survey instrument cannot possible provide all the information that analysts and policy makers would like to have available to inform their understanding of skill and employment issues.

Basic statistical information on the drivers of skill demand, as well as measures of skills and employment, are an essential starting point. Special skill surveys can enhance this, especially if the information can be linked into the more basic data. However such research, based on linked data resources, is complex and difficult to set up, and requires long time scales and adequate resources. Examples of such work going back to the very first ESS are discussed below.

It is argued that separate surveys are probably needed to obtain: basic economic and labour market data; information about current skill deficiencies; and more complex information about and range of other issues relating to employer behaviour and performance.

The way forward
This paper confirms that the current LMI on employment and skills issues in the UK has many strengths. It has also identified a number of gaps at UK level (and in some respects beyond that at a pan-European level).

A top priority should be to establish a much sounder statistical foundation for understanding the current demand for skills for employers, by moving closer to the kind of Occupational Employment Statistics survey conducted in the USA. This would provide a much more robust and detailed picture of the state of demand for skills than is currently available from either employer surveys or household surveys (such as the LFS). In the UK it is conceivable that the ASHE could be developed by ONS to provide such data, at relatively modest marginal cost.

The ESS series should be continued but probably on a more modest scale. The value of a more coordinated approach between countries within the UK seems clear and the organisations involved should make greater efforts to coordinate and harmonise their efforts in this area. Overlaps with other surveys dealing with training should be examined and duplication of effort avoided.

We need to focus on building on what we already have, and on learning from (and in some cases stealing from others, notably by exploiting the US O*NET system of skill needs within occupations).

1. Introduction

1.1 Background

This document is a response to the UK Commission for Employment and Skills' (UKCES) invitation to contribute to the debate on whether existing labour market information (LMI) is fit for purpose. The Leitch Review identified the need to improve the quality of LMI. The UKCES, with its UK-wide remit and role in monitoring the whole employment and skills system, has been tasked to take this work forward.

It is taken as given in the terms of reference for this project that a first class LMI system is integral to the efficient functioning of the labour market. The UKCES will be producing a new, enhanced, *standard*, and *framework*, for sectoral LMI to be deployed by the Sector Skills Councils (SSCs). However its remit is broader than this, and it will be working with partners to improve the general quality of LMI across the UK, ensuring its suitability for purpose, rigour, consistency and reliability. The UKCES is planning to work with partners across the skills and employment system, many of which are already involved in collecting LMI, to pool and synthesise existing sources into a common LMI framework.

LMI and statistical data generally are needed for a variety of different purposes. The Office for National Statistics (ONS) highlights numerous uses including: the general management of the economy; assessment and collection of taxes; analysis of economic and labour market developments, including modelling and setting of benchmarks and targets; and the planning of education and training systems and interventions.[1] In the UK and other countries it is increasingly being recognised that LMI also plays a key role in informing all citizens about the environment that they face.

[1] According to the ONS website reliable and impartial statistics are vital for planning the proper allocation of resources, policy-making and decision-making to ensure a fair society. Trusted and reliable statistics form one of the foundations of an effective democracy. Official statistics are also a building block for open and transparent government, effective public administration, and efficient operation of the economy and society. They provide everyone in the wider community with the statistical information, analysis and advice they need to improve decision making, inform debate and stimulate research.

ONS state that Official statistics are used to:

- inform parliaments and political assemblies about the state of the nation and provide a window on the work and performance of governments. This allows them to assess the impact of their policies over time and between different areas;
- provide ministers with a picture of the economy and society, enabling them to formulate economic and social policies and to monitor and evaluate their delivery;
- permit government and its agencies, at all levels, to carry out their business efficiently and effectively and make informed decisions based on evidence;
- provide citizens with a view of society and of the work and performance of government. Statistics show the scale of government activity in every area of public policy, allowing the impact of government policies and actions to be assessed;
- furnish businesses with a statistical service that promotes the effective and efficient functioning of industry and commerce;
- assist analysts, researchers, scholars and students with their work and studies
- meet the needs of the European Union and other international bodies for international comparisons of data.

1.2 Aims

The aims of this paper are based on the original terms of reference set by UKCES. These were to:

- provide an overview of issues in this area;
- examine whether available employer data (specifically relating to employment and skills issues) in the UK are fit for purpose as a source of consistent and comparable LMI to inform policy deliberations, as well as meeting other needs for LMI;
- identify any key gaps in the data currently available; and
- make proposals as to how it can be improved; and

The overall aim is help to contribute to a debate amongst LMI practitioners across the UK, about the consistent development and improvement of LMI in the UK. The paper is intended as an input into one of a series of workshops to be held with the UKCES and its partners, to engage them in discussions about how to improve current sources of LMI. It focuses upon data collected from employers that is needed to understand issues relating to skills and employment.

The increasing realisation of the significance of investment in human capital and skills as a key determinant of international competition has led to a rising demand for robust LMI on skills and related issues across the world. This paper focuses upon data that have to be collected from employers in order to understand these issues in depth. This involves examining practice within the UK, but also considering what lessons can learned from some other countries (notably the USA).

Drawing upon lessons from the rest of the world, it is apparent that any in-depth assessment requires the consideration of a much broader range of surveys than simply those concerned directly with issues of skills and training. While these are important there area number of other kinds of information that need to be obtained from employers in order to provide a firm foundation for thinking about skills and employment issues.

The overall objectives of the project are:

- to assess the different data requirements to achieve these general aims;
- to explore the extent to which existing data are fit for purpose; and
- to help develop proposals for the development of employer-based data in the future which are better aligned to need.

1.3 Key research questions

There are currently numerous surveys of employers, conducted on a more or less regular basis, which provide employment and skills-related information across the UK. Following the original terms of reference, this paper considers a range of key questions about these and some other relevant surveys:

i. are they focussed on the right questions (in particular is the focus on skill shortages and gaps appropriate)?;
ii. are the data gathered robust; do they provide an accurate and comprehensive picture?
iii. is the coverage appropriate (in terms of geography, sector, size of company etc);?
iv. is the lack of harmonised UK-wide data problematic?
v. are current sample sizes adequate?;
vi. is there a need for further employer based information?;
vii. are new instruments required?
viii. are the methodologies (mainly telephone surveys) the most appropriate, (could other data gathering techniques be developed)?
ix. are the data being gathered in the most efficient and effective form to meet varying stakeholder needs (at sectoral, international, national, regional and sub-regional levels)?

The paper therefore needs to address various technical questions, including sampling strategies, sampling frames, sample size, definitions and questionnaire design. It also has to grapple with more basic issues of what kinds of LMI are needed and for what purposes.

1.4 Structure of the paper

The remainder of this paper is structured as follows. Section 2 begins with a brief overview of the role of the State in providing LMI, setting out the case for core LMI to be treated as a public good and therefore provided by the State. It then outlines the various ways in which the State can support the analysis of changing skills needs, including investment in basic statistical infrastructure such as Standard systems for classification of industries, occupations and qualifications. It briefly discusses the main uses and users of such LMI in general, before going on to outline the main purposes and rationale for carrying out regular national employer surveys.

This is followed in Section 3 with some key definitions and concepts. It is argued that it is essential to define terms such as jobs and skills, as well as concepts such as skills imbalances (shortages, skill gaps, and over supply of skills). Understanding of changes in skill needs requires an understanding also of the key drivers (innovation, and technical change and economic developments) as well as the causes and consequences of skills imbalances. This has significant implications for the aims and objectives, as well as design, of employer surveys.

Section 4 steps back to consider the overall aims and objectives of employer surveys, including some lessons from international experience. It considers the broader aims and objectives of employer surveys in this general area, drawing upon the previous section, but also considering the experience of other countries. The multiplicity of aims of employer surveys, as well as the complementary role of Surveys of Households (such as the Census of Population, Labour Force Surveys), is examined. The significance of employer survey data for assessing both changing current and anticipated future skill needs is discussed, highlighting the different types of data required. The needs of a range of other potential uses for employer based data are also considered. It is clear that there are a number of reasons that

employers need to be questioned about skills and employment issues, and that it is unlikely that a single survey instrument can meet all these needs. The broader context is considered by reviewing the possibilities for developing harmonised employer surveys across Europe. The section concludes with an overview of general considerations to be taken into account in developing employer surveys on skills issues

Section 5 moves on to review the existing UK surveys of employers relating to employment and skills. It highlights the large range of existing surveys, including major official surveys such as the Annual Business Inquiry (ABI) and others, as well as the more obvious Employer Skills Surveys (ESS). It covers all the main surveys of employers conducted in the UK which are relevant to understanding issues to do with employment and skills. It argues that this list needs to go well beyond the ESS series which have focused on skill shortages and gaps, and on training. It is also necessary to consider surveys that are aimed at producing more general robust economic data related to employment and skills. The discussion highlights key features of all the relevant UK surveys, summarising some of their strengths and weaknesses. This includes a critical assessment of the ESS series, based on experience over the past decade.

Finally, Section 6 draws out the main implications and lessons for UKCES. It returns to the key questions set out in Section 1.3 and attempts to provide some answers, based on UK and international experience. It concludes that the UK is in many respects well provided with LMI. However, there are also a number of problems which need to be addressed by the UKCES in its role in ensuring that UK LMI is suitable for purpose, rigorous, consistent and reliable. In particular, these relate to the focus and scale of NESS and related surveys. The paper suggests there is a need for a quite radical rethink about the purpose and methodology adopted for NESS in England, and corresponding surveys in other countries within the UK.

2. The role of the State in providing LMI

2.1 The ways the State can support skills needs analysis

National governments can provide technical support for assessing and anticipating changing skill needs in a number of ways. Based on a review of experience worldwide (Wilson 2008), the key elements have been:

- The development of standard systems of classification (especially industry, occupation and qualifications);
- The introduction of regular national surveys of households and employers in order to help measure key trends;
- The development of means of access to these datasets electronically;
- Investment in general economic modelling and analytical techniques to exploit these data and thereby improve the understanding causes and consequences of the trends observed.

In many countries it is accepted that the State has an obligation to provide labour market information (LMI) and other statistical information as a *public good*. Although LMI does not meet all the criteria for defining a public good it is generally "non-rivalrous" (one person's consumption of it does not diminish anybody else's) and (when it is made freely available) it is "non-excludable" (no person is excluded from consuming it).[2] Because there is the possibility of some LMI being provided privately, it is not classic public good in the same way as are the legal system or defence. However when coupled with other arguments such as economies of scale, market failure, merit goods and inequality, a case can be made for the State taking the prime if not the whole responsibility for provision of basic LMI.[3]

This responsibility is taken very seriously in the USA, which is one of the most market oriented of all economies. The Federal government, as well as many individual State governments, spend many millions of dollars each year on generating and disseminating such information. This is not in an attempt to plan or manage the economy and labour market in precise detail but in order to provide all its citizens with the information they need to make informed choices and decisions and to ensure that markets work efficiently.

2.2 Standard systems for classification

Classification of Industries, Occupations and Qualifications

A standard system of classifying economic activity and employment is essential to any systematic attempt to assess changing skill needs. Analysts and statisticians have identified industry (or sector), occupation and qualification as key dimensions. Considerable effort has been expended on developing standard systems for classifying both industries and occupations, facilitating comparisons over time and across different data sources The UK has gradually been moving towards a more harmonised system, including consistency with international standards set by the ILO. Most official data have adopted the Standard Occupational Classification (SOC) and the Standard Industrial Classification (SIC) for defining employment and related indicators by occupation and sector. Rather less effort has been expended by official statisticians on trying to standardise the classification and treatment of qualifications.

[2] See Bosworth (2008) for more detailed discussion.
[3] *Op cit.*.

This has generally made much less progress, and in most countries there are serious difficulties of comparison within their own borders over time, let alone between countries. In the UK, qualifications have been defined in recent years according to the National Qualifications Framework (NQF).

Classification by sector

The Office for National Statistics has devoted considerable effort to refining both SOC and SIC in recent years. The development of the Sector Skills Councils (SSCs), which have been defined with “footprints” which cut across SIC categories, has complicated the picture. SSCs were set up to try to engage employers more directly in the process of investment in skills. The way in which the SSCs were set up paid little or no attention to existing systems for classifying economic activity and jobs. This in some respects continued the fashion established by the Training and Enterprise Councils (TECs) set up in the 1980s and 1990s to invent new systems for classifying both sectors and occupations that were (in their opinions) better suited to their immediate objectives. The vast improvements in IT at that time resulted in an explosion in the development of databases and primary data collection exercises at local level. Many of these were intended to assess current positions but others also look forward into the future. These included Skills Audits of local areas to supplement and update the information from official sources (household surveys), as well as local Surveys of Employers, intended to assess their skill needs. Often such work was subcontracted to specialist survey companies and labour market consultancies. Although this increase in availability of relevant LMII is to be applauded, there were many problems related to inconsistencies in methodology and definitions, which made it much less useful than it might otherwise have been. Although there are benefits to diversity and new approaches, there is also a very strong case for a more coordinated approach that takes advantage of economies of scale and benefits from synergy and cross-fertilization. Unfortunately the attempts to develop more customised systems for classification often failed to recognise the complexities involved in their development, and has served to undermine much previous hard work by government analysts and statisticians to develop useful and meaningful taxonomies.

Much of the official data based on standard systems of classification is not well suited to match the SSC footprints, although it is usually possible (with some effort) to recast the information in a form that more closely matches them. More recently some data such as the most recent NESS have been collected on this basis. While this might meet the immediate needs of the SSCs it causes considerable complications when it comes to making international comparisons, which are based on systems of classification developed by the ILO and other international agencies. It also means that there is no well established time series data to set current developments into any kind of historical context.

Classification by occupation

A number of analysts working for SSCs have also criticised the SOC, claiming that it fails to meet their requirements. Although SOC includes a very large number of occupational job titles, there are sometimes categories that appear not to be covered, especially in areas where new jobs are being developed. Other problems arise because of the need for greater emphasis on other aspects of skills. As with sectors, these difficulties have often resulted in the development of *ad hoc* systems for classifying occupations. While they may meet some immediate need, they have limited value if attempts are made to make comparisons with other data, including changes over time or across countries. Such *ad hoc* solutions frequently fail to

recognise the complexities of these issues and the enormous efforts that have gone into developing the official standards.

Given the increasingly international nature of many labour markets, the need to move towards (rather than away from) harmonisation with the international standards should be given a high priority.

Classification by qualification

Attempts have also been made to standardise the classification and treatment of qualifications. This has generally made less progress and in most countries there remain serious difficulties of comparison within their own borders over time, let alone between countries.

Other measures of skill

While occupation and qualification have been the most commonly used measures of skills, there has been a clear trend towards placing greater emphasis on other aspects including competences and what are variously referred to as key, core and generic skills. These often veer into personal characteristics and behaviours rather than skills or knowledge that can be acquired via some form of conventional education or training.

This is a hugely complex area. On one level it descends to the trivial and trite. Many of the “skills” emphasised are a bit like “apple pie”. What employer would want illiterate or innumerate workers? At the other extreme, as the Americans have demonstrated with their O*NET system, such terms can require enormous amounts of information to define them precisely. The BLS has invested millions of dollars in the O*NET system but some might question its fitness for purpose and value for money. The work of Felstead *et al* (2007) demonstrates that much is possible from a more modest approach. This is now being extended to an international level via the PIAAC project.

2.3 Uses and Users

For many years labour market information (LMI) was collected primarily for the benefit of policy makers and key stakeholders. It was intended for use in planning and managing both labour markets and educational and training systems. The systems set up in the USA during the early 1950s were first designed to help facilitate the movement back into work of ex servicemen. In France indicative planning was seen as the key to economic development. The earliest attempt to project the economy and labour market were all closely tied up with managing the economy and often quite mechanistic attempts to plan educational systems. Parnes (1962) was typical of early attempts to apply such techniques to educational planning in the countries that participated in the OECD Mediterranean Regional Project in the 1960s. See Wilson (2008) for a brief review of this literature.

Since the 1970s the focus has shifted from the provision of management information to policy makers to producing LMI for a much wider audience. LMI is now seen as an essential element in ensuring that all citizens and organisations are properly informed about the economic and labour market environment. This information can help markets to operate efficiently and ensure that choices and decisions are well grounded. LMI is therefore now not so much about centralised planning and control but more about empowering individual people and organisations by informing them about what is going on around them.

As argued above, LMI can be seen as a public good, which should in part at least be provided by the State. It is interesting that the country that probably invests more in

LMI than any other is the USA. This is done, not to control the labour market and education and training systems centrally, but in order to give individual citizens and organisations detailed information about the economic and labour market environment they face. This does not just include historical data, but also detailed projections of possible future developments.

2.4 Purposes of Regular National Surveys of Employers

Monitoring sectoral performance

Monitoring the performance of different sectors of the economy (in particular in terms of output and employment) is a key component in the LMI needed to manage the economy. This must come from employers. In many countries, such as the USA, UK, and much of northern Europe, the State conducts good quality *Censuses* or *Surveys of Economic Activity*, which form the basis of such information. These form a key input into the *National Accounts*. A prime objective in collecting such data relates to administrative and tax collection. However, increasingly such information has come to be seen as a key element in monitoring and managing the economy, being used by both government and financial analysts to model and understand current and possible future developments.[4]

There are many other ways that employer surveys can throw light on skills and employment issues. These are summarised in Section 3.

Employers surveys can be used to collect two main types of information:

i. Robust information on matters of fact (such as current sales or level of employment, as well as skill structures and trends); or

ii. opinions and perceptions (about the current situation or the future).

In practice, the distinction between the two is not always so clear cut. However it serves to emphasise that some of the information gathered is much more subjective than others. While asking peoples opinions and exploring their understanding and rationale for their behaviour has its merits, followers of positive economic thinkers such as Milton Friedman are keen to focus on observing how people (individuals, employers, etc) actually behave and then trying to explain this behaviour using analytical approaches.

A number of the relevant UK employer surveys are focussed on (i), aiming to measure levels of economic activity, types of employment, earnings or hours worked. In an objective fashion. Others are more interested obtaining more subjective information and impressions about skill needs, causes and implications. It can be argued that the emphasis in the UK has moved too much in favour of the latter and that a greater focus on the "basics" would be beneficial.

Before developing such a case it is helpful to provide a brief overview of the main surveys that are currently conducted on a regular basis in the UK.

Measuring Changing Occupational Structure

Surveys of Employers (enterprises/establishments) and surveys of Households (Labour Force Surveys) have both been used measure changes in occupational employment structure within sectors. Both have their own advantages and disadvantages for these purposes. Both have the advantage of producing information in a relatively short space of time.

Employer surveys can provide a range of information, including a measure of occupational structure ***within*** industries, as well as current recruitment problems and

[4] See footnote 1 above for further details.

other skill deficiencies. They have also been used to assess employers' opinions and perceptions on future skill needs, as well as the cause and consequences of skill deficiencies.

They have the great advantage that, in principle, they provide a very direct measure of skill demand. In the USA the Occupational Employment Statistics (OES) survey provides a classic example of such an approach, but this focuses on facts (what employers actually do) rather than their opinions or perceptions.

However, in most European countries (including the UK), it is Household surveys have become the norm for obtaining overall measures of occupational employment structure. A substantial increase in sample size has often been needed to deliver robust statistics at anything like the detailed sectoral and occupational levels required. A major concern in a number of countries is the quality of information available from the LFS on current occupational structure, and ongoing trends, within sectors. This is in part an issue about inadequate sample size to achieve robust estimates. However it also concerns the reliability of the information obtained (due to use of proxy responses, bias and lack of focus).

The first problem with the LFS can be addressed by increasing the sample size. Alternatively both problems can be tackled by carrying out larger and more consistent employer surveys (as is done in the USA), but both these options are costly. Although there might be some merit in getting individual sectors involved in the process of conducting employer surveys (and indeed some SSCs are already involved in such initiatives) there are substantial advantages in centralising this process. These advantages include economies of scale, as well as consistency across sectors.

The international context

Most existing employer surveys have a narrow national focus. However it is becoming clear that we live and operate in a global environment, with many labour markets stretching beyond national boundaries. For many years the boundaries between the constituent countries of the UK have had little meaning from a labour market perspective. This pattern is now being repeated across a broader European dimension, with massive flow of people, as well as goods and services, across international borders. This raises important questions about what the appropriate focus of LMI should be. It also raises issues about the priority to be attached to ensuring consistency and comparability across these borders. As noted below, this has caused some problems within the UK, with results from surveys such as the ESS series often being incompatible. Such problems are multiplied manifold if one attempts to make comparisons across European boundaries. Yet much labour market activity cannot be properly understood in a purely narrow national context.

3. Some key definitions and concepts

3.1 The need to define terms

Before examining the existing UK surveys in detail it is important to clarify various conceptual and definitional issues. These include what information employer surveys can reasonably be expected to provide about:

- present and future skill needs;
- recruitment and business planning practices;
- training and investment in human capital.

Given the broad range of types of information required it is doubtful that there will be one survey instrument that can meet all these aims.

It is also important to establish some minimal definitions of what is meant by the general term skills as well as other concepts such as jobs, occupations, qualifications, competences and skill gaps.

Conceptual issues such as how skill needs can be measured are also an important prerequisite for identifying some of the key elements in any "ideal" LMI system. An appropriate methodological approach is also essential for the efficient implementation of any employer survey, taking account of both quality of information needed and the cost of its collection. These methodological considerations need to cover issues such as the statistical validity of results, timeliness, accuracy and comparability (across both surveys and categories (such as sectors or countries)).

3.2 Defining jobs

The Migration Advisory Committee (MAC, 2008) argues that the notion of a job represents a basic element in the employment relationship. It is defined as a set of tasks or duties to be carried out by the employee and recognised primarily by the associated job title. The 26,000 official job titles distinguished in SOC 2000 are translated via an elaborate coding process into index into one of the 353 unit (4 digit level) groups.[5]

Table 3.1: Job titles and associated occupations

Level/ Group/ Title	Digit	No. for all occupations	SOC 2000 code	Exemplar occupational titles and categories
Major group	1	9	2	Professional occupations
Sub-major group	2	25	21	Science and technology professionals
Minor group	3	81	212	Engineering professionals
Unit group	4	353	2122	Mechanical engineers
Job title	n/a	26,000	n/a	Engineer, aerospace

Source Adopted from Box 4.2 in MAC (2008).

[5] Currently there are no official data available at the job title level and very few reliable statistics at the 4 digit level. The MAC report makes maximum use of the 3 and 4 digit level data available from the LFS and NESS, but the latter is not generally available and required considerable additional recoding work.

3.3 Defining skills

Wilson *et al*. (2003) argue that two broad, practical approaches to defining skill can be identified:

- Based on the attributes of individuals – their formal qualifications, and/or the skills that individuals say they possess;
- Defined by the characteristics of the jobs that people do – their occupations, or employers' assessment of the work that they do and the skills they use.

These different approaches can lead to rather different assessments of skills and skill needs, and there is scope for disagreement as to what constitutes a skill, and how much of that particular skill individuals possess, or use in their jobs.

Different disciplines have approached this question in different ways:

- Sociologists focus on the social construction and social context of skills;
- Economists focus on quantitative measures of formal academic qualifications, work experience and training, linked to implications for productivity and pay;
- Psychologists concentrate on methods of formal job analysis aimed at providing objective measures of job characteristics based on job evaluations (often using very detailed questionnaires, which are frequently now used to help companies set pay for comparable jobs).

The Migration Advisory Committee (MAC, 2008) identifies five main indicators of skill:

- position in the Standard Occupational Classification (SOC) hierarchy;
- formal qualifications (above NQF level 3);
- earnings (compared with the median for all occupations);
- on-the-job training or experience required to carry out the job to the appropriate level; and
- innate ability required to carry out the job to the appropriate level.

The MAC report analyses the first three systematically and quantitatively, using LFS data. For the last it relies upon more qualitative evidence.

Skills can therefore be defined and measured in various ways. The most commonly used methods are:

- occupation; and
- qualification.

These both have the considerable advantages of being well established, easily understood, and relatively straightforward to measure.

Increasingly in recent years employers and others have emphasised the need to consider other aspects of skill. This places the focus on competence and often personal characteristics. Over the past 20 years much more effort has been placed on measuring what are variously referred to as:

- soft, key, core or generic skills.

Following the ECVET classification competences are usually classified into three types: (i) theoretical knowledge; (ii) technical skills; and (iii) social competences. The notion of skills therefore goes well beyond a narrow concept of technical knowledge and experience. Rather they describe a multi-dimensional set of abilities needed to perform a professional task efficiently. Skills are understood as the combination of different theoretical, technical and social abilities. Together these form the skills profiles needed in a particular occupation. The profiles describe occupational tasks. Occupational titles are a shorthand symbols for this combination of profiles.

Occupation remains the most common means of describing skills required by employees in the workplace. But despite efforts at harmonisation there are still problems with reaching common international understandings about such terms (for example, there is a wide range of country-specific understandings of occupational titles such as “managers”). In the UK and Europe more generally there is also still a big gap in our understanding of the detailed breakdown of tasks and elements which make up a job compared with the situation the USA with their detailed O*NET system.[6] , [7]

3.4 The central importance of occupation

Scientific progress requires taxonomy and measurement for each of these different measures of skill. All are important but perhaps the most fundamental is robust information on occupation (especially differentiated by sector). This is a crucial part of the statistical infrastructure. It is an essential element in understanding the current situation and, from that foundation, assessing possible future developments. Other things are also important but without these core data it is impossible to develop robust measures of skill demand.

This requires an employer survey. This is not so much about a need to obtain employers’ opinions, but rather focusing on what employers actually do. Monitoring and directly measuring actual skill demand as indicated by the types of jobs they pay people to undertake. The focus should be on real needs, what skills employers reveal they require (not necessarily what they perceive or say). How they behave is the key - who do they employ and in what positions? Other surveys can then help to translate this into demand for qualifications and/or key/generic skills.

3.5 Defining Skill Shortages (imbalances, skill gaps, and over supply of skills)

Skill shortages, skill gaps, and the over-supply of skills are labour market concepts which describe possible imbalances between the supply of and the demand for skills. In some sense they are marginal, representing the difference between two much large numbers (demand and supply). In employer surveys they are typically reflected in a range of indicators such as hard-to-fill vacancies, sub-optimal deployment and / or difficulties in the recruitment of labour, etc. In recent years a distinction has often been made between *external* recruitment difficulties arising from problems in finding the skills required from the external labour market and internal difficulties with the existing work force not having the skills or proficiencies needed to do their jobs properly. The term skill gap is now commonly used to refer to problems with the competency of the existing workforce to meet the production needs of the organisation. The latter are more difficult to measure in surveys, with quite different results emerging depending on precisely how the question is asked (as discussed in more detail in Section 4).

The MAC (2008) has recently produced a new review of definitions and measure of labour shortages. In line with many previous reviews they conclude that there is no universal measure that fills all needs. In considering whether an occupation is experiencing shortage they recommend using a range of indicators, including

[6] There is also a further dimension that focuses upon different professional functions such as: general management, financial and business administration, sales and marketing, various aspects of the production of goods and services, logistics, maintenance, etc.
[7] For details of O*NET see: http://online.onetcenter.org/

earnings, vacancies and unemployment, as well as employer perceptions based on employer surveys.

The MAC has developed a comprehensive set of data based on the 3 and 4 digit level of SOC, but note that this has some limitations, since employers often think of skills and shortages in much more specific terms. It argues that ideally it is necessary to look at more detailed categories. In the USA the BLS adopts a much more detailed analysis distinguishing over 800 occupations in both its projections work as well as other analyses.

Table 3.1 presents an example of how job titles used in the UK SOC relate to the occupational categories available in most data sets. In most cases the LMI available in the UK is only available at the 1 or 2 digit levels, occasionally at the 3 and 4 digit level and rarely if ever for individual job titles. That this is too crude for many purposes is reinforced by the response to the MACs report by some SSCs:. *"The MAC has rightly recognised the relationship between 'occupations' and the considerably larger number of Job Titles that broadly relate to an 'occupation'...But the reality is that, for many employers, it is Job Title, rather than Occupation, that is relevant*
for their 'skill needs'." Semta response to the MAC's call for evidence

3.6 Changes in skill needs

Overall changes in skill needs require a broader focus on the quantities of skills deployed. This is about the skills composition of the existing workforce and how this is developing, including replacement needs. This requires accurate measurement of the composition of the existing workforce plus some means of assessing how this is changing over time (key drivers of change), including factors leading to outflows from the current workforce. A time-series dimension is essential.

This can focus attention on the overall composition of the workforce, (which reflects the average skills composition for all jobs rather than new ones), or with a more differentiated approach, on the difference between the skills of currently employed workers and the skills needed in new jobs or replacements. The former is by far the most common approach and most attempts to quantify replacement needs assume a skill profile similar to the average for all existing jobs within the workplace.

Of course employers' views about their changing future skill needs can be surveyed directly. Such results tend to be biased by the individual views and preferences of employers, inconsistent and often contradictory. However such views can provide som e useful insights into recruitment or training decisions, especially in the short-term.

3.7 Key drivers: Innovation, technical change and skill needs

Skills are a derived demand, driven by the need to employ certain types of labour in order to produce goods and services that people will pay to consume. The levels of demand for these goods and services depend on a number of key drivers. These include: factors determining whether these are provided locally or from abroad, such as relative costs and prices, together with factors which determine the technology used. These are all, therefore, key drivers of changing skill demands. The impact of innovation and technical/organisational change on skill needs is often a key concern. This last set of factors can also influence the types of goods and service produced, as well as the competitive position of the employer concerned.

3.8 Causes and consequences of skills imbalances

Skill imbalances arise from divergence between the demand for and supply of skills and demand. Product markets and organisational/technological factors help to determine the structure of labour demand. Demographic and human capital investment decisions help to determine supply. Imbalances, which are influenced by interactions between the supply and demand sides, will of course result in other adjustments including wages, occupational mobility, migration, etc.

Although wage adjustment plays a central role in most economic approaches to understanding such issues, this kind of adjustment is usually a relatively minor element in most surveys. Such surveys often do include activities of employers to combat skill shortages, e.g. through measures to improve labour retention, training activities, as well as measures to raise the attractiveness of jobs in the company, wage adjustments, terms and conditions of employment etc.

3.9 Implications for employer skills surveys

In principle, employer surveys can be used to try to measure all of these elements. This covers not just the skills composition of employment and the nature of external and internal skill deficiencies, but also the causes and consequences of these deficiencies, including exploring links between innovation strategies, capital investment and business reorganisation.

In practice, there are limits to what can be achieved by a purely survey based approach. These relate to how much one can infer from what employers say as opposed to how they may actually behave. There are also limits to what can be achieved within a single survey, especially one based on telephone interview techniques, which need to be kept within strict time limits to maximise response rates. Both these issues are revisited in Sections 4 and 5 below.

4. Aims and objectives of employer surveys, including lessons from international experience

4.1 Aims of employer surveys

The workshop organised by Cedefop in conjunction with the OECD, in Paris in May 2008,[8] highlighted the many possible aims of employer surveys. There are potentially many disparate interests and possible foci for such surveys. These include monitoring and measuring:

i. changes in levels of economic activity and employment (primarily distinguished by sector;
ii. information on changes in on patterns of historical employment structure (especially occupational structure and the other aspects of the demand for skills such as qualifications);
iii. data on other aspects of skills (such as key, core and generic skills), including the detailed analysis of the tasks required to undertake a particular occupation;;
iv. Information on pay, hours, conditions, of work, etc;
v. current skill shortages and skill gaps (including various kinds of vacancies);
vi. vacancy information based on public employment service administrative data;
vii. continuing vocational training and other employer investment in skills;
viii. possible future skill needs;
ix. industrial relations and related issues
x. recruitment practices;
xi. adaptation to change;
xii. links between skills and performance;
xiii. Perceptions and use of public interventions/services.

One employer survey cannot meet all these needs. A number of different survey instruments will be needed to provide robust and useful information on all these topics.

4.2 Role of Surveys of Households (Censuses of Population, Labour Force Surveys, etc)

Some of the objectives set out above can be, and often are, met by the use of household rather than employer surveys. Most countries conduct regular but infrequent Censuses of their Population. For many years this was the only source of detailed information on the occupational structure of the employed workforce. Such data sets remain a cornerstone for any analysis of changing occupational structure in many countries.

More recently, Labour Force Surveys (LFS) have become much more commonplace. These are effectively mini-censuses although usually being completed voluntarily rather than as a legal obligation, and focussing upon just a small sample of the total population. The LFS has been a key survey in Europe, member states being obliged

[8] May 2008, OECD (http://www.cedefop.europa.eu/index.asp?section=3&read=3327&sub=1).

to conduct such a survey on a regular basis and with a fairly standard set of questions. This has been a major step forward in terms of achieving international harmonisation.

The gradual improvement in the LFS, and in particular its recent increase in sample size, mean that it is now the prime source of data on occupational employment in the UK. However, it is still limited in its ability to provide accurate data for small geographical areas or particular sectors. There are also some other concerns about the reliability of the information as an indicator of changing skill needs.

The LFS enables the analysis of trends in occupational and qualification patterns, based on individual respondent's answers about the jobs they are employed in. However it does have limitations, especially if it is being used as a source for more detailed measurement of such patterns. Some of these are due to the inherent difficulties associated with a household as opposed to employer survey (use of proxy responses, bias in responses, etc). Others are more a reflection of limitations of sample size which makes the quality of the data for very detailed categories (e.g. occupation by sector at 3 or 4 digit levels) suspect due to problems of statistical "noise". This is of serious concern if one is interested in the detail for its own sake, both in terms of understanding structural changes in economy (the industry dimension), and changes in the way work is carried out (the occupational dimension and the demand for skills). Only some of these weaknesses can be dealt with by boosting sample size. The present data set can provide details down to a 3 and 4 digit level across all sectors. But if one is interested in change within sectors (which is crucial to an understanding of links between structural change and skill demand) then two digit data stretch the data set to its limits in terms of statistical reliability.

While it is clear that the LFS household survey provides an important and valuable source of information on changing occupational employment structure, it therefore has a number of technical limitations. Many of these are due to limited sample size, especially for identifying very detailed patterns within sectors. But there are also particular difficulties of getting reliable and unbiased information from individuals and often proxy respondents. Individuals may not have the same understanding of their jobs as do their employers. There may also be tendency to inflate job titles. Other limitations include the fact that the LFS only covers certain aspects of skill (notably occupation and qualifications). It does not deal with generic skills. In general, the household based LFS is much better suited to dealing with issues relating to supply than demand for labour. For the latter it is important to get an employer's perspective.

Compared to the huge survey of establishments conducted on a regular basis by the Bureau of Labour Statistics (BLS) for the USA, the LFS provides a very fuzzy and imprecise picture of trends in occupational structure. However, as always, considerations of cost are crucial. Few other countries have been prepared to devote as much resource to such data collection in this area as the USA.

4.3 Anticipation of changing future skill needs:

There have been various extensive reviews of research into anticipation of changing future skill needs. These cover many countries which have undertaken work of this nature. There are an enormous number of different methods and approaches that have been used to try to anticipate future education and training needs. These include both quantitative and qualitative methods.

No attempt is made here to provide a comprehensive description of all these studies; rather the emphasis is on providing some key insights, with some selected examples.[9]

The main general approaches adopted include:

i. Formal, national level, quantitative, model based projections;

ii. Surveys of opinion of employers or other groups, including setting up "observatories", focus groups, round tables and other Delphi style methods to reach a consensus view (these approaches may include some quantitative aspects but are generally more qualitative);

iii. *Ad hoc* sectoral or occupational studies (involving both quantitative methods) focussing on the situation in particular areas (which may involve elements of both i and ii.

iv. Qualitative methods based on *Scenario development* exercises which are based on expert opinion.

The UK system for anticipation of changing skill needs involves elements of all these approaches. Each has its strengths and weaknesses. The different approaches also have very different requirements in terms of data. Some, but not all require data to be collected from employers.

The first approach is probably the most demanding in terms of data required. It is dependent upon significant prior investment in data and modelling. The others tend to be less demanding, and are often adopted where such prior investments have not been made.

Employer surveys (of both fact and opinion/perception) lie at the heart of each of these, varying mostly in terms of the kinds of information that the statistician is trying to obtain. For (i), the key emphasis is on obtaining robust data on key economic and labour market indicators (matters of fact, such as levels of employment and economic activity, pay rates, etc). This may also be a key objective of any such surveys carried out as an input into (iii), although here the focus is often on concepts that are more difficult to measure such as skill shortages and gaps. This kind of approach also tends to place much more emphasis on matters of perception, attitudes and opinions. Often this is intended to provide a short cut to an understanding of causes and consequences, by asking people directly about their behaviour.[10]

Some sectoral studies, as well as Observatories based on geographical boundaries, can involve a number of other important elements, including in-depth interviews with employers and others, and (where it is feasible) more systematic quantitative modelling methods which attempt to test the hypotheses implied rather than simply relying on what people say. A range of different methodologies, and interaction with many different actors (education and training providers and other stakeholders as well as employers), is used in order to "triangulate" a view of the key problems and likely future developments from various different perspectives.

This type of approach usually involves a range of other non-quantitative methods, including the use of focus groups, round table discussions, scenario development exercises and similar mechanisms, to enable "soft" qualitative data to be incorporated into thinking about such issues, alongside the "harder" statistical information upon which most quantitative analysis is based.

[9] For further detailed discussion, see Wilson (2008) and the other references therein.
[10] As opposed to testing of hypotheses based on observed behaviour.

In recent years such assessments have often also had a strong geographical focus, with the setting up in many countries of regional observatories (and the like) to monitor changing skill needs at a more local level.

4.4 Data needed for monitoring and anticipating skill needs

It is clear from a review of practice worldwide that the data that are most useful in terms of monitoring and anticipating changing skill needs depend on the different approaches to anticipation of skill needs that are adopted, as well as the state of the existing statistical infrastructure.

The main method used across the world for projecting future skill needs, relies on quantitative analysis, based on formal econometric models (Wilson *et al.* 2004). Robust basic data on occupational employment structure within sectors are an essential prerequisite to building such models. This requires significant prior investment in statistical infrastructure as well as modelling and analytical techniques.

In countries where these investments have not been made attempts have been made to find "quick solutions" using employer surveys and more qualitative approaches as an alternative to such quantitative, modelling methods.

If the prime objective is anticipating future skills needs, then it might appear that the obvious thing to do if we want to know what employers skill needs is to ask them questions about possible future skill needs. However, past experience suggests that employers are not very good at anticipating their future skill needs (see the review in Wilson, *et al.* (2004)). Such results have usually turned out to be biased, inconsistent and generally unreliable.[11]

But surveys of employers are a key element in helping to anticipate changing skill needs. Such surveys can provide crucial insights into current trends, as well as providing the basic data for building quantitative models that can help to anticipate future change. The focus here, however, is on facts rather than opinions and perceptions, looking at what employers actually do, (explicitly measuring developments over time in their employment structures).

The Occupational Employment Statistics survey (OES) conducted by the Bureau of Labour Statistics in the USA provides an excellent examples of good practice. This survey delivers robust and very detailed data on both employment and pay that is highly valued by various users. Initiated in 1968, the OES has established a sound statistical base which supports a range of activities including the BLS's detailed projections of occupational employment. It is also used to provide LMI to the agency responsible for monitoring migration flows. The OES is used to provide crucial information on changing patterns of labour demand, as well as wages, which are used to help identify occupations for which there is a case to allow inward migration. Data on pay (as well as employment) enables the analysis of substitution effects as well as growth accounting.

The costs of conducting the OES survey, the related projection activities of the BLS and the complementary O*NET system (which focuses in more detail on changing generic skill needs within occupations) are substantial. This investment is supported by a government interested not in trying to plan the future in precise detail but in informing its citizens so that they can make the decisions about what skills to invest in. While a number of individual countries within Europe have some comparable data to that available from the OES, there is at present no pan-European equivalent.

[11] In Italy there has been some success reported from the Excelsior survey but this is focused upon just a few months ahead.

4.5 Needs of other users

Other users of LMI include the Migration Advisory Committee which has been set up to advise the government on various issues related to this topic, including the extent to which skill shortages might justify inward migration. Ideally this requires very detailed occupational data. In the US concerns about inward migration lead to the establishment and continued funding of the OES. The US OES survey is very detailed, including 800 plus occupations, which provides much greater insight into changing skill needs than the broad occupational categories possible when using sources such as the UK's LFS data. The Migration Advisory Committee (2008) has commented on the desirability of being able to analyse changes in the labour market at a more detailed level than the 353 categories at the SOC 4 digit level that can be undertaken using the LFS. The information currently available from NESS is generally even less detailed, providing data at just the 1 digit level of SOC (and this does not match the LFS data very closely). The data currently available for the UK are not fully fit for purpose and needs of the MAC (which currently mainly has a backward looking perspective) nor for other users (who require a forward looking perspective). They need to be improved urgently.

The response rate in the US to the OES survey is a very impressive 78%, which is very high for a voluntary survey. This is largely achieved through use of postal survey methods (backed up with internet feedback and query response) and an emphasis on civic responsibility.

The international literature reviewed by the MAC (2008) indicates that shortage indicators are used to guide policy advice in labour market and education and training matters as well as in the migration arena. The types of indicators used vary considerably. In the US, for example, the Bureau of Labor Statistics (Veneri, 1999) considers three main occupational indicators:

- employment growth rate compared to the average;
- wage increases compared to the average; and
- the unemployment rate compared to the average.

In each case these are at a considerable level of detail (distinguishing over 800 occupations). The US does not place much emphasis on the use of vacancies, nor on "direct" measures of skill shortages and "gaps" based on employer surveys. The view there is that, while such information can provide a useful complement to data on employment levels, it is not an essential component in measuring changing skill needs. Vacancies focus on the margins of the labour market and tend to be very ephemeral unless there are long-standing market failures.

In Canada, the Strategic Policy Research Directorate (2006) defines an occupation as being in an excess-demand situation using the same three indicators. The US and Canada use information on shortage occupations thus defined to inform decisions about investment in training as well as immigration.

According to Shah and Burke (2005), the Department of Education, Employment and Workplace Relations in Australia maintains the Migration Occupations in Demand List. This prioritises occupations in short supply. It is based on a detailed telephone survey of employers who have recently advertised vacancies. The Department of Labour in New Zealand maintains a similar list. According to Infometrics (2006), the methodology used to determine the list is based on a number of indicators including: analysis of job advertisements; surveys of employers; and detailed annual occupational reports.

The MAC (2008) concludes that the differences between these various approaches emphasise that there is no single, infallible way of measuring skill shortage and that any analysis needs to be contextualised by detailed background information and knowledge of the labour market. It quotes from Veneri (1999) who argues that:

"In sum, CPS and OES data provide insight into changes in labor market conditions for specific occupations. Used alone, however, these data are not adequate to definitively identify the existence of labor market shortages for a specific occupation. Besides, limiting analysis to indicators such as employment, unemployment, and wages does not present a complete picture of the market for a particular occupation. The labor market data should be combined with background information on the occupation and knowledge of the workings of the labor market. In addition, information on supply, such as data on demographic characteristics, education by field of study, and employer's requirement regarding education and training plays a significant role in completing an analysis of an occupation's labor market. Current and potential occupational shortages can best be analyzed on a case by case basis, and the analysis should focus on one occupation or a group of related occupations and should provide a detailed investigation into factors affecting supply and demand. Conclusions about shortages should not be based on general labor market statistics alone or anecdotal evidence alone."

4.6 The European dimension

As noted above, the UK is now operating within a broader European labour market in which there is increasingly free movement of people across national boundaries. This raises a whole host of questions about the focus of employer surveys, as well as issues of comparability and harmonisation.

The Paris workshop organised by Cedefop/OECD refereed to above, considered various possible options for developing employer based, pan-European surveys to provide labour market information that can help to improve the balance between the demand for and supply of skills, including better anticipation of changing skill needs across Europe.

The options considered included the possibilities of modifying a number of existing pan-European surveys, as well as developing new ones. Possible existing European surveys that might form the basis for this include:

- The CVTS3 survey, which focuses on continuing vocational training;
- Building on a variety of NESS style surveys now being undertaken in a number of countries which are focussed on current skill deficiencies (vacancies and skill gaps) and which might be harmonised;
- Building upon job vacancy data based on administrative sources (European Public Employment Services Vacancy Monitoring (EPVM));
- The ongoing, OECD sponsored, PIAAC initiative focusing on generic skills.
- Establishment Surveys on Working Time and Work-Life Balance conducted under the auspices of Eurofound;
- Business Cycle Survey carried out by DG ECFIN;

Annex C provides further details on a number of these surveys.

Cedefop and others are currently considering whether a new Employer based survey is needed to monitor, and help to **anticipate changing skill needs**. An ITT has been

issued and a project is about to be commissioned which is due to report in the summer of 2009.[12]

The debate about the various alternatives at the Paris Workshop suggested that:

- Modifying the existing pan-European CVTS3 survey is not practicable. The need for a CVTS is essential, but this survey is focussing on issues other than monitoring and measuring changing skill needs.
- Adjusting / harmonising existing national surveys focussed on "shortages" or "gaps" is also probably unrealistic. As the discussion in this paper makes clear, harmonisation within the UK is problematic. Across the remainder of Europe such surveys are even more disparate, and it seems likely that vested interests would resist changing the current national formats.
- Similar remarks apply to the EPVM. It seems unlikely that such administrative data systems can be modified to cover overall labour demand as opposed to vacancies and harmonisation across national boundaries would not be easy.
- The PIAAC initiative will go a long way to filling the data gap on generic or soft skills at a pan-European level (for discussion see Eberts, 2007). However there seems little prospect of modifying the PIAAC survey to include more basic questions to measure occupational structure at a detailed level;
- Other surveys, such as those on working time and work-life balances are focussed on issues other than skills. It seems unrealistic to expect that they can bear the weight of providing consistent data on changing skill needs as well.
- Even more specific surveys, focussing on issues such as recruitment practices, adaptation to change and links between skills and performance can also contribute interesting insights, but they tend to require much more complex and customised survey designs. General academic research is likely to focus in much greater detail on such matters.

Wilson (2008) has argued that there is a strong prima facie case for a new employer based, pan-European survey of employers. The biggest gap at a European level is robust and consistent information on the current patterns of skill demand by detailed occupation within sectors. The LFS data available at European level has been taken as far as it can be in the Cedefop project (Wilson *et al.* (2008). To go a stage further will require new and better data. Increasing the LFS sample size can help to resolve some of the problems identified here but it cannot solve the basic difficulties of imprecision and bias as a result of self- and proxy-reporting in a household based survey. An employer focussed survey is also essential to get a proper demand perspective.

The US is some 40 years ahead of Europe with its OES, but it is possible to catch up quite quickly if decisions are made promptly. However a serious investment is needed. Cedefop is playing a key role in this debate by funding a study to explore these issues in greater depth, and by piloting alternative approaches that might be tried at a pan-European level. Of course the OES is not perfect but it, and the history of its development, has some valuable lessons for Europe and for the UK.

[12] ITT for Project AO/RPA/AZU-TODUN/Feasibility-Employers Survey 020/08, Employer survey on skill needs in Europe: Feasibility study

4.7 General considerations for employer surveys on skills

Surveys of employers about skills can take very different directions. These depend upon key issues such as choice of:

- Time horizon: short-term (e.g. six months) medium term (e.g. one- three years) or longer-term futures.
- The difference between skills needed in existing jobs as opposed to vacancies.
- The description of skill needs by competences, formal education and training, personal characteristics of job holders, etc.

The richness of the survey approach not only depends on the number and detail of the questions to be asked, but on the potential links with other economic and employment related indicators, and the comparability with other statistical sources. New developments by ONS will facilitate the exploitation of such links. However this is dependent upon employers indicating their willingness for such information to be used.[13]

[13] Skope recently hosted a workshop in collaboration with ONS to discuss such issues. Speakers included Martina Aumeyr and Rhys Davies (VML), National Office of Statistics. The seminar showcased recent work by the Office of National Statistics' Virtual Micro-data Laboratory (VML). The VML allows researchers access to restricted micro-data for research purposes. The seminar also examined the possibilities of extending the research potential of the National Employers Skills Survey 2007 by linking this data set with other ONS data. In the past the VML has used Employer Skills Survey data, linked to that from other surveys, to explore issues to do with skills and productivity. The LSC included a new question in the 2007 NESS that asked respondents to indicate their willingness to allow data from their NESS returns to be linked to data from other sources, and 73 per cent of respondents (61,089) agreed. This means that far more detailed work is possible that involves micro-level linkages between NESS returns and other ONS data sets –for example on firm performance and output. For further details see http://www.cf.ac.uk/socsi/newsandevents/events/28112008.html?

5. Existing UK surveys of employers relating to employment and skills

5.1 The range of existing surveys

There are a large number of existing surveys of employers which are carried out on a regular basis in the UK that have a focus on matters to do with employment and skills. These include the now well established English (National) Employer Skills Surveys ((N)ESS) as well as others such as Workforce Training in England (WTE), and its predecessor (Learning and Training at Work, (LTW)).

However, there are many other surveys of employers that need to be considered in any comprehensive overview. These include surveys conducted by the devolved administrations, as well as various surveys focusing on different aspects of skills, employment and general economic performance. This includes major official surveys such as the Annual Business Inquiry (ABI) and the Annual Survey of Hours and Earnings (ASHE) as well as other more specialist surveys such as the Workplace Employment Relations Survey (WERS).

Section 5.2 describes the main UK surveys of employers conducted on a regular basis, other than Employer Skills Surveys. The latter are dealt with in Section 5.3. The latter have been subject to considerable attention. Section 5.4 provides a summary of their strengths and weaknesses.

5.2 Key UK Employer Surveys

Annual Business Inquiry (ABI)

In the UK the main instrument used to monitor overall employment and economic activity by sector is the Annual Business Inquiry (ABI). This survey is directed at employers and is compulsory. Information on employment levels, output and other indicators are collected under the terms of the Statistics of Trade Act (1947). Further details of the ABI can be found in Annex A.

Such sectoral information lies at the heart of the multi-sectoral models used in quantitative employment projections. In some other countries such data are of much lower quality and reliability (if they exist at all on a regular basis). This constrains very significantly the ability of such countries (which include many southern European countries), to develop sophisticated quantitative models of economic and labour market development. The UK is comparatively well served in this regard, with well established system of national accounts and robust time series data on output and employment.

The information from sources such as the ABI is very different from that obtained in other surveys such as the UK's *Employer Skills Surveys*, which are concerned primarily with the patterns of skill deficiencies rather than the scale of economic activity. Nor does the ABI provide information on the structure of employment by occupation.[14]

Annual Survey of Hours and Earnings (ASHE)

The Annual Survey of Hours and Earnings (ASHE) replaced the old so called New Earnings Survey (NES). Both are (were) directed at employers, but focus on a random sample of employees (selected by their National Insurance number). The

[14] The USA conducts a regular *Occupational Employment Statistics* (OES) survey of employers. In the UK analysts have to rely on other sources. The main alternative is the Labour Force Survey or the Census of Population, both of which are household surveys, focused on individuals rather than employers.

NES provided an independent estimate of employment structure, including occupation. However, there were always concerns about how representative it was, and in particular concerns about bias caused by incomplete coverage of employment, especially amongst certain types of low paid workers. More recently ASHE uses an employment structure imposed from LFS data. Neither ASHE nor the ABI cover self employment. Further details about ASHE can be found in Annex A.

National Employer Skills Surveys (NESS)

The *National Employer Skills Survey* (NESS), or something similar, has been conducted at least biannually since 1999. It is focussed on England but there are similar surveys for Scotland, Wales and Northern Ireland. NESS is focussed on current skill deficiencies although earlier versions also asked questions about economic performance. Because of the demand for considerable sectoral and spatial detail the surveys are very large and therefore expensive. More recently they have focussed on sectors represented by the Sector Skills Councils (SSCs). They have also attempted to provide estimates of occupational employment structure, but this is only at a broad (1 digit) level. The history of (N)ESS is set out in more detail in Section 5.3. Further details about NESS and similar surveys can be found in Annexes A and B.

Other UK Employer Surveys

In addition to those already mentioned, there are a number other regular surveys of employers that focus on employment and skills issues. These include:

- Workforce Training in England (WTE, and its predecessor the Learning and Training at Work survey);
- Workplace Employment Relations Survey (WERS);
- The Continuing Vocational Training Survey (CVTS);
- SSDA Employer Survey;
- ONS Vacancy survey (sectoral only);

5.3 Employer Skills Surveys

In recent years, each of the four UK countries has undertaken large-scale employers' skills surveys (ESS). These have sought to identify the incidence, extent, causes and implications of recruitment difficulties and skill problems from an employer perspective. Dignan (2004) provides a useful and comprehensive review of these, as well as the Irish experience.[15]

Following recommendation from the National Skills Task Force, the first employers' skills survey (ESS) in the UK was undertaken in England in 1999 (ESS1999, Bosworth *et al* 1999). ESS1999 was followed up by a similar survey in 2000/01 (ESS2001) and then by ESS2002 and ESS2003.[16] ESS2002 was on a much smaller scale than the two previous surveys). Following a review of needs, further surveys on a much larger scale took place in 2004, 2005 and 2007.

[15] The Irish surveys have been more specifically concerned with current vacancies and recruitment problems, and although they share some common features, they have not placed the same emphasis on skill shortages or skill gaps.
[16] See Hogarth and Wilson (2001) and Mason and Wilson (2003) for reviews of the early skills surveys.

The English surveys were closely followed by the inaugural NI Skills Monitoring Survey (SMS) in 2000, the 2002 Skills in Scotland survey and the 2003 Future Skills Wales (FSW) Generic Skills Survey. These were in turn followed up with further updates on a roughly biennial basis.

Many other countries have also developed similar surveys. For example, in the Republic of Ireland, vacancy surveys have been conducted since 1998/99, again on roughly biennial cycle. Others have been developed in France, Italy, etc (Excelsior survey).

Although many of these surveys have much in common, there are a number of differences in terms of scope and detailed definitions and methodologies that make comparisons difficult.

The various employer skills surveys carried out in the UK since 1999 all share a broadly similar set of objectives and adopt basically similar methods to achieve these, although a number of differences have emerged over time and as different clients have tailored them to meet changing needs.

They all have strong focus on issues connected with skill shortages, skill gaps and training, from an employer's perspective. The distinction introduced in ESS1999 identifying where skills deficiencies were primarily due to recruitment difficulties in the external labour market, as opposed to internal skill gaps requiring improvements within the existing workforce, has been maintained.

Recruitment problems are measured by unfilled job vacancies that are classified by respondents as hard-to-fill. The subset of these that are regarded as hard-to-fill because of some kind of lack of skills (low numbers of applicants with the required skills, lack of work experience or lacking qualifications required) are referred to as skill-shortage vacancies.

The concept of internal skill gaps was developed to try to capture the extent to which employers perceive the skills within their current workforce as adequate to meet their current business objectives. In the English and Scottish employer skills surveys, internal skill gaps are measured indirectly using a question about employers' perceptions of the level of proficiency of their existing workforce. In Northern Ireland and Wales, a more direct question is used.

Annex B sets out in more detail the various surveys, comparing aims objectives, as well as details of the approach, including survey instruments used and other technical details.

5.4 A Critical Assessment of UK Employer Skills Surveys

Overview of ESS and NESS

Hillage *et al.* (2002) carried out an extensive assessment of the early ESSs. They conducted a qualitative review, involving follow-up interviews with respondents to ESS2002, asking respondents various questions about the concepts used in the survey. These checks suggest that most of the questions appeared to be valid,[17] with two main exceptions:

[17] Dignan (2004) suggested that the lack of a precise definition of vacancies might be a problem, but the follow-up interviews carried by Hillage *et al.* suggested that the survey instrument used in ESS was sound. Respondents found the terminology used for vacancies as well as the questions asked about business strategy or capacity both relevant and understandable. However there are still some unanswered questions about what respondents mean by a 'vacancy'. Does an unfilled job have to be advertised to be formally regarded as a vacancy? Although the qualitative work for ESS2002 showed

- respondents tended to associate proficiency (the concept used to quantify internal skills gaps) as much with performance and ability as the possession (or lack of) skills;[18]
- respondents also did not have a very precise understanding of the meaning of many generic skills, for example confusing communication and customer handling skills.

Based on evidence from their follow up survey, Hillage *et al*. (2002) concluded that many respondents thought that the skill demand did not change very rapidly and that unless there were dramatic changes in the labour market generally, monitoring of skill deficiencies didn't need to be done very frequently (every two or even three years rather than annually). Initial comparisons of results from the ESS in England suggested that the extent of skill deficiencies did not change rapidly. Subsequent surveys have in many respects tended to confirm this. In some cases such problems appear to be ephemeral, which is what would be expected if labour markets adjust to deal with imbalances. Where problems do appear to be persistent this appears to be in parts of the labour market where there is market failure or lack of competitive pressures (for example in parts of the economy dominated by the public sector (directly or indirectly), such as health care.

Hillage *et al*. (2002) also argued that, while there was merit in continuing the national series to monitor the state of the national labour market, using a survey of similar size to that used in 2002 (i.e. a much smaller sample of around 4,000), that it was not clear that increasing the sample size would be beneficial. While an increase in sample size can have some general benefits in terms of the depth, detail, reliability and flexibility of the data, and obviously facilitates the development of analyses for particular sectors and local area, there are real questions as to whether this represents the best use of limited resources. Many skill related problems are generic and common across many sectors and broad geographical areas. The present very large surveys represent a huge investment. There is a risk that they produce detailed data for their own sake rather than because they answer a particular LMI need.

Mason and Wilson (2003) present a detailed assessment of the strengths and weaknesses of the Employers Skill Surveys (ESS1999, ESS2001 and ESS2002), drawing out some key lessons. Some but by no means all of the points raised were taken up in the subsequent National Employers Skills Surveys conducted on behalf of the LSC.
Mason and Wilson (2003) concluded that in general, the ESS series represented a significant step forward compared with their predecessors, such as the *Skill Needs in Great Britain* (SNIB) series. For the first time in the UK ESS had gathered systematic information on skills deficiencies, which clearly distinguishes between skill-shortage vacancies (skill-related external recruitment difficulties) and internal skill gaps. They also addressed much more directly than any previous surveys information on the causes and consequences of such problems.

Mason and Wilson (2003) also note that ESS provided a much more comprehensive picture of vacancies than the vacancy series produced at that time by the Employment Service (ES). These tended to be concentrated in just few occupational

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that most employers meant very similar things by the term 'vacancy', this type of issue probably still needs further clarification.

[18] This has some potentially significant implications for the interpretation of the skill gap measures as well as appropriate responses to them. Skill gaps may not therefore be remedied by further training if the poor performance is the consequence of poor management of the group of staff concerned rather than lack of skills amongst that group.

groups. The results suggested that the ES "Job Centre" based estimates, picked up only around a third of all vacancies.[19]

The forward-looking survey questions in ESS were also commended by Mason and Wilson (2003) as providing useful information for policy-makers about enterprises' intentions with regard to product/service innovation and upgrading of product/service quality and the new or additional skills which are needed to bring such plans to fruition. However, Mason and Wilson questioned whether all such questions needed to be repeated every time. The aims and objectives of the questionnaire develop to support the thinking of the NSTF (which dictated the design of the first ESS) is not necessarily the same as the LMI needs of the main current users of the NESS (the LSC, the RDAs and the Sector Skills Councils). For example, these organisations may require more detailed information about establishments' training activities, and the extent of their satisfaction with local, regional and national education and training provision, than were provided in the original ESS. This is something that has been achieved subsequently by increasing the sample size almost threefold.

The ephemeral and marginal nature of vacancies and skill deficiencies

Vacancies measure the volume and the skills profile of current unmet labour demand better than any other indicator. They reflect the present demand of employers as represented by the offer to conclude a labour contract with a potential worker. In a sense this represents an anticipation of labour demand for a certain (very limited) period of time into the future.

However, in contrast to most other employment-related variables, vacancies have a very short duration (typically measured in days or weeks), whereas successful job applicants for such vacancies may well go on to have a long term tenure in the job measured in months, years or even decades. This makes vacancies a quite volatile indicator, as the period until a particular job becomes vacant again can be long. Many employers may have at most one vacancy at a certain point in time. This has important consequences for the design of employer surveys focussed on vacancies. Large samples, stratification to cover establishments of different sizes, and short observation periods are needed to achieve reliable results.

Reviews by Dignan (2004) and others suggest that when compared on a consistent basis, the ESS and NESS results suggest little or no change in vacancies as a proportion of employment. This holds also for both difficult-to-fill and skill-shortage vacancies over almost a decade. See Annex B for details. The proportion of employers and employees affected by skill deficiencies (both internal and external) has remained quite small. This is despite the fact that this has been a period of almost unprecedented growth in the UK economy. The patterns by sector have often been ephemeral in nature, coming and going as the economy has experienced shocks, and as the labour market has adjusted. Where there is evidence of persistence this is often associated with market imperfections, especially in areas where the public sector has a significant role, either directly or indirectly. The NESS series (and ESS before it) has therefore been focused very much on marginal and ephemeral issues rather than throwing light on the changing pattern of skill needs of the vast majority of employers. This raises the question, first highlighted by Mason and Wilson (2003) about whether the focus of skills surveys on the margins is the right one. A case can be made for paying much more attention to understanding the skill requirements of firms that do not have skill problems. The information that has been produced could probably have been obtained with much smaller and less

[19] The ES series were subsequently suspended to be replaced by a new series (see Machin and Christian, 2002) for details.

expensive surveys. It is hard to think of what have we learned from NESS that we could not have done without, or that we could not have inferred from previous surveys.

Mason and Wilson (2003) argued that users needed more information about the changing skill requirements of the great majority of firms across the economy rather than just focusing on the minorities of firms with skill-shortage vacancies and/or internal skill gaps. This is not something that has been addressed in NESS. The current survey still focuses most attention on the margins, those establishments that respond that they are experiencing some problems rather than on what is happening to the skills needs of the vast balk of employers who do not report such problems. The particular problem highlighted by Mason and Wilson (2003) is that the more detailed questions about skill needs are only addressed to the small minority of establishments which report that they have skill-shortage vacancies or internal skill gaps of some kind. The vast majority of establishments were not asked anything about the types of skills they need. Such a focus on the margins is likely to provide a somewhat biased view of the country's overall skill needs. More recently NESS2005 and NESS2007 have include questions which provide some indication of more general skill needs, including a measure of the overall occupational structure in the establishment, but this is only at the very broadest 1 digit level of SOC (9 categories). Compared to the detail available in the US surveys, with around 800 occupations distinguished, this is crude to say the least!

Successive versions of the ESS and NESS have continued to devote most of their questions to monitoring the extent, nature, causes of and responses to skill deficiencies. There are only a few questions regarding employers' *demands* for skills, either implicitly (such as through product strategy questions) or explicitly. More emphasis is needed on monitoring actual demand. This is in part a simple question of measuring, much more precisely than at present, the emerging demand for skills as measured by ***detailed occupational*** category.

Value of an employer survey focussed on skill need (as opposed to skill shortages and gaps)

Employer surveys (as opposed to household surveys) have the great advantage that they measure skill needs at the place where the employment relationship takes place and focuses on the agent that is responsible for the demand for labour. However, there are limits to the information that employer surveys can provide. Employer perceptions may not necessarily reflect reality, and in particular, because employers are focussed on the requirements of their particular businesses or workplaces, rather than the labour market or the economy as a whole, there is a danger that the broader social perspective may get lost.

This is why an employer survey which focuses specifically on employers' revealed demand, (such as the US OES surveys) is important. Such a survey focuses on the occupations employers actually employ. This is arguably the best way to measure changing skill demands. It avoids the problems of bias and lack of understanding of occupational definitions that plague both household and employer surveys which are based on respondent's perceptions as opposed to facts. It is not focussed on employers' opinions, but rather on what employers actually do. It monitors and directly measures actual skill demand as indicated by the types of jobs employers pay people to undertake. The focus is therefore on real needs, what skills employers reveal they require (not necessarily what they perceive or say). How they behave is the key - who do they employ and in what positions? Other surveys can then help to translate this into demand for qualifications, soft skills, etc. There is an urgent need

for strategic investment in such data to deal with these concerns in the UK (and also more generally at a Pan-European level).

The question of pay

From an economic perspective it is difficult to separate questions about the incidence and intensity of skill shortages from questions about pay. Despite this, the issue of pay and wages does not appear explicitly in most employer skills surveys. The face-to-face element of ESS1999 asked for information about wage levels for specific occupations. As noted elsewhere, the question of pay rates is given much greater emphasis in US and Canadian approaches to skill demand and supply questions. Consideration should be given to the question of pay generally, and in skill surveys in particular. Questions which can establish how well the establishment pays compared to the norm may have an important role to explaining many recruitment problems and other skill deficiencies.

Establishment vs enterprise

The current NESS series focuses attention on the establishment or workplace as the unit of analysis. This was the subject of considerable debate when ESS1999 was developed of whether the establishment or the enterprise was the most appropriate target for the questionnaire. Each has advantages and disadvantages. The workplace is where the effects of skill related problems are most immediately felt. However this does not necessarily make it the most appropriate unit for the collection of such data although it remains at the centre of the NESS series of surveys.

The ONS Vacancy Survey collects data at enterprise or organisation level, although this does lead to some difficulties in obtaining responses from very large organisations with multiple sites (Machin and Christian, 2002). The 'optimal' unit of analysis probably varies between industries. On the other hand if the prime concern is with issues relating to economic performance then good performance data may often only be available for the latter. It is possible, as was attempted in ESS1999, to ask some limited questions about performance within the survey. Alternatively such information can (in principle) be matched in to an ESS or NESS data set from another data source (such as the ABI). However, the practical difficulties of doing this are not to be underestimated. ONS are devoting some resources to doing this with NESS2007, which should be a significant step forward.[20]

Sampling issues

The scope for sectoral and regional disaggregation of the data depends heavily on the specifics of the quota sampling methodology which is employed, as well as sample size. If data really need reliable information on relatively small sectors and regions, then a large sample is inevitable. However, it seems clear that many of the results do not vary enormously between sectors and geographical areas, once sector is taken into account. This suggests that such detail may not be essential. The inclusion of very small establishments is another key consideration. Mason and Wilson (2003) and Forth (2003) considered these matters in more detail. They suggested there were strong arguments for focusing on establishments with 5 or more employees (which account for 90% of all employees). Where users need to have information about micro-establishments, separate surveys targeted at that size of establishment might be better.

Stratified samples and grossing up

In contrast to household surveys, employer surveys need to be based on stratified samples which account for the size of companies. Without such stratification, the

[20] See footnote 13 for further details

probability of large companies being represented in the sample will not reflect their contribution to total employment. Large companies would usually be under-represented in such terms. Stratification is also important to achieve representative results by spatial area and sector.

This is dependent on having good information on the overall population of enterprises or establishments representing the overall number of employing organisations. For the English surveys this is based on the Inter-Departmental Business Register (IDBR, see Annex A for details). As noted by Dignan (2004), the use of different coding frameworks by the various British and Irish surveys poses problems for the comparison of the results. A consistent and uniform approach to such frameworks would be beneficial.

Cross-sectional versus longitudinal surveys

Most employer surveys are cross-sectional surveys, using new or modified samples for every observation period. Longitudinal employer surveys, which develop a panel of data over time on the same set of companies, can provide a powerful extension to such information. Mason and Wilson (2003) advocated that if the main aim was to consider the causes and consequences of skill deficiencies rather than their extent and location, then this might be one way in which the ESS series might be developed. However there are also problems and costs associated with such types of survey and NESS has gone in a rather different direction.

Other limitations of existing employer skills surveys

Long-term planning remains the exception rather than the rule in most business practice. Skill needs are typically related to the current state of orders, business organisation and production technologies. Nevertheless employers can be asked about their views about possible future skill needs. The quality of this information is likely to differ from data about the present situation. It will be much more speculative and often appears to be influenced by current short-term factors.

Employer surveys provide a micro perspective, but skill gaps at the business level do not necessarily imply skill gaps at the level of regional or national labour markets (and vice versa). A key concern is so called latent skill gaps, unrecognised by individual businesses but important for a regional or national economy trapped in a sub-optimal position regarding the use of skills. This can be due to supply restrictions and inefficiencies in the education and training system or to a lack of demand from employers stuck in a low skill equilibrium trap. From a macro perspective the skill needs of such an economy are clearly different from the situation at the micro level. The question therefore is to what extent information from an employer survey is able to reflect the macro needs of a long-term growth strategy. The limitations of a purely business-oriented view need to be recognised.

Another point raised by Mason and Wilson (2003) is that if the surveys are to be genuinely useful in documenting external skill shortages and internal skills gaps and feeding into the policy debate and decision process, a clearer picture of the types of ***generic skills*** employers are looking for is also needed. The current questions on key and generic skills used in NESS fail to provide this.

Need for harmonisation across countries

A key message from Dignan (2004) is the desirability of a more co-ordinated and common approach to the design and implementation of employer skills surveys. He argues that the exchange and sharing of expertise and experience (including what works and what does not) can results in at least three benefits:

- improvements to the instruments and methods used within each country;

- refinement of definitions and measurement of key concepts;
- "benchmarking" of key indicators.

Alternative survey techniques

Employer surveys can be conducted using a variety of survey techniques, including: face-to-face interviews, telephone interviews, postal surveys, and online surveys. Each has advantages and disadvantages regarding the quality of data obtained, response rates, and cost. The US experience with the OES suggests that there is potential for using postal and online surveys more intensively.

Advantages and disadvantages of continuity in survey questions

As noted in Mason and Wilson (2003), continuity is important in order to enable evaluation of trends over time and the stability or persistence of some of the initial ESS and NESS findings. However, there are drawbacks to simply repeating the same questions in each new version of the survey. It is probably timely for users of NESS and related data to carry out a formal review of their information needs and how well they are being met. This paper is aimed at stimulating a radical rethink about some of these issues.

Redesigning the survey instruments

Mason and Wilson (2003) also emphasised the need to allow plenty of time to design and develop new survey instruments. ESS1999 and 2001 were both designed and implemented to very tight timetables. Both of the authors participated in the Steering Committee responsible for designing the ESS1999 survey instrument and experienced first hand the pressure to deliver the survey results within a relatively short space of time. The preparation for ESS2001 was equally time-constrained. Given resources committed to carrying out such surveys, adequate time and resources need be devoted to assessing what is needed and how best to deliver it. Mason and Wilson argued that at least as much time and effort needs to be to given to the design of any new survey instruments as to the mechanics of organising and executing the survey.

6. Implications and lessons

6.1 Data needed from surveys of employers

The discussion in Section 4.1 above identified a vast range of information that needs to be obtained from employers if we are to understand developments in employment and skills. At one level, these involve very basic data on economic and labour market activity, such as:

i. changes in levels of economic activity and employment (primarily distinguished by sector);

ii. information on changes in on patterns of historical employment structure (especially occupational structure and the other aspects of the demand for skills such as qualifications);

iii. data on other aspects of skills (such as key, core and generic skills), including the detailed analysis of the tasks required to undertake a particular occupation;

iv. Information on pay, hours, conditions, of work, etc;

The UK is well served for (i.) and (iv.). Regarding (ii.) We are currently dependent upon the LFS. While adequate for some purposes, this survey suffers from a number of limitations which mean that it is far from ideal. Compared with best practice elsewhere in the world (especially the USA), it is woefully inadequate, providing neither the level of detail required, nor the demand side perspective that an employer (as opposed to a household survey) can provide. It is possible that a revamped employer based survey developed from ASHE could deliver the equivalent information at a UK level. However, there is a case for considering a new survey, with a pan-European wide perspective, based more closely on the US OES model.

As far as (iii.) is concerned, a number of surveys cover other aspects of skills. There is a need to consider how these initiatives might be better co-ordinated. Matters have been advanced in recent years with the Skills surveys undertaken by Felstead *et al*. (2007), and developments such as the Future Skills Wales generic skill surveys. Further advances will arise as a consequence of the OECD/EC PIAAC initiative, but this still leaves a large gap compared with what is available from the US O*NET system. There is probably considerable potential to “piggy-back” on the US system rather than re-inventing the wheel. For many occupations the details of skills involved will be common across the Atlantic. This possibility should be actively explored. More effort is needed to coordinate activity within the UK. Greater consistency is desirable, including harmonisation with the ongoing PIAAC initiative.

Section 4.1 also set out other possible objectives of surveys directed at employers. These included:

v. current skill shortages (including various kinds of vacancies) and skill gaps;

vi. vacancy information based on public employment service administrative data;

vii. continuing vocational training and other employer investment in skills;

Item (v.) relates to the main outputs from the current NESS series. The ESS and NESS series have been generally heralded as a significant step forward compared with earlier surveys available in the UK. There are however some questions about whether the focus of the current surveys is quite right. This and related issues are discussed in more detail in Section 6.2 below.

The ONS Vacancy survey is the closest we have in the UK to (vi.). Currently it does not include an occupational dimension, so it is of very limited value in a skills context.

It is mainly focused on short-term cyclical matters, at a sectoral level. There is an ongoing discussion about harmonisation of such data within Europe. This should consider again whether there is a case for adding an occupational dimension.

There are a number of surveys that cover the issue of employer investment in training, workforce development and related matters (vii.). These include the pan-European CVTS, as well as the WTE/LTW surveys. The NESS series also covers this. There seems to be a case for considering whether there could be some rationalisation here to avoid overlap and duplication.

Finally Section 4.1 outlined a number of other issues that employer surveys could attempt to address:

viii. possible future skill needs;

ix. industrial relations and related issues

x. recruitment practices;

xi. adaptation to change;

xii. links between skills and performance;

xiii. Perceptions and use of public interventions/services.

Asking questions about employers perceptions of the future (vii.) can be of some value in teasing out issues such as latent skill gaps (gaps between their perceptions of what is needed to conduct their business successfully, and what might actually be needed to ensure business survival). Their value as a means of identifying future skill needs has generally been assessed as very limited.

The other issues, while undoubtedly important, should probably be the subject of specialist surveys such as WERS, with survey instruments and other aspects of methodology designed specifically to address the research questions concerned. This might include development of panel dimensions to the survey work, as well as linking of data sets via employer identification codes, etc. It is not realistic to expect that all of these elements can be dealt with by a single employer survey. Specialist surveys are probably needed in areas such as:

- Skill use and High Performance Working;
- Workplace changes;
- Quality of work issues;
- Perceptions and use of public interventions/services.

But each of these should be linked to specific research projects or surveys (some of which are already taking place), not a general survey of skill needs or skill deficiencies.

A number of different surveys are needed to obtain different types of data. While the boundaries between them may sometimes blur and the potential for overlap will always be there, separate surveys should be designed for particular purposes. More effort needs to be made to assess priorities and to ensure that these are achieved efficiently. This needs to involve detailed discussion with ONS, given their key role in producing a number of the key data sets.

This raises some questions about the priorities set by ONS more generally for LMI in the UK. ONS have from time to time conducted reviews of LMI needs (see for example Laux (2002)). Laux (2002) argued that ONS have collated a wide range of comments about improving labour market statistics, and have developed composite proposals for improving the statistics they are responsible for providing. The main

conclusion is recent years seems to have been that data on both employment and on jobs are needed, and that both main current sources, the LFS and various employer surveys, should be retained, albeit with improvements to each source including their greater coordination. However, the question of occupational employment and related data does not appear to have been given very high priority. This needs to change.

6.2 Other general questions to be considered

The introductory remarks in Section 1.3 raised a number of general questions about existing employer surveys, to which we can now return.

i. are they focussed on the right questions?

The present focus of the NESS series is very much on skill gaps and shortages. A number of concerns have been raised about whether this is the correct prioritization. On balance, it probably places too much emphasis on the marginal and ephemeral. and perhaps too much emphasis on particular types of detail at the expense of others (for more details see below).

ii. are the data gathered robust; do they provide an accurate and comprehensive picture?

There are very many data gathered relating to employment and skills related issues in the UK. So a simple answer to this question is not possible. Much of what is needed is collected, and it does provide a robust and accurate picture of what is going on. There are however some gaps and some areas of concern where it is not clear that the current focus and priorities are the right ones.

iii. is the coverage appropriate (in terms of geography, sector, size of company etc);?

In some respects the focus of the NESS series on very detailed breakdowns by sector and geographical area may have gone beyond what is strictly necessary, given the generic nature of many skill issues and trends. The focus on very tiny establishments also causes some problems, both in terms of comparisons over time and collecting robust and precise data. It may be appropriate to reconsider this issue. There is insufficient detail on occupations for many purposes, including the needs of the Migration Advisory Committee.

iv. is the lack of harmonised UK-wide data problematic?

There are clearly advantages in the devolved administrations, as well as other spatial and sectoral bodies, taking an interest in these issues. However, this can and has lead to problems in making comparisons. This devalues what is potentially possible if a better harmonised set of core data were collected, using common methods and definitions. It also fails to reap potential costs savings from economies of scale.

There are also important issues regarding taking a broader European perspective. The UK operates in an increasingly global labour market. and free movement of people within Europe in particular calls into the question a too narrow focus on national borders.

v. *are current sample sizes adequate?;*

Generally sample sizes are fit for current purpose, but as noted under ii. there are some issues about whether the focus across various dimensions is correct. There are some doubts about whether the sample size of around 75,000 in NESS is really necessary to obtain the information that it delivers. The present sample size is necessary to deliver robust results across all the various dimensions of establishment size, sector and geography, but are these dimensions really needed?

vi. is there a need for further employer base information?;

This paper has highlighted the inadequate information currently available on basic data on the occupational structure of employment from a demand perspective. The LFS is not adequate for this purpose. An employer based survey, providing robust data by sector at a detailed occupational level should be prioritised.

Better information is also needed on detailed skills (generic) needed by employers. This could be based on existing information and surveys (including possibly exploiting US data on O*NET). More coo-ordination and harmonisation is needed.

vii. are new instruments required?

A case can be made for a new employer based survey focussing on the issue of obtaining more detailed data on the demand for occupations. However, it is possible that this could be developed from an existing survey such as ASHE.

This gap is even more problematic at a pan-European level, so this also needs to be borne in mind in thinking about possible new developments. The initiative underway from Cedefop in this area is relevant.

viii. are the methodologies (mainly telephone surveys) the most appropriate, (could other data gathering techniques be developed)?

Telephone surveys have many advantages. They also have some limitations, notably in the natural limits to the attention span of participants and the amount of detail that can realistically be expected from respondents The experience of the US OES suggests that it is possible to obtain more detailed data for employers using postal questionnaires linked to the web. These possibilities need to be explored in a UK context.

ix. are the data being gathered in the most efficient and effective form to meet varying stakeholder needs (e.g. sectoral, international, national, regional, sub-regional)?

Although much useful information is being gathered efficiently and effectively there are various ways in which things might be improved as set out in more detail above.

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Annex A: UK Employer Surveys

This Annex draws together material from ONS and related websites, with some annotation. Its purpose is to provide in one location a summary of the main existing surveys of employers in the UK that have a bearing on skills and employment issues.

ASHE (Annual Survey of Hours and Earnings)

The Annual Survey of Hours and Earnings (ASHE) provides information about the levels, distribution and make-up of earnings and hours paid for employees within industries, occupations and regions.

The ASHE was developed to replace the New Earnings Survey (NES) in 2004. This included improvements to the coverage of employees, imputation for item non-response and the weighting of earnings estimates.

The ASHE tables contain UK data on earnings for employees by sex and full-time/part-time workers. Further breakdowns include by region, occupation, industry, region by occupation and age-groups. These breakdowns are available for the following variables: gross weekly pay, weekly pay excluding overtime, basic pay including other pay, overtime pay, gross hourly pay, hourly pay excluding overtime.

Unlike its predecessor the New Earnings Survey (NES), the information on employment structure is constrained to match that in the LFS.

The ASHE sample is based on a selection of National Insurance (NI) numbers of employees, but it is directed at employers, who are asked to provide the answers.

ABI (Annual Business Inquiry)

The ABI was first held in 1998. It replaced several sector specific annual inquiries which covered the production, construction, motor trades, wholesale, retail, catering, property and service trades sectors.

In addition to the restructuring and integration of a number of separate inquiries, major improvements in methodology were implemented. The ABI provides coherent and consistent annual industrial statistics covering a range of variables for the whole economy. Various outputs from the ABI are used in the national accounts.

The sample size of ABI/1 in 1998 was approximately 78,500. The ABI/2 sample size is slightly lower at about 75,000 because of the exclusion of certain industries in the public sector and elsewhere where other data are already available. It excludes central and local government bodies in the Education sector and similarly in the Health sector along with charitable organisations and Medical and Dental Practices. . Sampling is done for ABI/1 and the ABI/2 sample then automatically results by excluding the appropriate industry sectors. The sample design is a stratified random one with three stratification dimensions. Strata are defined in terms of:

- six employment size bands (1–9, 10–19, 20–49, 50–99, 100–249, 250+).
- region (*viz*: England & Wales combined/Scotland/Northern Ireland).
- SIC industry.

Within England and Wales industry stratification is at 4 digit SIC level. Within Northern Ireland it is at 2 digit SIC level and within Scotland at a hybrid 2/3/4 digit level.

All stratification variables are taken from the Inter-Departmental Business Register (IDBR). Special arrangements apply in Scotland and Northern Ireland allocate larger than proportional sample sizes.

The ABI is a Statutory survey carried out on an annual frequency.

The main information collected is as follows:

- Total turnover
- Employment costs
- Purchases of goods and services
- Taxes and levies
- Stocks
- Capital expenditure

The ABI is conducted in two parts: employment and financial information.

The financial inquiry covers about two thirds of the UK economy i.e. production; construction; motor trades; wholesale; retail; catering and allied trades; property; service trades, agriculture (part), hunting, forestry and fishing. Employment inquiry coverage is wider.

WERS (Workplace Employment Relations Survey)

The Workplace Employment Relations Survey (WERS) is a national survey of people at work. The most recent survey is for 2004.

Its purpose is to provide an account, for all to use, of management/employee relations. For this reason, the survey is supported by leading organisations like the Trades Union Congress, and the Chartered Institute of Personnel and Development.

The survey aims to provide a mapping of employment relations practices in workplaces across Great Britain, monitor changes in those practices over time, inform policy development, permit an informed assessment of the effects of public policy, and bring about a greater understanding of employment relations as well as the labour market.

The WERS series has documented and comprehensively monitored the state of employment relations in workplaces in Britain over the past two decades. The survey design has remained consistent in parts throughout the series, in order to generate data which is comparable across the period 1980–2004, though equally it has responded to changing interests in the employment relations arena by adding new areas of enquiry and reducing other areas in scope.

The survey is jointly sponsored by the Department of Trade and Industry, the Advisory Conciliation and Arbitration Service (ACAS), the Economic and Social Research Council and the Policy Studies Institute. It follows in the acclaimed footsteps of earlier surveys conducted in 1980, 1984, 1990 and 1998. Prior to 1997 it was called the Workplace Industrial Relations Survey (WIRS).

The purpose of each survey in the series has been to provide large-scale, statistically reliable evidence about a broad range of industrial relations and employment practices across almost every sector of the economy in Great Britain. This evidence is collected with the following objectives in mind:

- to provide a mapping of employment relations practices in workplaces across Great Britain;
- to monitor changes in those practices over time;
- to both inform policy development and permit an informed assessment of the effects of public policy, and,
- to bring about a greater understanding of employment relations as well as the labour market.

To that end, the survey collects information from: managers with responsibility for employment relations or personnel matters; trade union or employee representatives; and employees themselves.

The 1997/8 and 2004 surveys included both a cross section element and a panel survey. The cross section survey included questionnaires for managers with responsibility for personnel matters or employment relations, trade union or employee representatives and employees themselves.

The samples were drawn from the register of business establishments maintained by the Office for National Statistics (ONS), taking all establishments with 5 or more staff in 2004 (10 or more staff in 1997/8). More details about the samples and other methodology can be found in the technical report information linked to the 2004 report.

SSDA Employer survey

Skills For Business Network 2005: Research Study Conducted For Sector Skills Development Agency (SSDA) By Ipsos MORI Social Research Institute.

These surveys cover UK employers. They were conducted to inform the evaluation of the Skills for Business network (SfBn) –the network of 25 employer-led independent Sector Skills Councils (SSCs) and the Sector Skills Development Agency (SSDA).

The2005/2006 survey of 13,600 UK establishments was conducted by Ipsos MORI between October and December 2005. The results were intended to inform the evaluation of the SfBn on a range of key measures relating to how the network was engaging with employers. The survey also contains a wealth of data on the skill challenges facing employers; human resource and business practices; and training and informal development practices which provide important contextual information to inform the development of policies to meet the network's objectives.

This was the third phase of the evaluation - and the third survey of employers on this scale – commissioned by the SSDA to inform the evaluation of the SfBn.

http://www.ukces.org.uk/pdf/060830%20R%20Research%20Report%2018%20(1).pdf

Research Reports:
Skills for Business network – Phase 1 Evaluation, SSDA Research Report 3, Aug 2004
Skills for Business 2003 – Survey of Employers, SSDA Research Report 4, Aug 2004.
Skills for Business network: Phase 2 evaluation main report, Research Report 10, Sept 2005
Skills for Business 2004: Survey of Employers, Research Report 11, Sept 2005.

CVTS (Continuing Vocational Training Survey)

http://www.dius.gov.uk/research/documents/DIUS-RR-08-17.pdf

The Department for Education and Employment was responsible for the first European Community Continuing Vocational Training Survey (CVTS) in the UK. CVTS covered employers with ten or more employees. It was conducted across all the then 12 EU member states.

The survey was carried out on an *ad hoc* basis with fieldwork for CVTS conducted in late 1994 and early 1995. The Training in Britain Survey of 1986-87 collected similar data as the extension survey. Results for CVTS were published in Sept 1996 under the title "Employer Provided Training in the UK 1993".

A follow-up survey, CVTS2 took place in 2000/01. CVTS2 collected similar data as before but covering 25 European states. Results were published in 2002.

CVTS collected data on the industry and size of establishments, their participation in on or off-the-job training, the costs of training, existence of training plans and training budgets, and the reasons why establishments had not trained any of their staff. The survey was designed to measure the volumes and costs of training courses provided by non-Governmental employers.

In the UK, CVTS covered enterprises in the private sector and establishments in the public sector and the survey was extended to cover data on initial training in addition to continuing training. Data collected on initial training, in addition to continuing training, and also include more industrial sectors except agriculture, forestry and fishing, the armed forces, households employing domestic staff, and extra-territorial bodies.

LTW (Learning and Training at Work)

This survey was focussed on employers' training practices and their awareness of, and involvement with, the training initiatives commissioned by the government

It collected data broken down by employer's size, region and industry sector.

It has now been replaced by the Workforce Training in England survey.

WTE (Workforce Training in England) 2006

This survey collected information from employers about the volume, type and pattern of training they provide; motivations for training; barriers to training; and use of, and satisfaction with, external training providers. The survey consisted of 4,000 telephone interviews with establishments of all sizes and sectors in England. Some comparisons of findings can be made with the larger scale National Employer Skills Survey (NESS2005).

Commissioned by the Department for Education and Skills, the Learning and Skills Council and the Sector Skills Development Agency, *Workforce Training in England 2006* .

ONS Vacancy Survey (of employers)

This section is mainly taken verbatim from the ONS website.

The Office for National Statistics (ONS) Vacancy Survey is a monthly business survey that provides comprehensive estimates of job vacancies across the economy. Vacancies are defined as positions for which employers are actively seeking recruits from outside their business. Each month's headline estimates are based on three-month rolling averages, with analysis by broad industry sector and by size of business. Monthly estimates of total vacancies are also published.

The survey has been running since April 2001, with the first experimental results published on the National Statistics website in September 2002. The results were accepted as National Statistics in June 2003 and since that date they have been published in the monthly labour market statistics First Release.

Approximately 6,000 enterprises in Great Britain are surveyed on a specific date each month. In common with the majority of ONS business surveys, the sample is obtained from the Inter-Departmental Business Register (IDBR), stratified by industry and number of people employed. One quarter of the sample consists of large businesses or organisations that are included every month. The remaining 4,500 are smaller and are sampled randomly on a quarterly basis. Smaller businesses remain in the survey for five or nine quarters (depending on the size of the business).

The survey covers all industrial sectors except agriculture, forestry and fishing. This is because of the disproportionate additional costs involved and the special difficulties of measuring vacancies in these industry sectors which mainly consist of very small firms (mostly with no vacancies). It is common practice to exclude these sectors from vacancy surveys in other countries. The UK approach is consistent with EU requirements. Completion of the survey is compulsory under the Statistics of Trade Act 1947.

The survey covers businesses in Great Britain only, although estimates for the UK are derived by grossing up the data for Great Britain, along with information about employment in Northern Ireland. Businesses in Northern Ireland are not surveyed because of the risk of overlap with responses to other surveys conducted by Northern Ireland departments.

As the data from the survey show strong and stable seasonal patterns, they are now being published on a seasonally adjusted basis. Results are published forty days after the survey data are collected. All results are comparable over time, dating back to the first published month. The unadjusted data series are also available.

The Vacancy Survey provides a consistent estimate of the total number of vacancies in the UK economy and is a leading indicator of the labour market. This information cannot be obtained from an alternative source, such as statistics of vacancies notified to Jobcentres, which provides only part of the picture and may not indicate developments in labour demand, due to changes to Jobcentre Plus procedures for taking and handling vacancies. The Jobcentre vacancies can however, be analysed in more detail than the survey results, for example by local area and by occupation.

From skills perspective this is the key gap. If information were available it would fill one of the main roles currently filled by NESS. According to Machin and Christian (2002) ONS went through a consultation process about the lack of an occupational dimension but it is not clear who was consulted. Based on this consultation with “main potential users of the data”, more detailed structural data, for example on occupations, (which would be far more difficult to collect (perhaps by less frequent annual or biennial surveys)), was given lower priority, as was possible extension of the survey to include the agriculture, forestry and fishing sector.

NESS (National Employer Skills Survey)

Background

The National Employers Skills Survey 2007 (NESS07) is the fourth in a series which provides detailed information on the incidence, extent and nature of skills problems facing employers in England. NESS gathers data on the issues employers face in terms of recruitment, skills gaps and training. It covers both recruitment and skill gaps within their existing workforce. It also explores employers' activities and expenditure in relation to training. NESS extends the earlier ESS series of surveys (with some differences). There are similar surveys in the other countries of the UK.[21]

The survey and subsequent analysis of the data study was commissioned by the Learning and Skills Council (LSC), in collaboration with the Department for Innovation, Universities and Skills (DIUS) and the Sector Skills Development Agency (SSDA).

The 2007 NESS was undertaken with around 79,000 employers using telephone interview techniques. The main survey was followed by a further sub-sample survey undertaken with around 7,000 employers that had funded or arranged training.

Key findings

The NESS series has revealed a generally positive trend in most areas of skills development. Fewer employers are now reporting skills gaps and the percentage of all vacancies caused by skills shortage, has shown a marked fall. There has been an increase in the proportion of employers providing training, holding a training plan and budget. There has been an increase in expenditure on training by employers compared to 2005. Key findings include the following:

- two thirds establishments have funded or arranged training in the last year;
- training expenditure was 10% higher in real terms than in 2005;
- almost half of employers have a training plan and over a third have a training budget;
- there has been a reduction in the number of vacancies caused by lack of skills (25% in 2005 compared to 21% in 2007).

NESS2007 included new questions focussing upon:

- awareness of and involvement in Train to Gain;
- recruitment of apprentices and reasons for offering or not offering Apprenticeships;
- key employer requirements of government in regard to recruitment and training; and
- the perceived performance of government on these measures.

NESS sampling Frame and related issues[22]

IDBR data are used for NESS07 quota-setting and weighting. There is a time lag so for the 2007 survey IDBR data for 2006 were used. IDBR data are widely regarded as being the most accurate and comprehensive source of information about the total

[21] The first NESS was commissioned in 2003 by the LSC – along with its partners, at that time (the DfES and the SSDA). NESS 2003 explored skills shortages and workforce development activity among more than 72,000 employers across England. This built upon the series of employer surveys designed to assess and monitor skills issues which included the Employers Skill Survey (ESS) commissioned by the DfES in 1999, 2001 and 2002.

[22] Thanks to Mark Winterbotham from IFF for much of the information in this section.

"population" of employers. It is also used for sampling/weighting the Employer Surveys in Scotland and Wales, as well as other flagship Government-funded surveys such as the SSDA/UKCES Surveys of Employers.

A modified Probability-Proportionate-to-Sample (PPS) approach was adopted to structure the quotas, with targets set on sector, size of establishment and geographical area, as follows:

- An initial target of 75,000 interviews were distributed across each of the nine English regions in proportion to the number of VAT and/or PAYE-based establishments with 2+ employment - *as defined by March 2006 IDBR data* - within that region.
- Within each region, interviews were then distributed by LSC area in proportion to the number of establishments within each local area (using IDBR 2006 unit-based data).
- Within each local LSC area, half of the target number of interviews was distributed across each of 28 sectors (defined using the 25 sector skill council (SSC) footprints, and with three additional 'sectors' grouping those employers not currently covered by an SSC) in proportion to the number of establishments within the sector (using IDBR 2006 unit-based data). The remaining interviews were distributed evenly across each sector.
- Targets within each sector were then calculated against six size bands, in proportion to the number of people working in establishments of that size (using IDBR 2006 employment-based data).

The sample itself was *primarily* drawn from Experian's database. Combining both the Yellow Pages and Thomson Directories, this is the most comprehensive source of establishment-based data that is commercially available with telephone numbers. This database is continually maintained, with new database "updates" made available on a monthly basis. For each quota cell, Experian was instructed to select the sample on a "1-in-n" basis.

Reflecting the Experian database's origin as a ***business*** database, however, there are certain pockets in which Experian consistently under-represents the population of employers, most notably in the public sphere. Skills for Justice and Government Skills are two SSCs where there is a particular shortfall in Experian's coverage. This also affects areas not directly covered by an SSC. In light of this, for NESS07, an application to ONS' Micro Data Release Panel was submitted to obtain details of the records they hold for these two SSCs.

The sectors were initially coded by 4/5 digit SIC code and respondents asked to confirm that they were appropriate. The establishment was then mapped to an SSC using the footprints (defined by SIC code) agreed between the SSCs and SSDA.

NESS also collects limited data by occupation. Employment is collected by 1 digit SOC code and some other data on vacancies, etc to 2 and 3 digit level. The latter is generally only available following further analysis f the detailed verbatim responses, and is not comprehensive.

For further details of NESS etc (see Annex B).

Annex B: An Overview of UK Employers Skills Surveys

B.1 Background

This annex draws heavily on Dignan's (2004) study. It provides a brief overview of his detailed 210 page report, extended and updated to include surveys carried out since 2003.

He focuses upon three main issues:

- Objectives and survey design;
- Definitions and measurement of indicators;
- Key similarities and differences in results.

To maximise comparability Dignan (2004) restricts most of his analysis to the following surveys:

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

He also makes a few comparisons within individual countries over time.

A number of new surveys which extend the ESS series have been conducted. In England these include ESS2002, and the new National Employer Skills Survey (NESS) series commissioned by the LSC (NESS2003, NESS2004, NESS2005 and NESS2007). New surveys have also been carried out by the devolved administrations in Scotland, Wales and Northern Ireland.

B.2 Objectives and survey design

The UK surveys all share the same broad set of **objectives**, aiming to provide within a description of recruitment problems and skill gaps, their causes and consequences. ESS1999 evolved from the *Skill Needs in Britain* surveys which were conducted on an annual basis from 1990 to 1997. These together with ESS1999 also provided model approaches for the Northern Irish, Scottish and Welsh surveys. They adopt broadly similar structures for questionnaires although they have subsequently moved further apart, especially the one for Wales, with its greater focus on generic skills.

The surveys also share many common features in terms of **survey design:** (see Table B.1):

- The unit of analysis, which is the establishment or workplace, as opposed to the enterprise or organisation;
- Sample frame, which is the British Telecom (BT) Business Database;.
- Stratification, by industry sector, establishment size-band and geographical area;[23]
- Targeting of larger workplaces, allocating interviews in proportion to numbers employed within each size-band rather than the number of establishments.

[23] Stratification in the Northern Ireland survey is by size band only

- Data collection methods based on Computer Assisted Telephone Interviewing (CATI).

There are, nonetheless, a few differences in survey design, such as sample strategies and sizes, industry coverage, weighting, etc (as indicated in Table B.1).

The Great Britain surveys made use of a quota sampling strategy as compared with the random disproportionate strategy employed in the Northern Ireland survey. Forth (2003) concludes that the ESS 2001 methodology "closely resembles" stratified

Table B.1: Employer Skills Surveys: Comparison of 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	EGRI 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	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

Source Dignan (2004).

random sampling. The surveys use different source of population data for weighting and grossing up. Response rates vary from 73 per cent in the Northern Irish SMS to around 50 per cent in the others. The Republic of Ireland vacancy surveys include many similar design features, but differ in a number of important respects, most notably, focussing on the enterprise or organisation rather than the establishment or workplace. The Irish survey also relies on a postal questionnaire. These differences do not preclude drawing comparisons but they do suggest the need for caution in interpreting any differences.

Dignan (2004) assesses the extent to which the different British and Irish surveys produce similar messages about how employers are affected by and respond to recruitment difficulties and skill gaps in their workforce. He highlights differences in foci as well methodological approach, and tries to draw some relevant lessons for those commissioning and carrying out such surveys. He concludes that while the UK surveys in particular share a broadly common methodological framework and approach, there are a number of differences of detail in design and implementation. He argues that this causes problems in making comparisons and that a more co-ordinated and common approach is desirable.

Coverage by sector and size of establishments as well as sample sizes vary. For example, even with the English surveys, ESS1999 was confined to non-agricultural industries and establishments with five or more employees. ESS2001 covered all industries and all establishments with one or more employees. ESS2002 was again restricted to establishments with five or more employees and was on a much smaller scale, with a sample size of just 4,000 compared with around 27,000 for the earlier surveys. Subsequently in order to produce statistically reliable results at detailed sectoral and geographical levels the sample size has been boosted to over 70,000 with significant implications for total costs. The surveys for the other countries within the UK have a number of similar and some additional differences compared to the English ones, which make direct comparisons problematic. There are also issues relating to timing, given that vacancies are likely to be sensitive to the economic cycle. For these and other reasons making direct comparisons between the surveys across countries is problematic.

Table B.2 Summarises some key features of the ESS and NESS series for England, focussing upon sample size, response rate and coverage. Various experiments were undertaken with coverage of smaller size establishments. These make comparison of a number of the surveys difficult, as it is clear that very small establishments (with 0-4 employees exhibit a number of unique characteristics.

Table B.2 Summarise some key features of the ESS and NESS series

Survey	Sample size (000s)	Size of establishment	Response rate
NESS2007	79	2+	35%
NESS2005	72	2+	44%
NESS2004	25	2+	42%
NESS2003	75	2+	35%
ESS2002	4	1+	40%??
ESS2001	27	1+	40%%??
ESS1999	27 (+ 4 face to face interviews)	%+	40%??

B.3 Definitions and Measurement

Definition and measurement of key variables or indicators are also crucial. Dignan (2004) deals with these under the following headings (which reflect the main foci of the surveys:

- Current vacancies;
- Hard-to-fill vacancies;
- Skill shortage vacancies;
- Skill gaps;
- Provision of training.

The first three relate to recruitment difficulties in the "external" labour market. The fourth refers to problems with the employers existing workforce (i.e. in the internal labour market).

Vacancies: Respondents (generally directors of Human Resources or their equivalent) are simply asked to indicate whether or not they have any vacancies and, if so, how many and in what areas. The latter is generally defined in terms of occupations that respondents are seeking to fill the posts. Vacancies are not explicitly defined in the GB surveys. Dignan (2004) suggest that, in comparison with the ONS Vacancy Survey, this may bias the numbers upwards as respondents are nor asked explicitly to restrict their answers to cases where they are active seeking to fill a vacancy, however qualitative research undertaken for ESS2002 suggests that the bias may be small (see Machin and Christian, 2002).

Hard-to-fill vacancies: All of the surveys use similar approach to the identification and measurement of hard-to-fill vacancies. However, in no case is a formal definition of a hard-to-fill vacancy provided. The surveys therefore measure the respondents' subjective perceptions of whether or not vacancies are hard-to-fill or not.

Skill-shortage vacancies: The concept of Skill-shortage vacancies was introduced in ESS1999 to distinguish hard-to-fill vacancies attributable to lack of skills as opposed to some other factors such as poor pay or working conditions. Estimates of both the incidence and extent of skill-shortage vacancies are based on asking respondents to identify the causes of vacancies being hard-to-fill. Skill-shortage vacancies are defined as those resulting from shortfalls in relevant skills, experience or qualifications required.

Skill gaps: The incidence of skill gaps can be measured directly by asking questions such as "does a skill gap exist your workforce" (Welsh and Northern Irish surveys). Alternatively the question can be put indirectly, such as "what proportion of your workforce are 'fully proficient' at their current jobs?" (English and Scottish surveys). Based on results from the Northern Irish survey which used both measures, as well as the qualitative analysis of ESS2002 conducted by Hillage *et al.* (2002), Dignan (2004) concludes that these result in non-comparable measures and casts particular doubts on the use of the proficiency question as a proxy indicator for 'skill gaps'.

"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."

Hillage *et al*, (2002) also noted that:
"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."

Mason and Wilson (2003) in their overview of lessons from the early ESSs conclude that 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"*.

Off-the job training: Broadly comparable indicators of the provision (by employers) of off-the-job training are presented in all the UK surveys, although there are some differences in respect of the number of employees receiving training.

Since 2004 the NESS series have also included questions on on-the job training.

B.4 Core questions

The UK employer skills surveys use a similar core set of questions. These are focussed upon:

- the incidence and extent of external recruitment problems faced by employers, as measured by hard-to-fill vacancies;
- the extent to which these problems arise from a lack of relevant skills amongst potential recruits;
- the incidence and extent of skill gaps exist within the current workforce;
- the provision of off-the-job training;

Incidence is measured by the proportion of establishments reporting such problems, distinguishing industry and size of establishment. **Extent** is measured by the number of vacancies or skill gaps. Other measures such as **Density** (numbers expressed as a percentage of total employment) or **Rates** (the number of vacancies as a proportion of the sum of employment plus vacancies) have also been developed to throw more light on the nature of the problems faced in different parts of the economy (see Mason and Wilson (2008) for further details).

The surveys also ask further questions to explore the causes ands consequences of skill deficiencies. These include questions on:

- causes of hard-to-fill vacancies and skill gaps;
- skills sought in relation to both external and internal skill deficiencies;
- impacts of skills-related problems on the establishment's performance;
- measures taken to overcome recruitment and skills-related problems.

B.5 Key similarities and differences in results

Problems in making comparisons

Even given the similarities between the surveys there are considerable practical difficulties in making direct comparisons across the UK and the Republic of Ireland. These include differences in industry and size grouping used as well as problems in accessing the detailed data and differences in routing through the questionnaires. Dignan (2004) therefore presents his results with a battery of caveats.

Even ignoring the Republic of Ireland vacancy survey which collects information from enterprises rather than establishments the results show many differences and it is not clear the extent to which these reflect real differences in the economic situation, the structure and behaviour of labour markets or just differences in survey methodologies. Different coverage, especially the inclusion (or not) of the smallest establishments is probably a key factor. Variations in the different approaches to weighting and grossing up to get estimates for the total population is also a potentially important issue.

There are also a number of more technical issues relating to the questionnaires and other survey design matters that have implications for the comparability of the surveys. These include:

- weighting and grossing up, including the use of different populations for this purpose;.
- treatment of missing data;

the precise measurement of skill-shortage vacancies hoe respondents were probed on such issues and details of questionnaire routing.

Common features for vacancies

Despite all these problems there were a few common features:

- larger establishments are more likely to have vacancies;
- the incidence of current vacancies is highest in certain sectors notably parts of the public services;
- the incidence of both hard-to-fill and skill-shortage vacancies does not vary much by industry;
- larger establishments are more likely have a hard-to-fill vacancy.
- few establishments reported having skill-shortage vacancies.

There are some notable differences between the findings from the surveys in the occupational composition of skill deficiencies. For example in the English surveys, skill-shortage vacancies were found in the professional and associate professional occupations and the skilled trades, whereas in Northern Ireland and Scotland, such vacancies were concentrated in skilled trades and also in some less-skilled occupations such as operatives and elementary occupations. However, it is again far from clear how much this reflects real differences as opposed to statistical noise or biases introduced by different methodologies.

Measuring internal skill gaps

Dignan (2004) suggests that perhaps the most significant differences between the surveys relate to the measurement of internal skill gaps. He shares the concerns regarding the use of the proficiency question approach to measuring internal skill gaps Voiced by others. For example, Hillage *et al,* (2002) argued that their qualitative research on respondents perception and reactions to the questions used in the early English surveys suggested that proficiency was as much associated with performance as with the possession of skills, and that therefore a more direct question might be less ambiguous. Despite these concerns, the same general approach has been maintained in the NESS series.

Causes, consequences and responses

Comparisons of the reasons for, impacts of, and responses to skill deficiencies are even more problematic. Nevertheless Dignan (2004) draws a few conclusions:

- the main impact on businesses of skill deficiencies was difficulties with customer service, followed by restrictions on business development activities, such as new product development;
- measures taken by establishments in response to skill deficiencies were mostly focused on the recruitment process (although higher pay also ranked highly in England and Scotland and in Northern Ireland providing training to less qualified recruits).

Off-the-job training

The early ESS series focussed on off-the –job training. The surveys reviewed by Dignan (2004) exhibit large disparities in the overall provision of off-the- job training (OJT) which seem difficult to explain. Despite this there were some common features:

- smaller establishments were less likely to provide OJT;
- public services were more likely to provide OJT than the private sector;.
- provision of OJT follows a U-shaped pattern – many do not provide any such training but those that do provide it to most of their employees.
- OJT was most common in establishments experiencing skill deficiencies (especially in the external labour market).

Of the surveys studied by Dignan (2004), Northern Ireland was the only one to include a module for on-the-job training. Since 2004 questions about on-the-job training have been added to NESS.

B.6 Too much emphasis on the margins?

A common finding from all the surveys reviewed by Dignan (2004) is that relatively small numbers of employers are affected by skill deficiencies. The more recent surveys show a similar pattern. This raises the question, also posed by Mason and Wilson (2003), about whether the focus of skills surveys on the margins of the difference between demand and supply rather than on demand *per se* is the right one. They argue that a strong case can be made for paying much more attention to understanding the skill requirements of firms that do not claim to have skill problems, however defined.

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Annex C: European Employer Surveys[24]

Continuing Vocational Training Survey

This is an enterprise-based survey conducted in all EU countries (plus Norway) to collect information on vocational training activities of employers. It is carried out in multi-annual sequence. The survey is based on a European regulation on vocational training statistics.

Job vacancy survey

National job vacancy surveys became the most important instrument to provide information on outstanding labour demand in Europe. Based on national experience with job vacancy surveys Eurostat proceeded in establishing this at a European level. Meanwhile 25 EU countries (except Ireland and Malta) are contributing to European job vacancy statistics and publishing results. (http://europa.eu.int/estatref/info/sdds/en/jvs/jvs_a_sm.htm).

At present the focus of most countries lies in providing data according to the European regulation on job vacancy statistics. Its first part was adopted in May 2008; the second part is expected to be adopted in 2009. Accordingly, from 2010 on all countries will provide representative national data on a quarterly basis for the number of job vacancies and job vacancy rates by NACE sectors and two workplace size classes. In addition to the required data, some countries collect additional data on the structure of vacancies (by qualification, occupation etc.) and/or on skill gaps, whilst other countries collect information on employers' expectations of future skill demand. Regarding the high importance attached to the identification of skill mismatch, both currently and in the future, increasing interest in using job vacancy surveys to identify future skill needs can be expected.

European countries invest in this expensive survey to yield reliable and comparable data. Currently methodological differences between the national surveys still exist and published data are not fully comparable. Together with EUROSTAT, individual countries are working on this challenge. From 2008 onwards, methodological workshops on job vacancy statistics will take place regularly, beginning with a workshop in December 2008 at the Institute for Employment Research in Nuremberg. In the medium term a high comparability of data collection methods can be expected, forced by the European regulation and a strong interest from all Member states regarding labour demand trends.

[24] This annex is based on a proposal prepared by IER in collaboration with Economix Research and Consulting, in response to the Cedefop Tender for Project AO/RPA/AZU-TODUN/Feasibility-Employers Survey 020/08 *Employer survey on skill needs in Europe: Feasibility study.*

Establishment Survey on Working Time and Work-Life Balance

This survey aims at mapping working time policies and practices at the level of the establishment in the European Union and to survey the views of the different actors at establishment level on these policies and practices. The survey started in 2004 and a 2008 update is presently underway. It covers 21 EU countries. The survey includes establishments with 10 and more employees. Overall 21,000 establishments were interviewed.

Business cycle survey

The Directorate General for Economic and Financial Affairs (DG ECFIN) conducts regular harmonised surveys for different sectors of the national economies in the European Union and in applicant countries. They are addressed to representatives of industry (manufacturing), services, retail trade and construction sectors, as well as to consumers. These surveys allow comparisons among different countries' business cycles and have become an indispensable tool for monitoring the evolution of the EU and the Euro-zone economies, as well as monitoring developments in the applicant countries. Labour related surveys have been occasionally conducted.

PIAAC Programme for the International Assessment of Adult Competencies

The Programme for the International Assessment for Adult Competencies (PIAAC) is aimed at developing a strategy to address the supply of and demand for competencies. It is intended to:

- identify and measure differences between individuals and countries in competencies believed to underlie both personal and societal success;
- assess the impact of these competencies on social and economic outcomes at individual and aggregate levels;
- gauge the performance of education and training systems in generating required competencies; and
- help to clarify the policy levers that could contribute to enhancing competencies.

The papers listed below are background documents that have been used to help develop this strategy.

Draft Strategy Paper: Policy Objectives, Strategic Options and Cost Implications
"What Do Policy Makers Need to Know About the Skills of Young People and the School to Work Transition?" (by Peter Dolton)
"Developing an International Survey on Adult Skills and Competencies: Aims and Methodological Issues" (by Vincent Merle)

For further information see: www.oecd.org/els/employment/piaac