

Skills in Focus

Underutilization, overqualification and skills mismatch: patterns and trends

Professors Alan Felstead and
Francis Green

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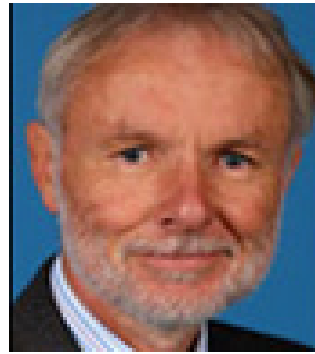


About the Authors



Alan Felstead is Research Professor at Cardiff School of Social Sciences, Cardiff University.

His research focuses on: the quality of work; training, skills and learning; non-standard employment; and the spaces and places of work. He has completed over 30 funded research projects (including nine funded by the Economic and Social Research Council), produced six books, and written over 200 journal articles, book chapters and research reports. His recent books include: *Improving Working as Learning* (London: Routledge, 2009); and *Changing Places of Work* (London: Palgrave, 2005). He has delivered many keynote addresses to conferences around the world, including China, Singapore, South Africa, Australia and Europe, and has given labour market advice to policy-makers inside and outside the UK.



Francis Green is Professor of Work and Education Economics at the Centre for Learning and Life Chances in Knowledge Economies and Societies (LLAKES), Institute of Education, London University.

His research focuses on skills, training, work quality and industrial relations issues. He has published many articles and nine books, including *Demanding Work: The Paradox of Job Quality in the Affluent Economy* (Princeton University Press, 2006). His new study, entitled *Skills and Skilled Work: An Economic and Social Analysis* (Oxford University Press) will appear in June 2013. He regularly provides consultancy advice and reports for UK government departments and a range of international organisations, including the OECD, World Bank and the European Commission.

About Skills in Focus

The Skills in Focus series is intended to support informed debate around current and future skills issues. The Joint Skills Committee is jointly sponsored by the Scottish Funding Council and Skills Development Scotland. The Committee works closely with the Scottish Government, employers, business organisations and students to ensure that Scotland has the right high-level skills and an employable and adaptive workforce.

Editorial team

Malcolm Greig, Evaluation & LMI Manager, SDS, malcolm.greig@sds.co.uk

Dr André Reibig, Senior Policy Officer, SFC, areibig@sfc.ac.uk

George Thompson, Research & Evaluation Executive, SDS, george.thompson@sds.co.uk

Dr Patrick Watt, Head of Evaluation & Research, SDS, patrick.watt@sds.co.uk

For all general enquiries, please e-mail skillsinfocus@sds.co.uk. For any specific enquiries, please contact a member of the editorial team.

Foreword



Introduction

Paul McKelvie OBE is Vice Chair of the Board of the Scottish Funding Council (SFC), a member of the Board of Skills Development Scotland (SDS) and Scotland Commissioner to the UK Commission for Employment and Skills. He is also the Chair of the Joint Skills Committee.

The Joint Skills Committee is a statutory committee of the Funding Council. It operates as a joint committee advising the Boards of SFC and SDS on skills issues. The Committee also has a central role in stimulating debate about skills in Scotland. The Skills in Focus seminar series is part of the Joint Skills Committee's contribution to that debate.

Foreword

Professors Alan Felstead and Francis Green are internationally renowned experts on skills, training and the nature of work. They are based at the Cardiff School of Social Sciences and the Centre for Learning and Life Chances in Knowledge Economies and Societies (LLAKES) respectively.

Alan and Francis start by highlighting the differences between hours-based underemployment (where workers wish more hours in their current job) and skills-based underemployment (where workers are not making best use of their skills in their job). The former can be measured through the regular Labour Force Survey. The latter, a measure of skills underutilization is more challenging.

A key source of evidence on skills underutilization is the Skills and Employment Survey. This is an independent survey of workers' views on qualifications, training and the nature of their job. The survey collected responses from working adults interviewed in their own homes.

Alan and Francis use historical data from the Skills and Employment Survey to analyse changes in aggregate qualification mismatches, overqualification and patterns of skills usage during the last 25 years. Alan and Francis find that in Britain between 1986 and 2006 aggregate mismatches in the level of qualifications supplied and those demanded were growing rapidly and over qualification rates were also increasing – although a greater proportion of the overqualified have been able to use the skills they had acquired. However, the 2012 results suggest that the matching process has begun to improve in Britain with overqualification rates falling for the first time since the series began. Unfortunately, 2012 results for Scotland are unavailable as there was no Scottish boost in the Skills and Employment Survey.

I would like to thank Alan and Francis for their input to the discussion on skills underutilization. They highlight the need for robust evidence to understand the impact that skills misalignments may have on well-being, job satisfaction and pay in Scotland. They argue that better understanding will aid the development of effective policy that minimises the occurrence of skills underutilisation in the future.

Paul McKelvie OBE Chair of the Joint Skills Committee

Underutilization, overqualification and skills mismatch: patterns and trends

1. Introduction.

It is becoming increasingly recognized that today's labour market does not divide neatly between those in work, on the one hand, and those seeking work, on the other. Instead, there is growing evidence these labour market distinctions are becoming fuzzy. For example, zero hours contracts – which allow employers to engage workers 'as required' but with no guarantees over when and for how long – have grown by 75% between 2008 and 2012 in the UK. Workplaces in the hotels and restaurants sector have been long-standing users of zero hours contracts, but some of the largest increases have occurred in sectors not renowned for their use such as education and the NHS (House of Commons, 2013; ONS, 2013a; van Wanrooy et al., 2013; Financial Times, 7 April 2013). Similarly, the number of people who are in employment but want to work more hours has risen by 980,000 since the start of the economic downturn in 2008 to stand at over three million in 2012 – a figure well above the level of unemployment. Around two-thirds of the increase took place in the 12 months between 2008 and 2009. Since then, the rate of increase has slowed down. However, over the same period unemployment – the common measure of excess capacity – went in the

opposite direction and fell (ONS, 2013b).

These divergent trends have highlighted the dangers of relying on unemployment as the only barometer of labour underutilization. In recognition of these issues a Scottish Parliament Inquiry was set-up to collect evidence on what is known about the economic and social costs of underemployment for the Scottish economy and its people. Its report was published in April 2013 and therefore provides an important backdrop to this Skills in Focus paper (Scottish Parliament, 2013).

Notably, the Inquiry recognized that underemployment covers circumstances where individuals would like to work more hours as well as situations where individuals' skills are not used effectively. Both mean that economic resources are underutilized and that there are demand constraints on economic growth, over and above the level implied by the unemployment measure. However, debates around zero hours contracts and constraints on working hours – both fuelled by readily available data for the UK and Scotland (Bell and Blanchflower, 2013; Bell, 2012; Felstead, 2011) – have meant that much of the analytical (and media) attention has focused on hours-constrained underemployment and rather less

“..improving the utilization of skills in the workplace’ featured prominently in Scottish policy documents..”

attention has been given to skills underutilization (The Scotsman, 7 January 2013; Daily Record, 7 January 2013; The Herald, 17 April 2013).

Before the economic crisis the situation was very different. Then, skills underutilization received a lot of attention in policy debates in the UK, with Scotland, in many respects, leading the way with the establishment of the Skills Utilization Leadership Group (Warhurst and Findlay, 2012; Payne, 2011). The aim of ‘improving the utilization of skills in the workplace’ featured prominently in Scottish policy documents such as Skills for Scotland: A Lifelong Skills Strategy, launched in 2007

(Scottish Government, 2007: 5) and renewed in 2010 (Scottish Government, 2010). Similar sentiments have been echoed more recently in the Scottish Government’s Effective Skills Use campaign which is based on the premise that ‘we collectively need to make better use of skills’ since ‘organisations and individuals will only reap the full benefits of skills investment when workplaces fully enable staff to also use their skills effectively’ (Scottish Government, 2012). At the UK level, too, skills underutilization featured in policy discussions with the UKCES stating that ‘the future employment and skills system will need to invest as much effort in raising employer ambition, in stimulating demand, as it does in enhancing skills supply’ (UKCES, 2009: 10).

Despite its importance the Parliamentary Inquiry recognized that there is a ‘paucity of data and research on skills underutilization in Scotland’ as well as a need ‘to collect trend data’ (Scottish Parliament, 2013: 28). As an illustration, the only recent quantifiable data in the Inquiry’s report came from one question asked of employers who responded to the 2011 UK Employer Skills Survey (ibid: 24).¹ Employers were asked how many of their staff had both qualifications and skills more advanced than required for the job. According to the answers


¹ Aside from this quantifiable evidence, the Parliamentary Inquiry drew on case study reports from women’s groups and disability campaigners (Scottish Parliament, 2013: 27-28).

they gave, skills underutilization in Scotland is slightly higher than in the rest of the UK (Davies et al., 2012: 91-95). However, it should be remembered that this estimate is derived from a single question, asked for the first time in 2011 and based on employers' knowledge of the qualifications and skills held by workers in their charge.

More precise estimates of skills mismatches are available from individual-level surveys which contain a series of questions about job skills and the skills held by workers themselves. However, such data are not regularly collected in Scotland. The aim of this Skills in Focus paper, then, is to demonstrate how such data can be collected as well as indicating – using British-level data – who is affected most by skills underutilization and whether the phenomenon has grown or declined over time.

The paper will be structured as follows. Section 2 will outline the data sources used and highlight the difficulties faced by analysts seeking to provide up-to-date evidence for Scotland alone. Section 3 outlines how different aspects of skills underutilization are measured by the survey questions used in this paper and how they differ from other possible approaches. Section 4 presents the empirical results for Britain in 2012. It presents data on aggregate mismatches in the demand for and supply of

qualifications as well as mapping how overqualification varies by a number of socio-economic indicators. Section 5 traces how aggregate qualification mismatches, overqualification and patterns of skill usage have changed over the last quarter of a century in Britain. Scottish data for 2006 is also presented since in that year the survey was boosted for Scotland. Section 6 concludes by arguing that while Scottish data resources provide a robust basis on which to examine the scale and character of hours-constrained underemployment, they provide a weak basis on which to do the same for skills underutilization. Instruments to measure skills underutilization, for example, are not included in the Labour Force Survey which is



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boosted by the Scottish Government. Surveys which set out to measure skills underutilization are less frequently carried out – usually on a five yearly cycle, but with boosting options. There is a good case that they need to be boosted for Scotland in the future. This will ensure that Scottish policy-makers can base their decisions on Scottish data rather than relying on data collected for Britain as a whole.

2. Data sources

This paper is based on a long-running series of surveys which allows analysts to track the changing nature of the British labour market through the eyes of workers who are questioned about a wide variety of issues, including the skills they use at work. The Skills and Employment Survey 2012 (SES2012) is the latest in the series and so provides a unique opportunity to assess what progress has been made towards achieving the goal of raising skills utilization in Britain. The survey collected responses from working adults in Britain, interviewed in their own homes. The sample was drawn using random probability principles subject to stratification based on a number of socio-economic indicators. Only one eligible respondent per address was randomly selected for interview, and 49% of those selected completed the survey. Data collection was

directed by ourselves and conducted by GfK-NOP.

SES2012 is the sixth in a series of nationally representative sample surveys of individuals in employment aged 20-60 years old (although the 2006 and 2012 surveys additionally sampled those aged 61-65).² The numbers of respondents were: 4,047 in the 1986 survey; 3,855 in 1992; 2,467 in 1997; 4,470 in 2001; 7,787 in 2006; and 3,200 in 2012. For each survey, weights were computed to take into account the differential probabilities of sample selection, the over-sampling of certain areas and some small response rate variations between groups (defined by sex, age and occupation). All of the analyses that follow use these weights (for more detail, see Felstead et al., 2013).

The sample size was boosted for Scotland in 2006 via funding from Future Skills Scotland (as part of the Enterprise Networks). The aim was to provide a baseline against which to track skills underutilization over time (along with changes skills, training and the quality of work).³ In 2006, 2000 respondents out of the 7,787 respondents were living in Scotland, the boost funding adding significantly to the numbers of interviews and providing robust results for Scotland as a whole and areas within it (including the Highlands and Islands).

² The 2006 survey was also conducted in Northern Ireland and so UK comparisons are possible (as in Figure 10, and Table A4).

³ The survey series collects data at a British-level on inter alia: the skills content of jobs; the amount and nature of training and learning at work; job control; insecurity and fear at work; work intensification; and job-related well-being. Six separate reports on each of these themes are available from the project web site: www.cardiff.ac.uk/socsi/ses2012 and LLAKES: www.llakes.org.

However, funds for a similar boost in 2012 were not available (cf. Felstead and Green, 2008; Felstead, 2007). This paper, therefore, paints a picture of the scale and character of skills underutilization in Britain as a whole as a way of promoting policy discussion in the Scottish context.

3. Measures

The concept of ‘underemployment’ refers to a situation where the quality or quantity of employment is lower for those in work than some standard point of comparison (Friedland and Price, 2003). Skills underutilization, then, refers to employment which underuses workers’ skills. This can be operationalized in a number of ways, but in each case there are practical and methodological restrictions on what survey data can be collected on workers’ skills and whether or not they exceed what skills jobs require. We use three indicators of skills underutilization:

- aggregate level imbalances in the supply of qualifications and demand for these credentials by employers;
- individual-level mismatches in the qualifications workers hold and those required to get the job; and
- an assessment of the use of whether

those ‘over-qualified’ (that is, they have qualifications which exceed the level of qualification required for the job) are able or unable to use their skills effectively.

We explain each of these in turn.

One of the major advantages of the survey series is the focus placed on the measurement of skills actually used in the workplace. Although it is possible to track accurately the qualifications held by those actually in employment (using the Labour Force Survey, see Sloane et al., 2005), the mismatch between the qualifications held by jobholders and the qualifications they require is only possible using data sets which collect both types of information. The six data sets reported here contain both of these elements. The analysis which follows allows us to reveal the extent, pattern and form of aggregate qualification mismatch.

Evidence from all six surveys is used to derive a ‘qualification demand and supply balance sheet’. Using evidence drawn from the second quarter Labour Force Survey for the relevant year, estimates of the qualification levels of the economically active are derived. The relevant one of our six surveys is then used to estimate the number of jobs requiring a

particular level of qualification on entry. These proportions are grossed up to provide national estimates. To these estimates, we add the number of vacancies as estimated by the Vacancies Survey (or Job Centre reports) for the relevant months of the survey (see Table A1). The total number of estimated vacancies is apportioned according to the qualifications requirements reported by new recruits to the relevant survey (i.e. those in their jobs for 12 months or less). This produces two columns of data – one estimates total qualification demand, while the other estimates qualification supply. Comparing the columns shows where in the qualification hierarchy demand and supply are broadly equal and where there are

deficiencies or excesses in supply.

Identifying aggregate imbalances in the labour market are indicative of skills underutilization, but they do not measure it directly. They do not reveal how effectively individuals' qualifications are matched to the jobs they do and, in particular, whether they have qualifications above the level required and are therefore 'overqualified'. Using the survey questions at our disposal, we use a more direct measure. We define respondents as 'overqualified' if they say that the qualifications – used as a proxy for skills – required to be hired for the job are lower than the qualifications they in fact hold. An alternative method uses the modal qualification level of job-holders as an indicator of the credentials required in each occupation (OECD, 2011; Chevalier and Lindley, 2007; McGinness, 2006). However, occupational titles may hide the fact that people with the same job title may do very different jobs and hence the qualification requirement may not be the same for everyone in any given occupation. Our preferred measure does not suffer from this drawback.

Our third measure takes the analysis further by examining whether those 'over-qualified' are also unable to use their skills at work effectively (Green and Zhu, 2010). We divide the overqualified into two groups according to

“Skills underutilization refers to employment which underuses workers' skills.”

a survey question on how much of their ‘past experience, skill and abilities’ they can use in their current job. ‘Real overqualification’ occurs when overqualified respondents say they use ‘very little’ or ‘a little’ of their skills at work. However, if the overqualified use ‘quite a lot’ or ‘almost all’ of their skills at work we classify them as ‘formally overqualified’.

4. Patterns of mismatch

For Britain as a whole, the expansion of the education sector, rising participation rates and the drive to increase qualification levels

has seen the number of people with no qualifications decline. In 2012, only 1.5 million economically active individuals in Britain had no qualifications to their name, but around 5.9 million jobs required no qualifications. At the other end of the spectrum, 8.2 million of the economically active had a first or higher degree, but only 6.8 million jobs stipulated that degrees were needed on entry (see Table A1).

A comparison of the ‘demand’ and ‘supply’ columns of data – calculated as outlined above – is illustrated in Figure 1. It shows where in the qualification hierarchy demand and supply

Figure 1: Qualifications Supply and Demand Mismatch, Britain, 2012

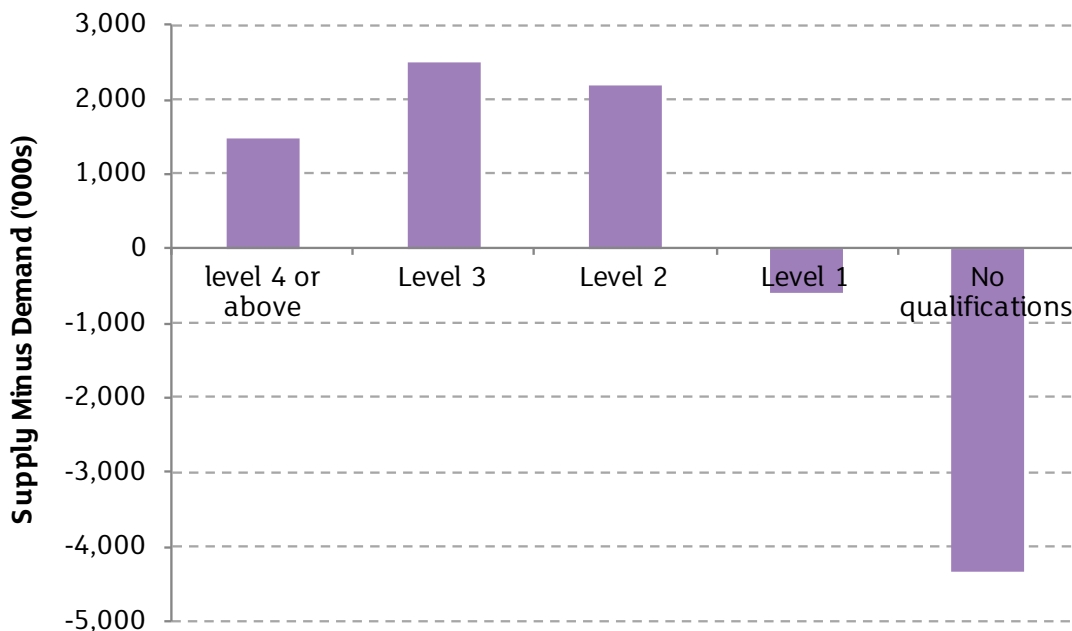
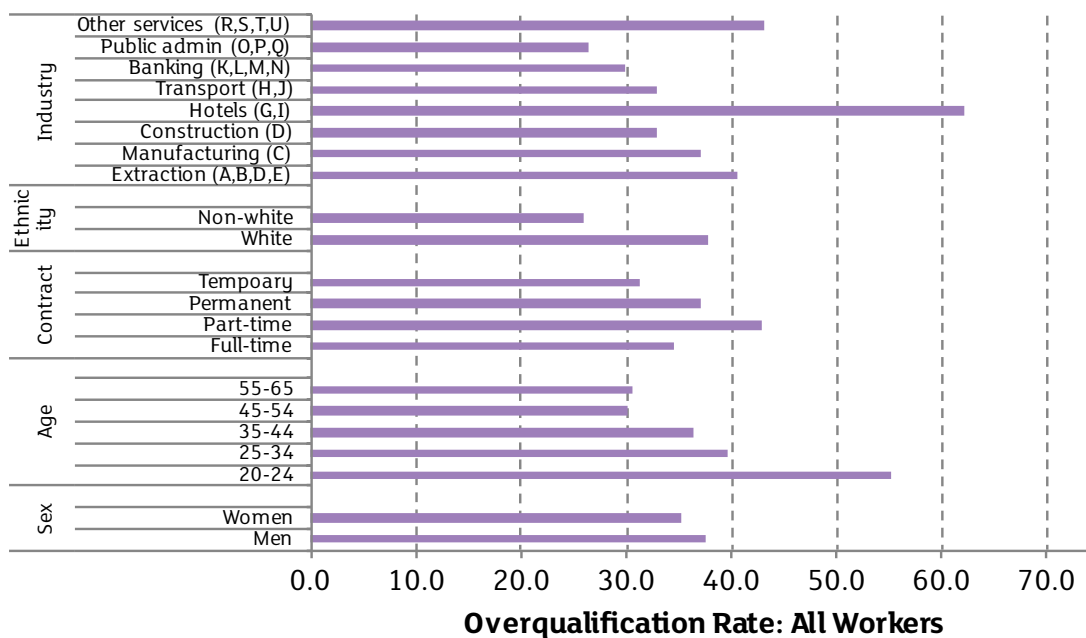


Figure 2: Overqualification rates by selected characteristics, all workers, Britain, 2012



were broadly equal and where there were deficiencies or excesses in supply in Britain. In 2012, there were 1.5 million more people with level 4 qualifications and above than there were jobs requiring these qualifications. Supply also exceeded demand at levels 3, and 2, the differences being 2.5 and 2.2 million respectively. As a result, in 2012, there were many more low qualification jobs than there were lowly qualified people to carry them out – the gap here was 4.3 million.

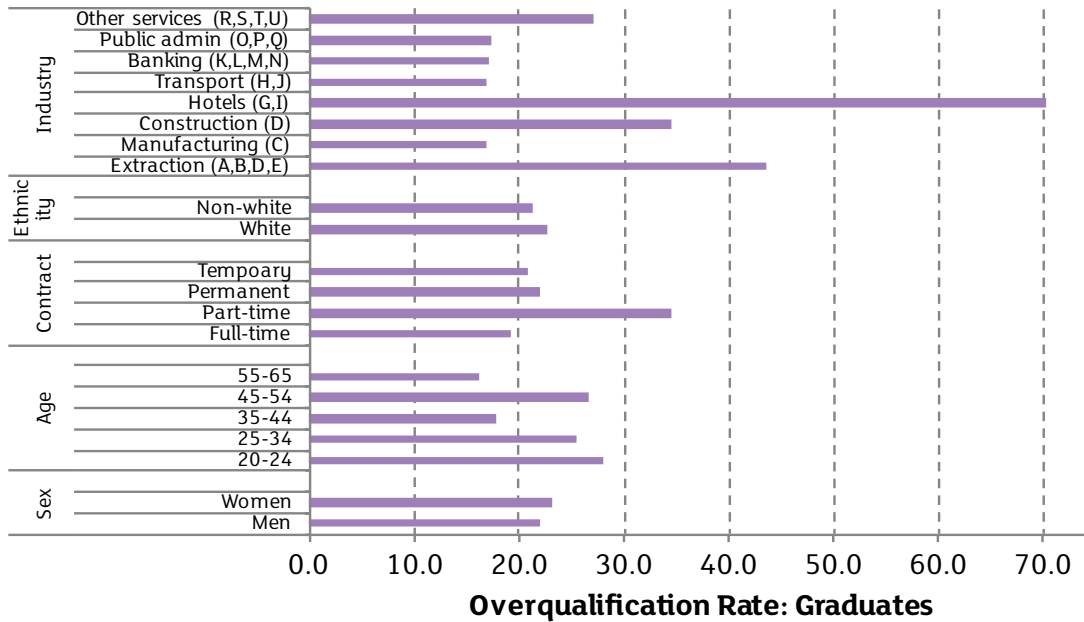
Concern has been expressed that in addition to suffering from high levels of unemployment, some groups in society – the young in particular – may also be more exposed to underemployment in that those in work want

to work more than they do currently. The Scottish evidence confirms that this is the case with men, those working in the private sector and the less well qualified also more likely to find their working hours constrained (Bell, 2013). These patterns extend to other measures of labour underutilization. The data presented here shows that there are large spikes in overqualification rates among similar groups: the young (20-24 year olds); part-timers; white workers⁴; those working in hotels, restaurants and retail; and among those working in other services such as arts, entertainment and recreation (see Figure 2).

However, for graduates the pattern is muted. The most notable peak is among graduates

⁴ This is at odds with other research which shows that non-whites have higher rates of overqualification (Battu and Sloane, 2002). However, their results also show considerable variation within the non-white category. Unfortunately, small sample sizes prevent further analysis on the 2012 dataset alone. However, pooling the six datasets is a possibility.

Figure 3: Overqualification rates by selected characteristics, graduates, Britain, 2012



working part-time.⁵ Among this group the overqualification rate in 2012 was 34.4% compared to 19.3% among full-timers. Once again, hotels, restaurants and retail is the industry sector with the highest rate of overqualification with seven out of ten (70.4%) graduates saying that they do not need a degree to get hired to their current post (see Figure 3). Rates are also high in the extractive industries such as agriculture and construction – both are sectors which are more reliant on low skill manual labour and have higher rates of labour turnover

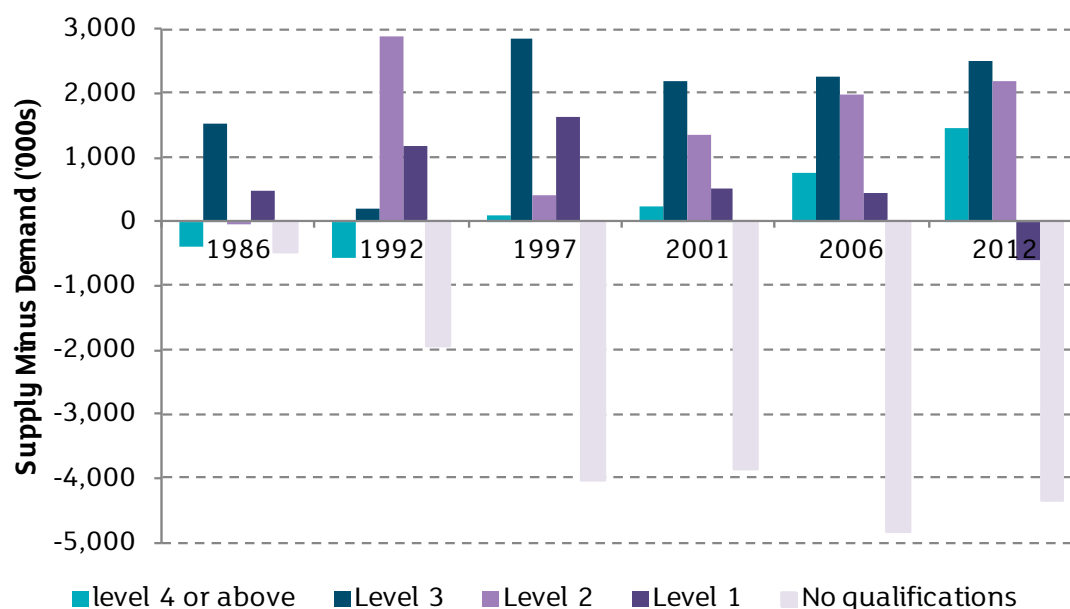
5. Mismatch trends

The phenomenon of large excess numbers of

jobs for people with no qualifications requirements – identified in Figure 1 – is not new, but rather it has emerged and grown over the last quarter of a century in many countries (McGuinness, 2006). This excess arose, not because the numbers of jobs that do not require any qualifications rose, but because the number of people holding no qualifications fell substantially faster than the number of jobs which do not require qualifications. The number of people with no qualifications fell by 6.1 million between 1986 and 2012, reflecting successful expansion of the education system and the growth of qualifications over this period. Meanwhile, the British economy saw the number of jobs requiring no qualifications

⁵ Graduates are those who report possessing a first or higher degree.

Figure 4: Qualifications supply and demand mismatch, Britain, 1986-2012



for entry fall by 2.2 million. Figure 4 also shows how the differences between the supply of qualifications at all levels and the number of jobs at these levels has fluctuated over time. These results have been widely used by the UKCES in its evidence reports (e.g., UKCES, 2009: 117-119; UKCES, 2010: 80).

In addition to changes at the bottom of the labour market, there have been notable changes at the top. Dramatic changes have taken place at level 4 or above. Here, the undersupplies identified in 1986 and 1992 have turned into an oversupply of 1.5 million people in 2012. This is largely the result of the supply of graduates outpacing the growth in demand for graduate entry jobs. So, while the demand for degree

holders rose by 4.8 million over the 1986-2012 period, the supply of graduates rose by 5.9 million. Figure 5 illustrates how the gap between the number of graduates and the number of graduate-level jobs has changed over the last quarter of century. Both supply and demand have risen to record highs, but the gap between the two has also risen and now stands at nearly 1.5 million.

Imbalances in the aggregate supplies of workers and numbers of jobs at each qualification level are an important factor underlying mismatches at the individual level, in which workers may have qualifications which are too high for their jobs. To obtain a fuller picture of the utilization of qualifications

Figure 5: Graduate supply and demand mismatch, Britain, 1986-2012

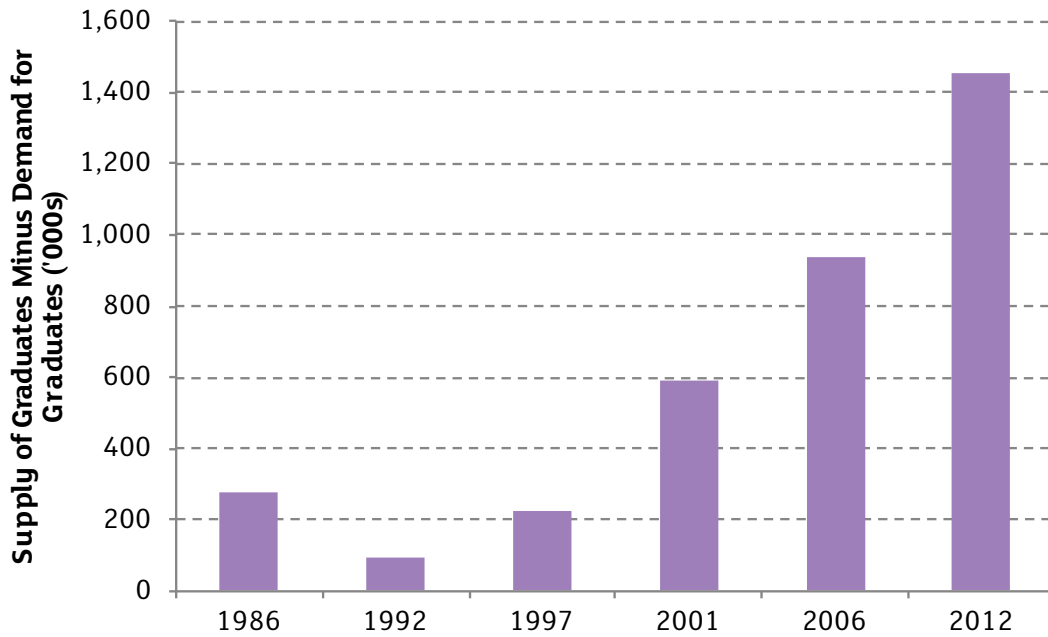
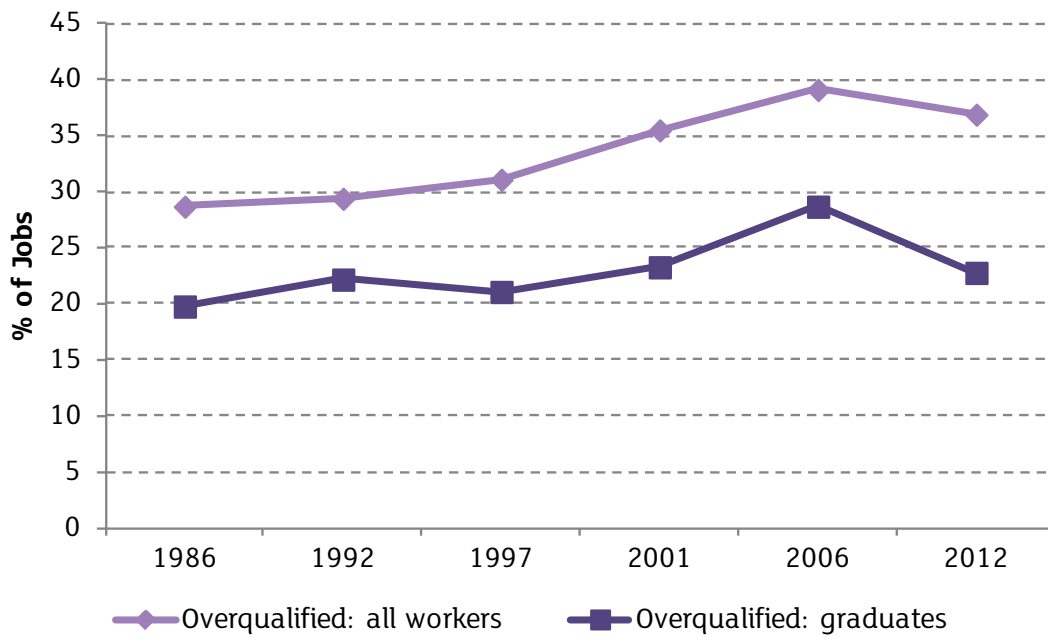


Figure 6: Overqualification, Britain, 1986-2012



in the economy, we investigate the match between each individual's qualifications and their job's requirements, and how this match has changed over time.

The results of the latest survey suggest that between 2006 and 2012 the long trend of rising levels of over-qualification in Britain was put into reverse (Figure 6). From 1986 to 2006, two or three percentage points were added at each data point to the proportion over-qualified. Yet between 2006 and 2012 the proportion fell by two percentage points, with an even sharper decline among graduates where it fell by six points. This suggests that at a time when the supply of qualified workers was growing ever larger, better levels of matching were also taking place. This is a major development since separate country studies using non-comparable indicators typically find that overqualification is prevalent in upwards of a fifth of the population (McGinnness, 2006). In some countries, the overqualification rate has risen as in Britain, at least until 2012. German data, for example, suggests that over-qualification among male full-time workers has increased from 23% in 1997 to 32% in 2006 (Rohrbach-Schmidt and Tiemann, 2011).

Another way of looking at the issue is to examine what happened to particular

qualification groups over time in terms of their labour market experience. Figure 7 examines the experiences of graduates. Using the Labour Force Survey we estimate the number of graduates aged 20-60 who were economically active (all the surveys in the data series reported here cover this age range, although some have extended the age range to 65). From this, we calculate the percentage unemployed and from our data series we calculate overqualification rates among employed graduates. The residual is the proportion of graduates who are in graduate-level jobs as reported by the level of qualification required on entry. The results are shown in Figure 7. This shows that the matching rate for graduates dipped substantially in 2006 – falling from 74.4% in 2001 to 68.5% in 2006 – before bouncing back in 2012 to its long-term level of around three-quarters (73.2%). It also shows that the numbers involved in all three labour market statuses have increased as the number of graduates has rocketed.

In order to take the analysis further, responses to questions posed elsewhere in these surveys can be used to examine whether those overqualified were able or unable to use their skills at work effectively. This suggests that the 'real overqualification' rate – those over-qualified and unable to use their skills at work

Figure 7: Graduate destinations, Britain, 1986-2012



expressed as a proportion of all workers – has remained unchanged at between 12-13% over the 1992-2012 period. Instead, most of the growth in ‘overqualification’ between 1992 and 2006 was accounted for by ‘formal overqualification’, a problem of less importance in practice given that respondents said they were able to use most of their skills at work (see Table A2). Over the entire 1992-2012 period the proportion of overqualified respondents who used little or none of their skills at work (i.e., the real overqualified) fell from 41.4% to 34.1% (see Figure 8). This suggests that the matching process is working rather better than the unadjusted overqualification figures would

suggest.

However, the proportion of overqualified graduates who could not use their skills at work has risen since 1992, rising from 29.4% in 1992 to 33.9% in 2012 (see Figure 9). Nevertheless, the 2012 figure represents a fall from 2006, when it stood at 35.5%, and was a time when an historically high number of graduates entered the labour market.

Scottish evidence is available for 2006 when boost funding was provided. This suggests at that time the Scottish educational system was more successful than the UK in producing people with level 4 or above qualifications – in

Figure 8: Real and formal overqualification among overqualified workers, Britain, 1992-2012

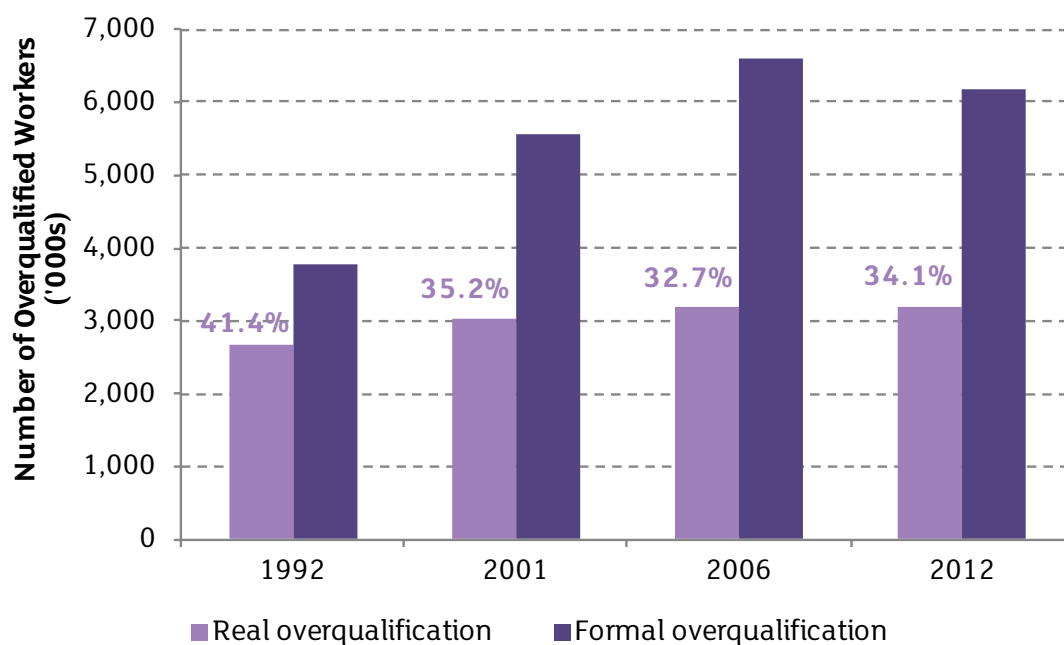
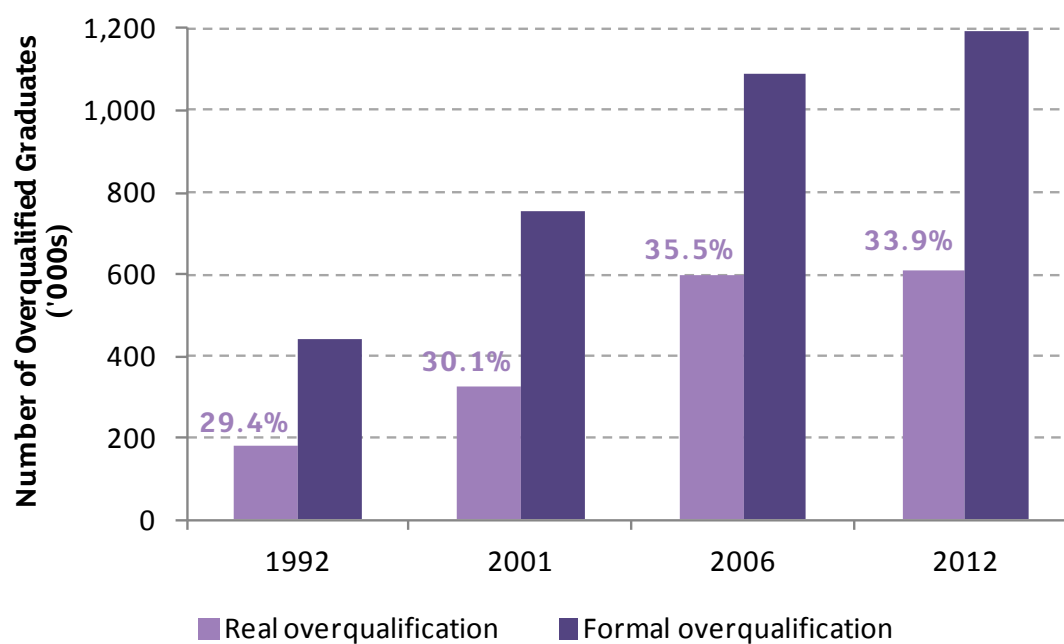


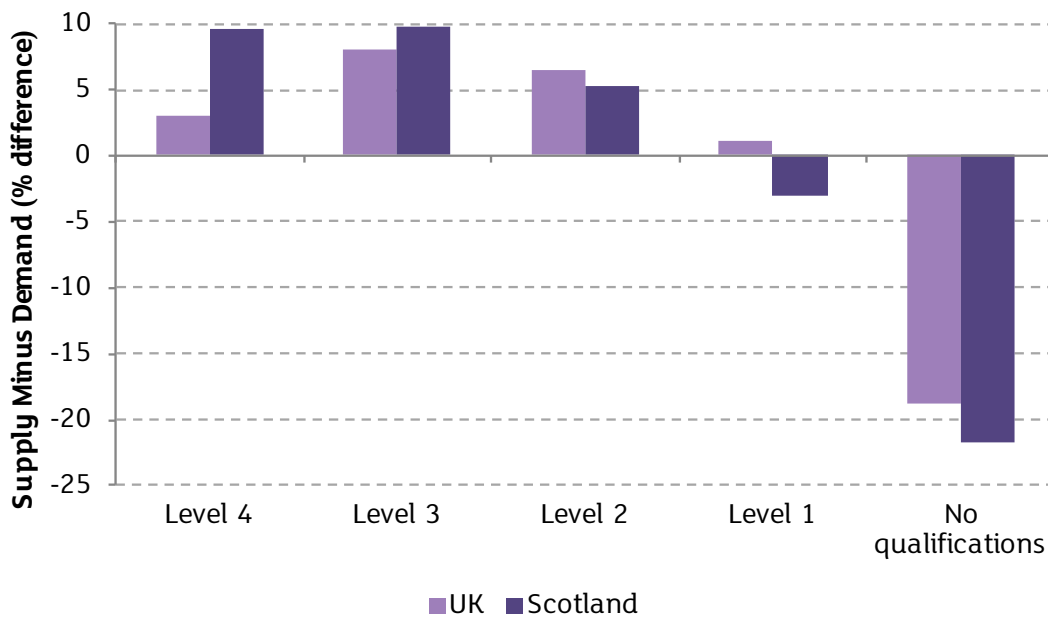
Figure 9: Real and formal overqualification among overqualified graduate workers, Britain, 1992-2012



2006, 37.3% of those in Scotland possessed these qualifications compared to 32.8% of those in the UK (see Table A3). However, in proportionate terms Scotland had fewer jobs requiring level 4 or above qualifications on entry. So, there was a ten percentage point qualification gap in Scotland compared to a gap of three percentage points in the UK as a whole (see Figure 10). At the other end of the scale, in 2006 both economies had reduced the number of people who had no qualifications to their name – this category accounted for about one in ten people (9.8% in Scotland and 9.4%

in the UK). However, the Scottish economy had proportionately more jobs that did not require qualifications on entry (31.6% compared to 28.2% in the UK). In 2006, Scotland had a 22 percentage point gap between the demand and supply of jobs/people in the ‘no qualifications’ category compared to a gap of 19 percentage points for the UK as whole. The policy implication is that while the education system in 2006 had successfully equipped the Scottish workforce with higher qualifications, the Scottish economy had not sufficiently upskilled its qualification demands. A similar

Figure 10: Qualifications supply and demand mismatch, Scotland versus the UK, 2006



pattern was found in the rest of the UK in 2006, but in Scotland it was more pronounced.

In spite of this, individual matching between individuals' qualification levels and job entry requirements in Scotland was no different to other parts of the UK. Similarly, real and formal overqualification rates were more or less the same in Scotland as in the rest of the UK in 2006 (see Table A3). Furthermore, there was evidence that even in the face of a rapid increase in the number of graduates, a greater proportion of those not in graduate jobs were able to use their skills and abilities nonetheless. In 2006 one in ten (10.4%) graduate workers outside of Scotland said that they could not use the skills they had accumulated at work compared to one in fifteen (6.6%) similarly qualified workers in Scotland. In other words, although overqualification rates among graduates were similar across the UK in 2006, the more wasteful form of overqualification (real) was less prevalent in Scotland.

6. Conclusion

Given the level of public investment in skills development, it is easy to see why there has been considerable interest in minimizing levels of skills underutilization. Wasted skill resources can have negative consequences for the individual both in terms of pecuniary and non-

pecuniary benefits (such as job satisfaction and well-being), for the employer's business and for the national economy. Yet we also know that it is not always possible for people to find employment that effectively uses the skills and educational qualifications they have. The pace of educational expansion may not be closely matched to the increasing demand from employers, and search processes by employers and employees are often imperfect. We therefore need to assess the scale of the problem, identify where skills underutilization occurs and then set about minimizing its occurrence. For that to happen, we need to be able to draw on robust evidence. Unfortunately, such evidence is in short supply in Scotland and some of it is dated. The recent Scottish Parliamentary Inquiry into underemployment recognized this omission and called on the Scottish Government to collect more data on skills underutilization given that 'aligning skills and qualifications with employment opportunities is a key issue for the future of Scotland's economy' (Scottish Parliament, 2013: 28).

In the absence of recent Scottish data, this paper presents some of the British results. These suggest that between 1986 and 2006 aggregate mismatches in qualifications supplied and those demanded were growing

rapidly and overqualification rates were also rising.

Nevertheless, much of the growth in overqualification during that period was in name only given that a greater and greater proportion of the overqualified were able to use the skills they had acquired. Real overqualification rates – where respondents possessed qualifications higher than required on entry and found it difficult to use a good proportion of their accumulated skills at work – barely changed. The 2012 results suggest that the matching process has improved with overqualification rates falling for the first time since the series began. What the results cannot tell us is how different Scotland is in these respects nor can we trace the relative impacts that matching or misalignments may have on worker well-being, job satisfaction and pay in the Scottish context. It is hoped that the resumption of data collection on skills used at work in Scotland, as recommended by the Scottish Parliament, will allow this to happen in the future.

References

- Battu, H and Sloane, P J (2002) 'To what extent are ethnic minorities in Britain over-educated?', *International Journal of Manpower*, 23(3): 192-208.
- Bell, D (2013) 'Submission from David Bell', *Underemployment in Scotland: Economy, Energy and Tourism Committee, 1st Meeting, 2013 (Session 4)*, Wednesday, 9 January 2013, Edinburgh: Scottish Parliament.
- Bell, D N F and Blanchflower, D G (2011) 'Underemployment in the UK in the Great Recession', *National Institute Economic Review*, 215: R23-33.
- Bell, D N F and Blanchflower, D G (2013) 'Underemployment in the UK revisited', *National Institute Economic Review*, 224: F8-F22.
- Chevalier, A and Lindley, J (2007) 'Over-education and the skills of UK graduates', *Centre for the Economics of Education Discussion Paper 79*, London: Centre for the Economics of Education, London School of Economics.
- Davies, B, Gore, K, Shury, J, Vivian, D, Winterbotham, M and Constable, S (2012) 'UK Commission's Employer Skills Survey 2011: UK results', *Evidence Report 45*, Wath-upon-Dearne: UK Commission for Employment and Skills.
- Felstead, A (2007) 'How "smart" are Scottish jobs? Summary evidence from the Skills Surveys, 1997-2006', *Futureskills Scotland Expert Briefing*, Glasgow: Future Skills Scotland.
- Felstead, A (2011) 'Patterns of under-utilization in the recession', *Skills in Focus*, December, Glasgow: Skills Development Scotland.
- Felstead, A and Green, F (2008) *Skills at Work in Scotland, 1997 to 2006: Evidence from the Skills Surveys*, Glasgow: Scottish Enterprise.
- Felstead, A, Gallie, D, Green, F and Inanc, I (2013) *Skills and Employment Survey 2012: Technical Briefing*, London: Centre for Learning and Life Chances in Knowledge Economies and Societies, Institute of Education.
- Financial Times (2013) "'Zero hours" contracts numbers leap', by Kuckler, H, 7 April.
- Friedland, D S and Price, R H (2003) 'Underemployment: consequences for the health and well-being of workers', *American Journal of Community Psychology*, 32(1/2): 33-45.
- House of Commons (2013) 'Zero hours contracts', *House of Commons Library*, SN/BT/6553, 23 April.
- Machin, A (2003) 'The Vacancy Survey: a new series of National Statistics', *Labour Market Trends*, 111(7): 349-362.
- McGuinness, S (2006) 'Overeducation in the labour market', *Journal of Economic Surveys*, 20(3): 387-418.
- OECD (2011) *OECD Employment Outlook 2011*, Paris: Organisation for Economic Co-operation and Development.
- ONS (2001) *Table 20: Jobcentre Vacancies*,

London: Office of National Statistics, downloaded from www.statistics.gov.uk on 17 December 2010.

ONS (2009) Table 21: Vacancies, London: Office of National Statistics, downloaded from www.statistics.gov.uk on 17 December 2010.

ONS (2012) VACS01: Vacancies and Unemployment, London: Office of National Statistics, downloaded from www.statistics.gov.uk on 30 November 2012.

ONS (2013a) 'People and hours worked on zero hours contracts, October to December, each year', www.ons.gov.uk/ons, downloaded on 8 May 2013.

ONS (2013b) 'Underemployment up by one million since 2008', <http://www.ons.gov.uk/ons/rel/lmac/underemployed-workers-in-the-uk/2012/sty-underemployed-workers-in-the-uk.html>, downloaded on 8 May 2013.

Palmer, N and Hughes, M (2008) 'Labour Force Survey: reweighting and seasonal adjustment review 2008', *Economic and Labour Market Review*, 2(6): 33-42.

Payne, J (2011) 'Scotland's skills utilization programme: an interim evaluation', SKOPE Research Paper No 101, Cardiff: ESRC Centre on Skills, Knowledge and Organisational Performance.

Rohrbach-Schmidt, D and Tiemann, M (2011) 'Mismatching and job tasks in Germany: rising over-qualification through polarization?', *Empirical Research in Vocational Education and Training*, 1(3): 39-53.

Scottish Government (2007) *Skills for Scotland: A Lifelong Skills Strategy*, Edinburgh: Scottish Government.

Scottish Government (2010) *Skills for Scotland: Accelerating the Recovery and Increasing Sustainable Economic Growth*, Edinburgh: Scottish Government.

Scottish Government (2012) 'Effective skills use', Edinburgh: Scottish Government, downloaded from www.scotland.gov.uk/Topics/Education/skills-strategy/making-skills-work on 11 May 2013.

Scottish Parliament (2013) *Underemployment in Scotland: Economy, Energy and Tourism Committee, 6th Report, 2013 (Session 4), SP Paper 305, Session 4 (2013)*: Edinburgh: Scottish Parliament.

UKCES (2009) *Ambition 2020: World Class Skills and Jobs for the UK*, Wath-upon-Deerne: UK Commission for Employment and Skills.

UKCES (2010) *The National Strategic Skills Audit for England 2010, Volume 2: The Evidence Report*, Wath-upon-Deerne: UK Commission for Employment and Skills.

van Wanrooy, B, Bewley, H, Bryson, A, Forth, J, Freeth, S, Stokes, L and Wood, S (2013) *The 2011 Workplace Employment Relations Survey: First Findings*, London: Department for Business Innovation and Skills.

Warhurst, C and Findlay, P (2012) 'More effective skills utilization: shifting the terrain of skills policy in Scotland', SKOPE Research Paper No 107, Cardiff: ESRC Centre on Skills, Knowledge and Organisational Performance.

Appendix

Table A1: Qualifications demand and supply, all workers, 1986-2012

	1986		1992		1997		2001		2006		2012	
	Demand + Vacancies	Supply	Demand + Vacancies	Supply	Demand + Vacancies	Supply	Demand + Vacancies	Supply	Demand + Vacancies	Supply	Demand + Vacancies	Supply
Level 4 or above	4,208,311	3,806,615	5,515,110	4,963,199	6,100,046	6,203,885	7,077,719	7,320,706	7,945,259	8,708,963	9,548,455	11,008,452
Degree	2,019,133	2,297,484	2,861,610	2,953,708	3,563,657	3,791,263	4,207,336	4,796,325	5,169,692	6,104,167	6,775,136	8,229,358
Professional qualifications	2,189,178	1,486,607	2,653,500	2,009,490	2,536,389	2,412,622	2,846,236	2,524,381	2,800,629	2,604,796	2,799,114	2,752,113
Level 3	3,347,121	4,887,784	3,857,996	4,067,402	3,271,504	6,105,411	4,061,134	6,260,466	3,994,933	6,262,034	3,797,704	6,286,690
Level 2	4,081,112	4,054,383	4,290,624	7,190,585	4,824,874	5,243,760	3,925,496	5,275,957	3,749,054	5,735,812	3,493,318	5,693,097
Level 1	1,708,559	2,184,862	1,114,223	2,275,808	2,112,024	3,742,026	3,003,004	3,508,890	2,875,629	3,315,194	3,098,091	2,509,280
No qualifications	8,076,177	7,590,707	7,673,877	5,713,731	7,343,537	3,323,510	6,739,946	2,877,795	7,089,826	2,262,752	5,856,304	1,510,964

Notes:

'Demand' + 'Vacancies' indicates the number of jobs with highest qualifications requirements at each level plus the number of estimated vacancies at each level; 'Supply' indicates the number of people holding highest qualifications at each level. Estimates were obtained as follows:

- Demand and Vacancies: for each year, using the spring Labour Force Survey, an estimate was derived of the total number of individuals aged 20-60 years old who were in paid work in Britain. To exclude Northern Ireland in these (and the supply calculations) we used URESMC (in 1986 URESCOMH) and weighted the results by the population weight (PWT11 in 2012, PWT07 in 2006, 2001, 1997 and 1992 and PWT03 in 1986). These weights have been used in accordance with ONS's reweighting exercise (Palmer and Hughes, 2008). This figure was multiplied by the percentage of survey respondents who reported that access to their jobs required highest qualifications at one of the levels shown. The demand figures are thus estimates of the number of jobs in Britain that demand qualifications at various levels. The analysis was restricted to individuals' main job; secondary jobs were not included. The vacancy totals for 1986, 1992 and 1997 were taken from the Jobcentre vacancy data – averages of April, May and June were used with downward adjustments made to arrive at British estimates (ONS, 2001: Table 20; Machin, 2003). However, comparing Job Centre vacancy figures for April 2001 with Vacancy Survey figures for the same month suggests that 35.4% of all vacancies are captured by these Job Centre counts (Machin, 2003: 360). The Job Centre vacancy totals for 1986, 1992 and 1997 were grossed up accordingly. The 2012 vacancy totals have been taken from the Vacancy Survey for April, May and June 2012 (ONS, 2012: Table VACS01). Figures for 2006 and 2001 have been taken from the same source for the corresponding months in respective years (the Vacancy Survey only started reporting in April 2001) (ONS, 2009: Table 21). For each year, the qualification levels required of those in work 12 months or less have been calculated. The resulting proportions were multiplied by the total number of vacancies for each year. The demand and vacancies columns are a summation of the total number of jobs occupied and the vacancies at each qualification level.
- Supply: for each year, using the spring Labour Force Survey, an estimate the total number of individuals who possess qualifications at each level was derived. These estimates include all economically active people, including the unemployed. To arrive at these estimates we used the EMPLOYEE and LOOKING variables for the 1986 Labour Force Survey and the INECACA derived variable for 1992 onwards (although the equivalent variable was INECACR in 1997, 2001, 2006 and 2012). For comparability with the demand figures, we restricted the analysis to those aged 20-60 years old living in Britain. Despite the greater detail provided by the LFS on qualifications held (such as the ability to differentiate those with one or two A levels, hence allocating individuals precisely across the Level 2/3 divide), for comparability we used the simpler qualification protocols used in deriving the qualification bands for the demand and vacancies data.

For 1986, the QUALSM1, QALCHECK and APPRENT variables were used to derive the following categorisation: Level 4 or above = higher degree, first degree, other degree level, BTEC/BEC/TEC higher, teaching – secondary, teaching – primary, nursing; Degree = higher degree, first degree, other degree level; Professional qualifications = BTEC/BEC/TEC higher, teaching – secondary, teaching – primary, nursing; Level 3 = BTEC/BEC/TEC general, A level, completed trade apprenticeship; Level 2 = City and Guilds, O level; Level 1 = CSE, other professional qualifications; No qualifications = none reported.

For 1992, HIQUAP was categorised as follows: Level 4 or above = higher degree, first degree, other degree level, BTEC etc higher, teaching – further education, teaching – secondary, teaching – primary, teaching – level not stated, nursing; Degree = higher degree, first degree, other degree level; Professional qualifications = BTEC etc higher, teaching – further education, teaching – secondary, teaching – primary, teaching – level not stated, nursing; Level 3 = BTEC (etc) general, A level and equivalent, completed trade apprenticeship; Level 2 = City and Guilds, O level and equivalent, RSA; Level 1 = CSE below grade 1, YT certificate, other; No qualifications = none reported.

For 1997 and 2001, we used the derived variable HIQUAL, while HIQUAL5 was used for 2006 and HIQUAL11 for 2012. Appropriate amendments were made for the ever-lengthening list of qualifications.

Table A2: Real and Formal Overqualification, Britain, 1992-2012				
	1992	2001	2006	2012
All workers				
Overqualified	29.4	35.5	39.1	36.9
Real overqualified	12.2	12.5	12.8	12.6
Formal overqualified	17.3	23.1	26.4	24.4
Graduates				
Overqualified	22.2	23.3	28.7	22.8
Real overqualified	6.4	7.0	10.2	7.7
Formal overqualified	15.3	16.3	18.5	15.0

Notes:

The 'over-qualified' are defined as those workers who have qualifications which exceed the level of qualification required for the job. This group is then sub-divided according to the response given to the question: 'How much of your past experience, skill and abilities can you make use of in your present job?' Those answering 'very little' or 'a little' (and reporting over-qualification) are classified as experiencing 'real over-qualification'. The remainder, that is, those responding 'quite a lot' or 'almost all' are classified as experiencing 'formal over-qualification' (cf. Green and Zhu, 2010: 750-752). Rounding accounts for the additive errors between columns and proportionately more missing data among graduates to the 1992 follow-up question. The skills in use question was not asked in the 1997 survey.

Source: authors' own calculations.

Table A3: Qualifications demand and supply, All workers, Scotland, 2006

	Demand			Supply
	Highest qualification required			Highest qualification held ('000s of people)
	Number of jobs (%)			
(1)	Jobs (2)	Vacancies (3)	Total demand (4)	(5)
Level 4 or above	626,798 (27.9)	9,486 (18.6)	636,284 (27.7)	876,479 (37.3)
Degree	379,673 (16.9)	4,845 (9.5)	384,518 (16.7)	505,209 (21.5)
Professional qualifications	247,125 (11.0)	4,641 (9.1)	251,766 (11.0)	371,270 (15.8)
Level 3	417,865 (18.6)	8,364 (16.4)	426,229 (18.6)	664,996 (28.3)
Level 2	238,138 (10.6)	5,763 (11.3)	243,901 (10.6)	373,620 (15.9)
Level 1	262,851 (11.7)	5,559 (10.9)	268,410 (11.7)	204,433 (8.7)
No qualifications	703,182 (31.3)	21,777 (42.7)	724,959 (31.6)	230,281 (9.8)
Totals	2,246,588	51,000	2,297,588	2,349,809

Source: Felstead and Green, 2008: Table 3.4.

Table A4: Real and Formal Overqualification, Scotland versus Rest of the UK, 2006

	Scotland	Rest of the UK
All workers		
Overqualified	38.9	38.6
Real overqualified	12.9	12.5
Formal overqualified	26.0	26.1
Graduates		
Overqualified	27.7	28.9
Real overqualified	6.6	10.4
Formal overqualified	21.1	18.6

Notes:

This table focuses on the 2006 data set only. For several reasons the data given here are not directly comparable to those presented elsewhere in this paper. It is based on information given by respondents aged 20-65 and not 20-60 as elsewhere, it includes data gathered in Northern Ireland (hence the Rest of the UK comparison) and it uses recently calculated weights (unlike Figure 10 which reproduces data presented elsewhere, Felstead, 2007: Figure 4).

Source: authors' own calculations.



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For further details contact skillsinfocus@sds.co.uk