

# CIPD

Championing better  
work and working lives

## Policy report

August 2015



Over-qualification and  
skills *mismatch*  
in the graduate  
labour market

The CIPD is the professional body for HR and people development. The not-for-profit organisation champions better work and working lives and has been setting the benchmark for excellence in people and organisation development for more than 100 years. It has 140,000 members across the world, provides thought leadership through independent research on the world of work, and offers professional training and accreditation for those working in HR and learning and development.

# Over-qualification and skills mismatch in the graduate labour market

## Policy report

## Contents

1 Introduction	2
2 The European context	6
3 Evidence of graduate over-skilling and over-qualification in Europe	13
4 New evidence on job upgrading in the UK	19
5 Conclusions	28
References	30

## Acknowledgements

Craig Holmes and Ken Mayhew

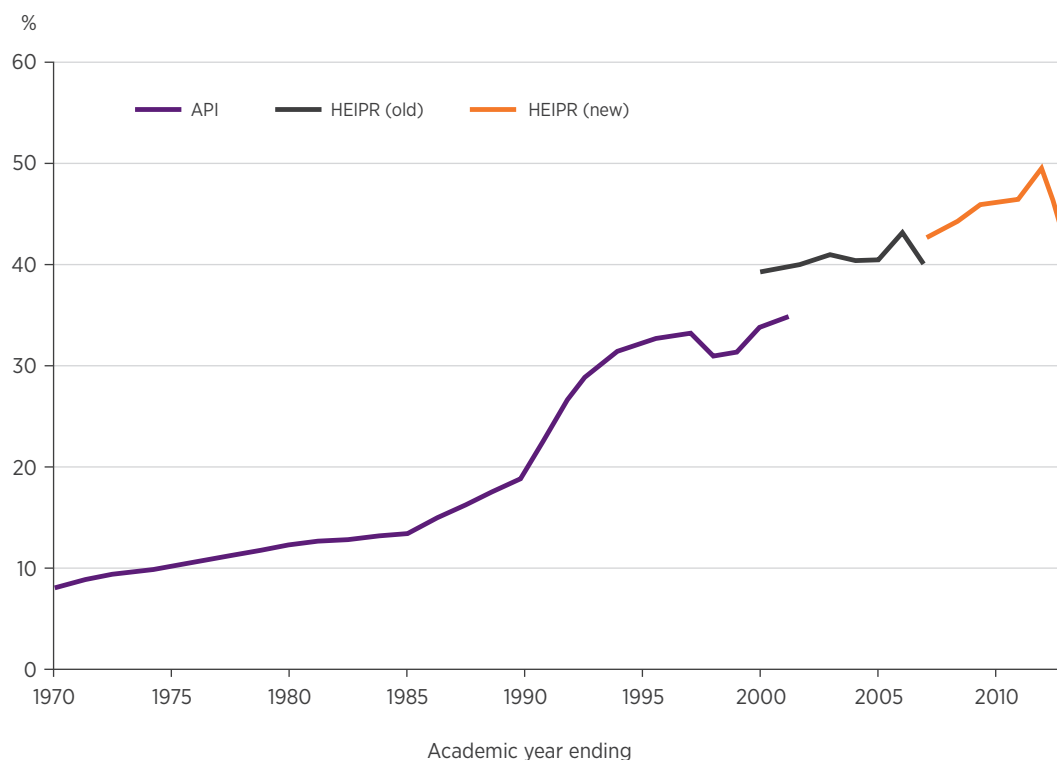
Thanks to Daria Luchinskaya and Charoula Tzanakou, of Warwick University and the Institute for Employment Research for research assistance and work on compiling the WERS data.

# 1 Introduction

The UK higher education (HE) system expanded gradually throughout the 1970s and 1980s, and rapidly from the end of the 1980s until the middle of the 1990s, as shown in Figure 1.1.<sup>1</sup> There continued to be further

growth in student numbers into the middle of the last decade – by 2004–5, participation rates reached 43% and have stayed at that level ever since, despite two major funding reforms (BIS, 2013).

**Figure 1.1: Participation rates in higher education in the UK, 1970–2013**



Source: House of Commons (2002); BIS (2014)

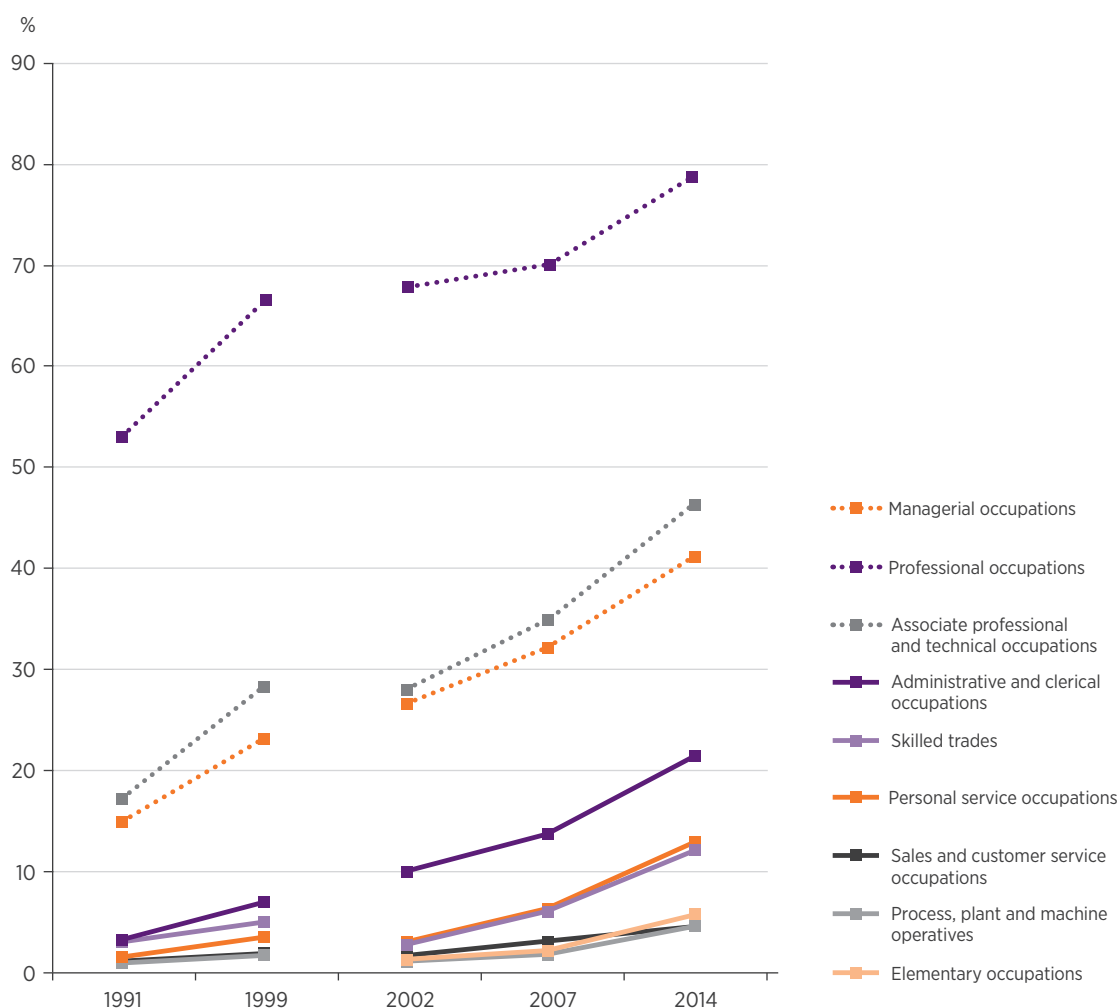
<sup>1</sup> Participation was measured by the Age Participation Index (API) until 2000, and was then replaced by the Higher Education Initial Participation Rate (HEIPR). The API figure gives the total number of first-time entrants into higher education as a proportion of the population of 18-year-olds. The HEIPR figure sums the initial participation rate of each age group aged 17 to 30. Therefore, the HEIPR figure captures those that entered the HE system for the first time later than the typical route directly after schooling. It also accounts for the change in the population of each successive cohort. The figures for 2000 and 2001 show the effect of the different methodology. The HEIPR was revised in 2006.

As the UK HE sector expanded, more graduates have found themselves working in jobs that in previous generations would have been filled by non-graduates. Figure 1.2 shows how the graduate share of the major occupational groups changed between 1991 and 2014. Professional occupations have historically employed more graduates than non-graduates,

the proportion rising from 53% to 78% over the period. In managerial, associate professional and technical occupations there are now nearly as many graduates as non-graduates, while only about one in every six workers in these occupations was a graduate at the start of the 1990s. The remaining occupations had a near insignificant share of graduates in

1991. This share has increased to 21% for administrative occupations, 13% for both sales and personal service occupations, and to 8% even for the lowest-skilled elementary occupations. Only the manual occupations – skilled trades and semi-skilled process operatives – have seen less dramatic rises.

**Figure 1.2: Graduate share of major occupational groups, 1991–2014**



Source: Labour Force Survey. Notes: Occupational groups by SOC90 major groups in 1991 and 1999, SOC2000 major groups thereafter.

*‘...the UK has witnessed one of the highest rates of higher education expansion across Europe over recent decades, but has not seen an increase in high-skill jobs matching that expansion...’*

In section 2 of this report, we set the UK's graduate labour market in the context of the whole of Europe, and discuss some general trends around higher education participation and occupational structure across the continent. Many, indeed most, countries have seen graduate supply increase faster than the number of high-skilled jobs in which graduates traditionally worked, leading to a process of occupational filtering down where many recent graduates find themselves further down the occupational hierarchy. From this perspective, the UK has witnessed one of the highest rates of higher education expansion across Europe over recent decades, but has not seen an increase in high-skill jobs matching that expansion – indeed, a number of countries with a slower expansion of higher education sector have experienced a larger increase in high-skill jobs.

However, as we will argue, this development is not necessarily a problem. For example, it might be the case that there were skill shortages in the early 1990s, and that the greater number of HE graduates better meets the needs and demands of employers who could not previously find sufficient highly qualified workers. This could be referred to as ‘worker upskilling’, meaning that the supply of skills increases to meet a higher constant demand. A second explanation might be that there has been an increase in demand for skills within these occupational groups at the same time as the supply of graduates has increased. We define this as ‘job upgrading’, meaning that the demand for skills increases to accommodate a rising supply. Where neither of these things has happened, we are left with the possibility that a significant number of graduates are overqualified.

Of course, all of this presumes the graduates have more skills than non-graduates, which overlooks issues around the types of skills produced in higher education as compared to alternative pathways into work. One possibility is that some university courses produce the same sorts of skills as were once produced by other forms of education and training, albeit through different delivery mechanisms. Examples that immediately spring to mind are the increase in more vocational degrees, and the replacement of apprenticeship-type routes into some occupations (such as teaching or nursing) by university-based courses. The second, more troubling possibility, is that the mix of skills graduates possess are not suitable for some types of work, making these graduates inferior substitutes for the types of non-graduates who used to be found in these occupational groups.

In this report, we examine the available evidence on the extent to which graduates are over-qualified and over-skilled for the current labour market, and the ways in which the labour market may have adapted in response to the growing supply of degree-holders. In section 3, we give an overview of some existing studies on the utilisation of graduates in European labour markets, as well as presenting some of our own data from recent European surveys. We argue that a lot of research in this area conflates two issues – whether a degree is necessary to get a job, and whether it is needed to do the job. Our interest is in the latter, which captures the nature of the work graduates perform. However, many of the measures used by prominent organisations may simply be picking up changes in the recruitment process. Academic research in the UK on graduate skill utilisation has

typically taken two approaches, both of which have problems. We argue that quantitative studies typically focus on outcomes like wage premia or self-reported skill utilisation measures as the relative share of graduate employment changes, but are not able to show whether anything has changed about jobs at the same time. On the other hand, case studies of particular occupations do produce evidence of changes in the nature of the jobs, but are not generalisable.

In section 4, we discuss a new approach followed by Luchinskaya, Tzanakou and Holmes (forthcoming) that uses data from the Workplace Employment Relations Survey on discretion and influence as a measure of the skill required in particular jobs, in order to get a new perspective on graduate work in the UK. The difference between graduate and non-graduate job influence captures the extent to which jobs in a particular occupation can be designed in such a way as to take advantage of workers who possess a degree, while the absolute level of influence captures the level of skill required within the occupation overall. We group occupations into several categories, including:

- Job upgrading – jobs with non-decreasing levels of graduate skill requirements and non-decreasing differences between the skill requirements of graduates and non-graduates.
- Job competition – jobs with initially positive but decreasing differences in skill requirement between graduates and non-graduates accompanying rising graduate shares.
- Job deskilling – jobs with falling levels of skill requirements.
- Graduate mismatch – jobs with zero or negative differences in skill requirements for graduates and non-graduates.

Our analysis shows that while there are examples of occupations where jobs have been upgraded as graduates have moved into them in increasing numbers, many other occupations have simply experienced either job competition, where those with degrees simply replace non-graduates in less demanding jobs, or enter jobs where the demand for graduate skills is non-existent or falling. We show that occupations where apprenticeships have been historically important have been particularly affected.

Section 5 concludes and discusses the implications of our analysis for policy and future research.

*‘...many other occupations have simply experienced either job competition, where those with degrees simply replace non-graduates in less demanding jobs, or enter jobs where the demand for graduate skills is non-existent or falling...’*

## 2 The European context

*‘Although HE expansion has been a general phenomenon it is noteworthy that the UK’s graduation rate is higher than that of any other country listed.’*

The situation in the UK summarised in the introduction is not unique since many, if not most, European countries have also seen a significant expansion of higher education. Table 2.1 shows graduation rates for a selection of European countries, from tertiary type 5A degree programmes – that is, a programme that ‘has a minimum theoretical duration of three years, full-time equivalent, eg the Bachelor’s degrees in many English-speaking countries, the Diploma in many German-speaking, [and] the country licence in many French-speaking countries.’ (OECD 2014, p79).

On this definition the nearest comparable figure available for the UK is 54% in 2011. Although HE expansion has been a general phenomenon it is noteworthy that the UK’s graduation rate is higher than that of any other country listed in the Table. Other

countries have not been included for lack of 1995 figures. But of the countries for which we have 2011 figures, only Iceland has a higher graduation rate.

How have European labour markets changed and do these changes match the increase in the number of graduates? In this section, we look at two possible changes. Firstly, we consider the overall occupational structure to examine the relationship between increasing numbers of graduates and the availability of high-skill occupations. Secondly, we begin to examine evidence about what has happened in terms of the skill requirements within occupations. In this second part, we describe the process of job upgrading, where the work in particular occupations becomes more demanding, complex or in some other way requiring of greater skills by anyone in it.

**Table 2.1: Trends in tertiary graduation rates, 1995–2012**

	1995	2012
Austria	10	39
Czech Republic	13	40
Denmark	25	49
Finland	21	47
Germany	14	31
Netherlands	29	45
Norway	26	42
Portugal	15	41
Spain	24	29
Switzerland	9	31
EU average	18	38

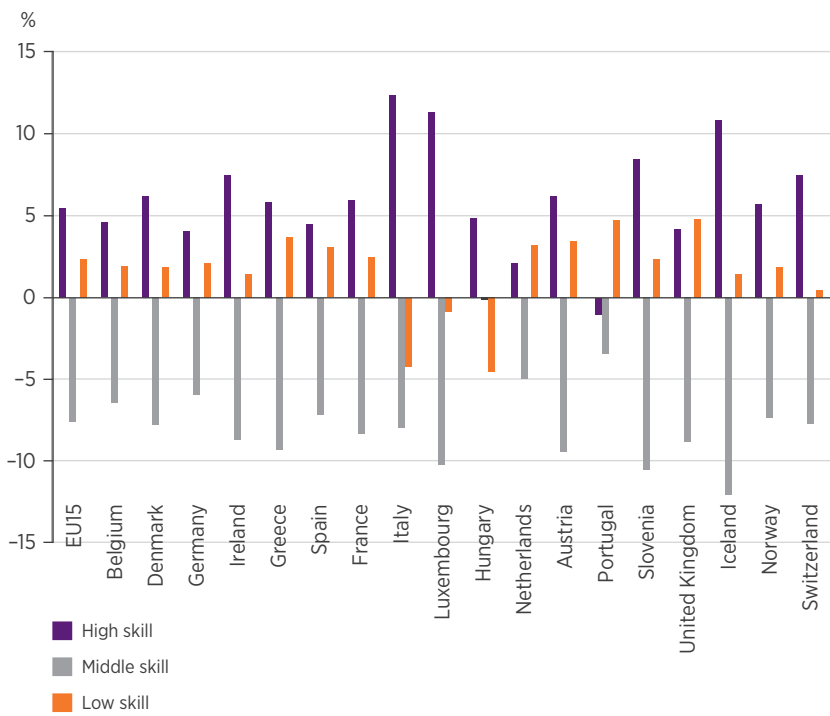
Source: OECD, Education at a Glance 2014, Table A3.2A, p.83



## 2.1 Occupations and graduates

Figure 2.1 shows the change in employment shares of different occupational groups, where occupations are grouped as high, middle or low skill, between 1996 and 2008.<sup>2</sup> It is broadly consistent with the emergence of an hourglass labour market (Goos and Manning 2007). In almost all the countries there has been an increase in the proportion of top-end and low-end jobs at the expense of those in the middle. The critical question is where increasing numbers of graduates fit into this changing labour market.

**Figure 2.1: Change in employment share of different occupational groups, 1996–2008**



<sup>2</sup> These occupations are grouped using the ISCO classification. High skill refers to ISCO groups 1–3, middle skill are ISCO group 4, 6, 7, and 8 and low-skill are ISCO groups 5 and 9.

One way to think about this is shown in Figure 2.2, which compares the change in the proportion of the workforce who are graduates with the growth of these high-skill jobs. It shows that there is a weak relationship between the two. However for most countries the growth of the former outstripped the growth of the latter. It is also noticeable that the UK, together with Spain and the Netherlands are well below the regression line. This means that the growth of high-skilled jobs was outstripped by the growth of graduates by more in these countries than elsewhere.

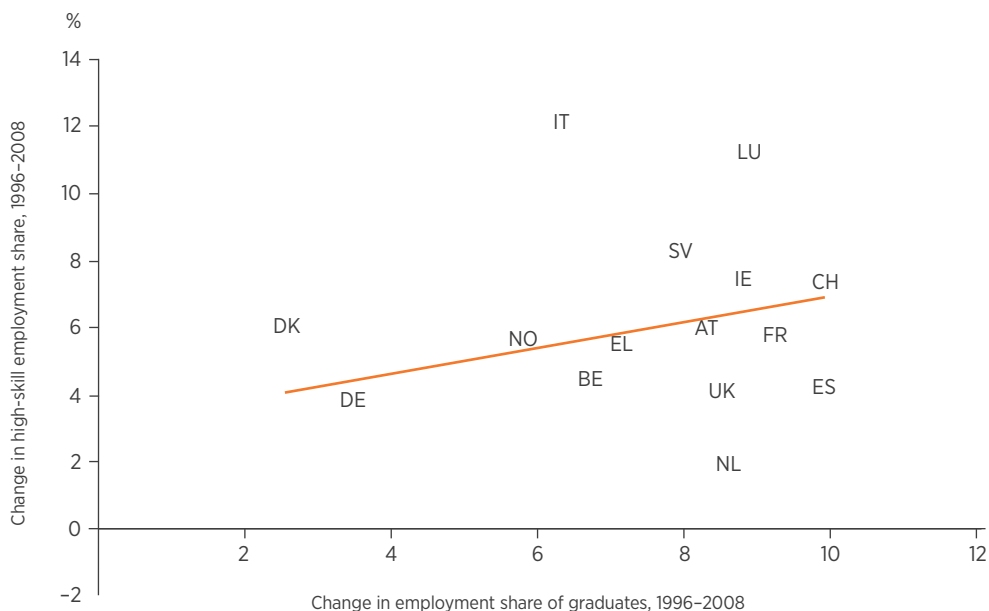
Figure 2.3 goes on to represent a crude attempt to discern whether the presence of lots of graduates in the labour market might have stimulated the subsequent growth of high-skilled work. If this had been the case then one would expect to see a positive slope

to the regression line. In fact the slope is slightly negative and even worse, the UK lies below this line. In other words, the UK was particularly bad in generating new high-skilled employment for its large stock of graduates. In this it was joined by the Netherlands, Spain, Denmark and Belgium.

If high-skilled jobs have grown by less than the number of highly qualified graduate workers, the next question is where the extra highly qualified workers end up. One answer to this is shown in Figure 2.4, which describes the change in employment in four broad occupational categories between 2007 and 2011 in the EU 27. Given that this covers a period of severe recession it is unsurprising that people of low and medium education levels fared less well than those of high education (essentially graduates). But what is striking is the increase

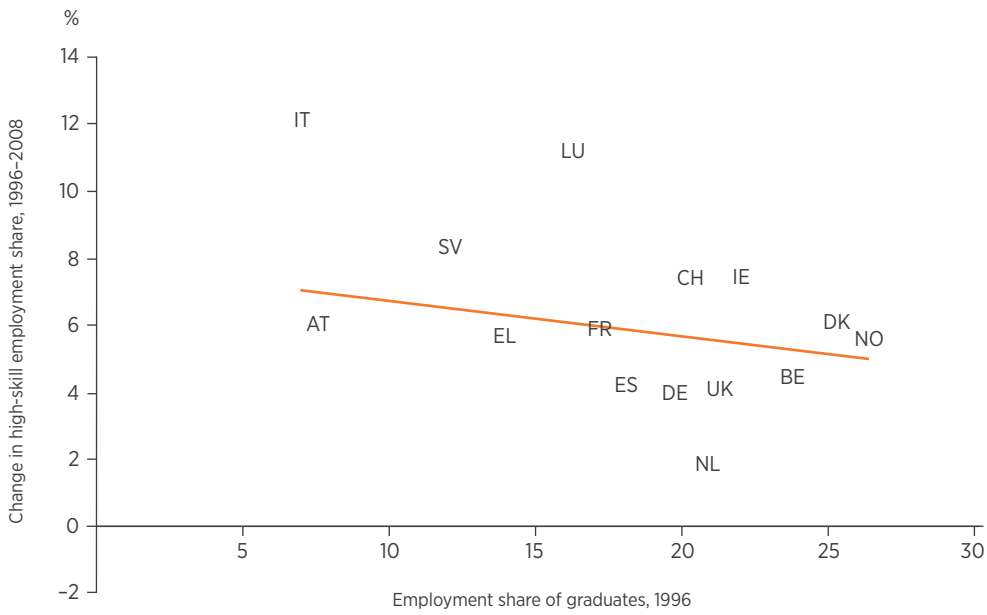
in the number of graduates in 'skilled non-manual occupations'. This is an extremely heterogeneous category, which includes clerical support workers and service and sales workers – in Figure 2.1 the former are part of the middle skill group, while the latter are classified as low-skilled. Many occupations in this category were traditionally non-graduate. Hence, we see that the development in the UK, described in the Introduction, of significant occupational filtering down as graduates enter the sorts of jobs once done by their non-graduate mothers and fathers, is a common one across Europe.

**Figure 2.2: Changes in high-skill supply and demand**



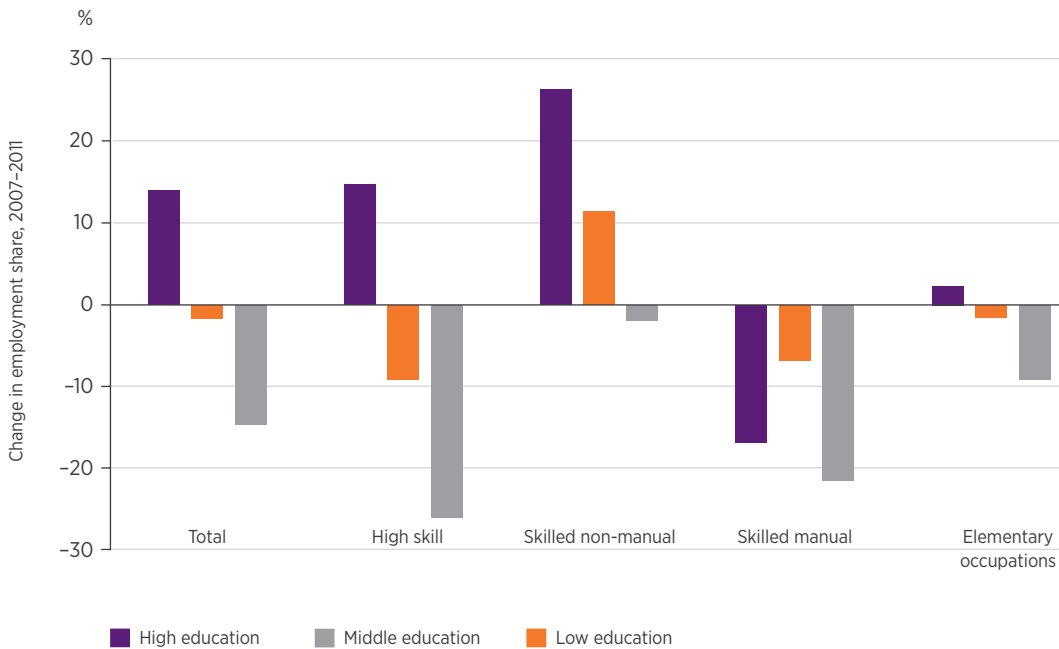
Source: Eurostat, EULFS

**Figure 2.3: High-skill supply and subsequent changes to high-skill demand**



Source: Eurostat, EULFS

**Figure 2.4: Change in employment by occupational group and skill level, EU27, 2007–2011**



Source: European Commission (2012)

*‘...the idea that increasing the supply of available skills will be the key to changing employer demand, relies on the ability or the willingness of employers to change the organisation and design of work to take advantage of these skills.’*

## **2.2 Job upgrading**

That the number of high-skill jobs seems to increase more slowly than the number of high-skilled workers, which leads to a process of occupational filtering down, certainly indicates that there is a potential problem across European labour markets. In addition, the composition of workers within the high-skilled work category has also shifted as the graduate share of these occupations has increased. How far is it an actual problem? This largely depends on the relationship between the skills being supplied to the labour market and their subsequent usage in work, which is reflected in the productivity of graduate workers in their jobs. It is a long held assumption among policymakers and some, if not a majority of academics and researchers, that improving skills and education increases productivity. For example, the Leitch Review (2006) stated:

*‘Productivity is increasingly driven by skills... higher levels of skills drive innovation, facilitate investment and improve leadership and management. For innovation to be effectively implemented, businesses must be able to draw on a flexible, skilled workforce.’*  
(Leitch Review, 2006:8)

The basis of this assumption is a simple version of human capital theory. On this view, productivity is a characteristic of each individual and depends on, among other things, the amount and quality of the education and training they have received. Work, jobs and employers play a passive role in the eventual outcomes. A more sophisticated approach acknowledges that the employer, in creating the environment in which individuals will deploy their abilities and skills, is an important determinant of (or possibly constraint on) what those workers

need to do, what skills they will need to possess in order to be able to perform their tasks adequately, and so ultimately their output and contribution to the enterprise. This approach at least allows for the possibility that the employer demand for skills is of similar importance to the supply for determining eventual outcomes. However, two further assumptions are often invoked. The first is the argument that technological progress drives up the demand for skills over time, so that there continues to be additional demand to meet the supply. This means that not only are there more jobs at the upper end of the skill distribution – managers, professionals, technicians, and so on – but also that traditionally less skilled occupations become more demanding. The second assumption is that the additional supply of skills will itself generate the extra demand necessary to absorb it. The argument is that since allowing more productive people to use their abilities is beneficial to the firm as much as it is the individual, then no employer would place constraints on this. Hence, jobs will change in order to accommodate these better educated employees through some combination of job redesign and/or capital investment.

The combination of these assumptions can be seen in a report by The Global Agenda Council on Employment (2014), which wrote:

*‘In most countries of the OECD, a higher education degree is the qualification most frequently required in jobs today. The composition of jobs in advanced countries has also consistently shifted over the past decade towards the employment of more highly qualified people at the expense of the less qualified. While part of this trend is due to rising*

*job-skill requirements, it has been made possible by the greater supply of people with higher qualifications coming into the labour market.'*

It is these processes that we have in mind when we describe a job as upgrading. However, there are a number of concerns. To begin with, it is increasingly less clear-cut that technological improvements necessarily create a greater demand for skills. While the two may have been interlinked in some historical periods, there is now evidence that many graduate-level jobs are subject to a 'digital Taylorism' (Brown, Lauder and Ashton, 2011) as better technology removes the need for skilled decision-making, creative thinking or discretion and makes some 'knowledge work' more routine. More recent predictions about the impact of new technologies on work do not restrict falling demand to lower-skilled jobs, but also suggest technology may reduce the demand for some high-level skilled work, such as technicians, financial analysts, accountants and auditors, paralegals, and cartographers (Frey and Osborne 2013).

Moreover, the idea that increasing the supply of available skills will be the key to changing employer demand, relies on the ability or the willingness of employers to change the organisation and design of work to take advantage of these skills. Doing so may require adjustments to the combination of the tasks, working procedures and available technology that make up a particular job. However, while advocates of human capital theory tend to assume – sometimes implicitly – that these features adjust to the available workforce, factors determining this distribution are more extensive than the available pool of skills. Firms face a range

of incentives and constraints including conditions in the product market, strategic decisions about the product offer, corporate governance and financing, managerial attitudes and the nature of employment relations, all of which have an impact on the types of jobs that a firm might offer and the use it may have for skills (Finegold and Soskice 1988).

Recognising these possibilities, The Global Agenda Council on Employment continue in their (2014) report to state that:

*'Comparing job requirements to the qualifications of the workforce, it is apparent that important imbalances exist in dynamic labour markets. In several countries, the share of the labour force with tertiary qualifications exceeds the share of jobs requiring tertiary degrees, which can lead to higher levels of graduate unemployment or over-qualification.'*

This quotation from such an influential body illustrates international concerns that perhaps the process of job upgrading is not to be taken for granted. When people discuss these concerns, there is a wide variety of terminology used, such as 'over-education', 'underemployment', 'over-qualification' and 'under-utilisation'. To try and be clear about what we are observing in the graduate labour market, we have to make a critical distinction between two questions which could be asked of any graduate entering the labour market: does an individual need a degree (or equivalent) to *get* the job and does an individual need the skills learnt while acquiring that degree in order to *do* the job? If someone has higher qualifications than needed to get the job we refer to that as over-qualification. If someone does not use the

skills acquired from obtaining a particular qualification, we refer to that as over-skilled.

An increase in people answering in the affirmative to the first of the two questions is inevitable. What matters from a job upgrading stance is how far this indicates that employers are using the qualification simply as a screening device given the numbers of graduates searching for work. Employers want to hire someone who meets or exceeds a certain intrinsic quality that means they would be able to adequately perform the job they are being hired for. We could suppose, in the manner of Thurow (1976), that there is a relatively fixed distribution of jobs offered by employers – some jobs are inherently more productive, higher paying and demanding of skill than others, depending on the choices made by employers, but this distribution does not depend on the available workers who could fill any vacancies. Instead, employers look for signals as to which potential workers will learn the job quickly and perform well thereafter. One such signal is educational attainment. Therefore, workers face incentives to acquire more education than their potential rivals for the available number of good jobs. It could be that this is happening without the characteristics and demands of jobs changing at all. If this were the case, then acquiring a university education would be little more than a move in a simple positional competition game. In Thurow's model, workers positioning themselves ahead of others by acquiring more education are likely to find that they are using a narrow subset of their capabilities once they actually start work. Moreover, some of those who pursue more education in order to engage in this form of competition will ultimately lose

*‘Moreover, some of those who pursue more education in order to engage in this form of competition will ultimately lose out, as there are only so many good jobs available.’*

out, as there are only so many good jobs available. Those people move down the job hierarchy and find work in jobs that require lower levels of skill. Employers, faced with better educated workers applying for their jobs, will naturally tend towards hiring them over those with less education, even if both types of workers would be perfectly capable of doing that work. In the most extreme case, we would have the situation described by Warhurst and Thompson (2006), who argue ‘with a bountiful supply of highly qualified labour, firms simply raise the entry tariff to employment without changing the work undertaken by these employees’. This is why it is so important to know the answer to the second of the questions posed above.

In examining the existing evidence on the extent to which skill demand has changed to accommodate the increased supply of graduates in the labour market, this report will essentially be asking which of these two views of the world – job upgrading or job competition – fits best. To the extent that jobs do not upgrade sufficiently, we should keep in mind an additional question: how costly are the consequences of this? Acquiring a signal to compete for access to job opportunities is a zero sum game – when one person improves their position, somebody else is made worse off. It does not add to productivity and is therefore potentially costly to society (Spence 1973). In the version of events discussed above, the gross cost would be approximately equal to the private and social costs of attending university.<sup>3</sup> The net cost will be lower than this, since we have to subtract the cost of the alternative

pathway into the labour market that any individual might have chosen in different circumstances – for example, where studying a particular university course replaces a trade apprenticeship. The bottom line is to ask how much more cheaply could an individual have entered a particular job and been just as productive had they not attended university but got there by some other route.

In this report, we also consider a further possibility which tends to get overlooked – that graduates are less capable in some occupations than the non-graduates they are displacing. We could imagine, for example, that certain skills are more effectively produced in the workplace through supervised practice, rather than in an academic institution. However, given labour market and societal pressures and government rhetoric and information, the sort of able young person who might once have gone down a work-based vocational learning route (and successfully entered a good occupation) opts instead to apply to university, and consequently fewer new labour market entrants have those particular skills. A similar example could be constructed comparing a post-compulsory technical college-based route with university. In such cases, not only should we be worried about a signalling cost, but also the broader costs of mismatch.

---

<sup>3</sup> Our analysis here only considers the labour market value of skills produced through education. We do not consider the wider, non-monetary benefits of continued participation in education, which would offset signalling costs in a more complete analysis.

### 3 Evidence of graduate over-skilling and over-qualification in Europe

Cedefop, an EU agency dealing with vocational education and training, employs two definitions that relate to capturing over-skilling. Firstly, they refer to vertical mismatch when ‘an individual’s education is less or more than the level of education required by his/her current job’. Secondly, they refer to skills mismatch when ‘the level and/or type of skills and abilities of an individual are less or more than the required levels of skills in the job’. Skills mismatch is closely related to our measure of over-skilling. Vertical mismatch, on the other hand, may potentially pick up what we refer to as over-qualification, but this is less clear-cut. Depending on how it is measured, the education required for their job could be

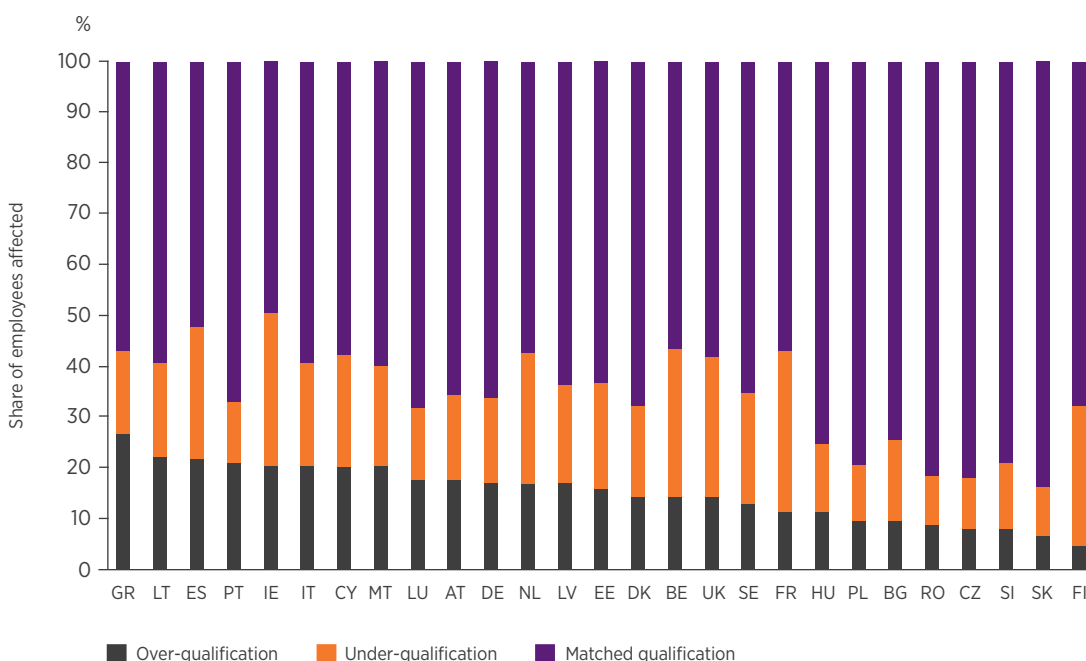
interpreted as either to do with the skills produced or the qualification bestowed upon the individual.

Cedefop outlines the three methods most commonly used for measuring either kind of mismatch: job evaluation methods, what they call ‘the empirical method’, and self-assessment. An example of the first type of analysis would be the higher education occupation classification work of Elias and Purcell (eg Elias and Purcell 2004b). However, this can be a relatively static measure given time delays between the skill analyses of specific jobs, and does not tell us anything about upgrading that might have happened within traditionally non-graduate jobs as

more graduates moved into them in the interim.

The second approach similarly attempts to make an objective assessment of skill requirements, and has become popular in OECD and EU circles. Cedefop summarises it as follows: ‘it acknowledges that there is a distribution of schooling levels across a given occupation and calculates the required educational level on the basis of the mean or modal qualification possessed by workers in each occupational group’. As Figure 3.1 shows, taking the whole labour force and not just graduates, both over-qualification and under-qualification are evident by this measure.

**Figure 3.1: Average incidence of vertical mismatch, EU-27 countries, 2001-2011**



Notes: A matched worker is one who has the modal qualification in their occupational group (two-digit ISCO category). Over- and under-qualification is defined related to this modal level of education. Data on employees aged 25-64 only.

Source: European Commission (2012)

Influential though this way of looking at the world has become, there are real problems with the methodology and it has been criticised previously (see Chevalier 2003) on a number of grounds. Firstly, particularly when using a mean or median education benchmark, the measure will under-report over-education if the actual requirements of a job are skewed towards the lower tail – that is, if there is a minimum level of education and training needed to be able to do a particular job, and without this it would not be possible to do the work. This measure will instead imply that some people are undereducated, which need not be the case.

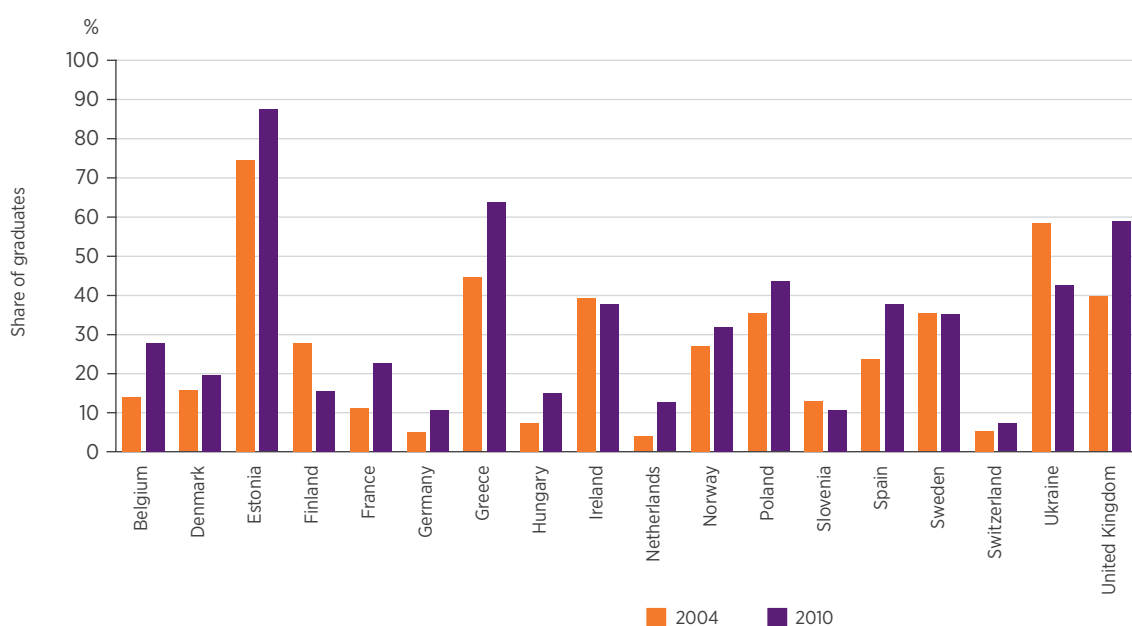
A second problem is that different cohorts may enter an occupation with different levels of education. Where this has been discussed previously (eg Chevalier 2003; Flisi et al 2014) the assumption is that each job's required level of education for successive cohorts changes as technological change

creates more demanding work for younger cohorts. This would mean that an older cohort's lower level of education would pull down the average level and imply the more educated younger cohort was overeducated. Some studies have tried to overcome this by looking at, or controlling for membership of, specific cohorts (Elias and Purcell 2004a; Quinn and Rubb 2006). However, we would argue that the actual problem lies in the exact opposite direction. For example, suppose ten years ago 70% of young workers entering a particular low-skilled job (such as a coffee shop barista or call centre operative) had completed high school qualifications but gone no further, while 20% of workers had further qualifications of whom 10% had a degree. This measure would suggest that 30% of this cohort were overeducated. Now suppose that the number of graduates had risen so quickly that many needed to take on such a job while applying for more suitable graduate-level employment – in

our illustrative example, imagine that 50% of new employees were graduates, while 30% were high school leavers and the remainder had sub-graduate post-compulsory qualifications. The measure would now suggest that no one in this cohort was overeducated. If it were true that the job had been upgraded at the same time as more educated workers moved to it, then aggregating the cohorts would imply some of the graduates were counted as being overeducated even though they were not. Considering each cohort separately would deal with this. However, if the job had not changed at all, then looking at each cohort would result in too few workers being counted as overeducated. We can therefore only interpret this measure if we know whether there has been upgrading, and cannot use it to say if upgrading has occurred.

Richer evidence can usually be found through more subjective, self-reported measures – that is

**Figure 3.2: Graduates in non-graduate jobs, 2004 and 2010**



Source: European Social Survey, own calculations



where individuals describe some feature of their own work. Below, we present self-reported data from two European surveys.

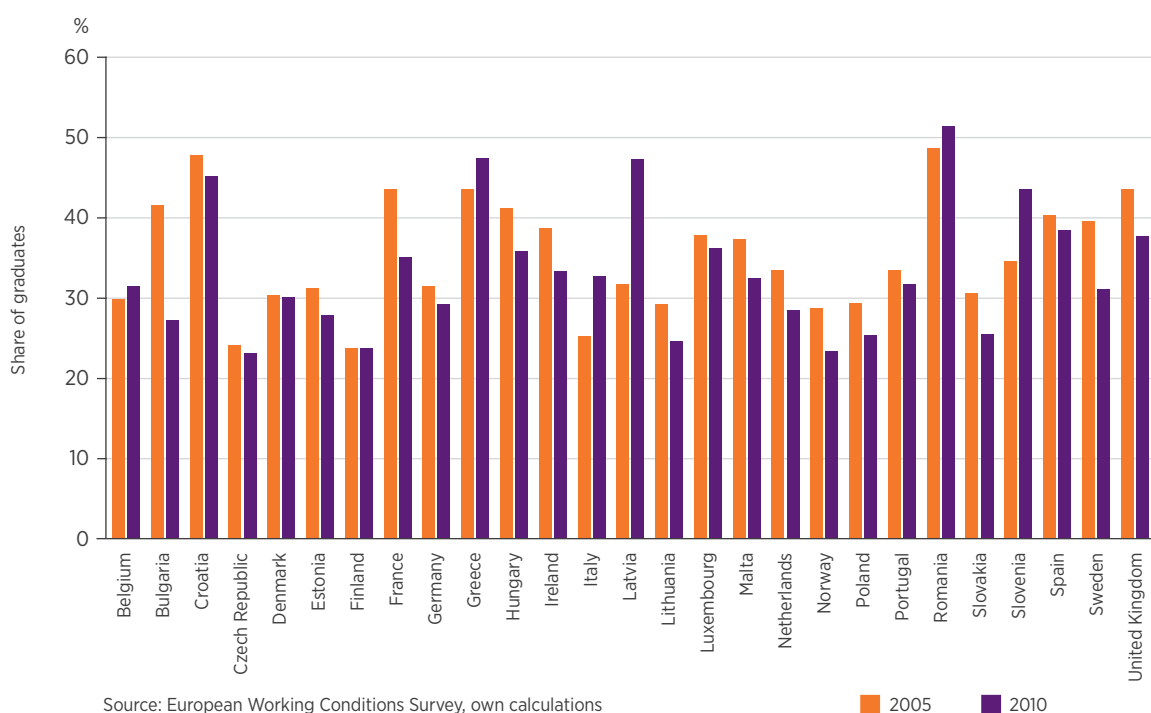
Firstly, the *European Social Survey* asks one question on how many years of education someone would need to be hired for their current job. In Figure 3.2 we have used 15–16 years of education as the minimum indicator for a graduate job. Employing this cut-off point, the table reports the percentage of graduates (ISCED 5 and 6) in non-graduate jobs. This percentage has gone up in most countries between 2004 and 2010, the exceptions being Finland, Ireland, Slovenia, Sweden and the Ukraine. There is huge variation between countries. Countries with particularly small proportions in 2010 (around 10% or less) are: Germany, the Netherlands, Slovenia and Switzerland. It is noteworthy that these countries are the ones that have had a strong history of vocational training in

rather contrasting institutional forms – the dual system in Germany and Austria, vocational schools in the Netherlands and Slovenia. By contrast the UK has a comparatively high percentage of graduates (58.8%) in non-graduate jobs, a percentage exceeded only by Greece and Estonia.

As an alternative source, we look at the *European Working Conditions Survey*, which asks respondents to give an assessment of the skills they use in their jobs. Graduates are deemed to be underutilised if they report that they have ‘skills to cope with more demanding duties’. On this definition, European countries show significant levels of underutilisation as shown in Figure 3.3. Interestingly, for most of them there is slightly less evidence of underutilisation in 2010 than in 2005. Countries where underutilisation was less than 25% are: the Czech Republic, Finland, Lithuania and Norway. Countries where it is more than 35% are:

Croatia, France, Greece, Hungary, Latvia, Luxembourg, Romania, Slovenia, Spain and the United Kingdom. Of this latter group of countries only Croatia, Greece, Latvia, Romania and Slovenia have more underutilisation than the UK.

**Figure 3.3: European graduate underutilisation, 2005–2010**



Source: European Working Conditions Survey, own calculations

2005 2010

Such underutilisation can be persistent. The Table below, which uses Australian data as the only source of which we are aware that follows skills matching outcomes over time, suggests that a graduate who was mismatched in the previous three years was forty times more likely to be mismatched in the current year than a graduate who had been well matched in all three previous years.

### 3.3 Over-skilling and over-qualification in the UK

There is a considerable amount of work using subjective, self-reported data in the UK, where there are numerous useful data sources. For example, Dolton and Vignoles (2000) found that around 30–40% of young people graduating in 1980 reported that they did not need their degree to get either their first job after university, or the job they were in six years after graduation. Battu et

al (2000) find a similar proportion of graduates from two cohorts (1985 and 1990) for whom having a degree was not a requirement of the job they held in 1996. However, it is not immediately clear how respondents interpret these sorts of questions – they may be thinking about their skills, but equally they may be saying that given the amount of competition for jobs they face, their degree was necessary to get an interview, regardless of the nature of the job they were applying for. Hence, it might be capturing over-qualification rather than over-skilling.

Data collected from the *UK Skills Surveys*<sup>4</sup> distinguish between these two aspects more clearly. In particular, one question is phrased: ‘If they were applying today, what qualifications, if any, would someone need to get the type of job they have now?’

**Table 3.1: Probability of different types of skill mismatch among graduates based on previous spells of mismatch, 2001–10**

Mismatch status in previous three years	Over-skilled	Over-qualified	Over-qualified and over-skilled	Over-qualified and dissatisfied
Not mismatched in previous three years	0.05	0.03	0.006	0.01
Mismatched in the previous year, but not the previous two years	0.20	0.26	0.05	0.07
Mismatched in previous two years, but not the previous three years	0.34	0.54	0.14	0.16
Mismatched in previous three years	0.45	0.68	0.24	0.36

Source: Mavromaras et al (2012)

**Table 3.2: Over-qualification and over-skilling**

% of graduates	Male		Female	
	1992	2006	1992	2006
Qualified	78.3	66.8	76.4	68.0
of which overskilled	7.9	5.5	5.0	4.3
Over-qualified	21.7	33.2	23.8	32.1
of which overskilled	7.5	9.9	7.2	8.4

Source: Green and Zhu (2010), own calculations

<sup>4</sup> Which we use here as a catch-all term to include the 1986 Social Change and Economic Life Initiative survey, the 1992 Employment in Britain survey, the 1997, 2001 and 2006 Skills Surveys and the 2012 Skills and Employment Survey.

And, a separate question asks respondents about the extent to which they use their skills, experience and abilities in their current job. The former gives a measure of over-qualification and has increased over the past two decades (see Table 3.2). The latter captures over-skilling – Green and Zhu (2010) show that low utilisation of skills in occupations that do require a degree to enter is relatively uncommon – this group is constantly around 5–8% of all graduates throughout the period 1992–2006. Moreover, they also argue that while the proportion of graduates in jobs where the degree was not a formal entry requirement has increased, around two-thirds to three-quarters of these jobs are not associated with skill underutilisation.

These findings are similar to those in Chevalier (2003) and Chevalier and Lindley (2009). Their studies propose a measure that combines an objective assessment (specifically, whether the graduate worked in a professional, managerial or computer analyst occupation) with a subjective assessment of satisfaction with the match between the work and the qualifications possessed.<sup>5</sup> Those workers in non-graduate occupations from the perspective of the objective measure, but who reported

satisfaction with their job–skills match, were labelled apparently overeducated, as opposed to genuinely overeducated. Table 3.3 shows that while the proportion of graduates in non-graduate jobs increased significantly for the later cohort, a large proportion of the graduates in this cohort, who were in non-graduate occupations, reported that they were satisfied with the match between their jobs and their skills.

There are several ways to interpret the finding that many graduates in non-graduate jobs report that they are utilising their skills. One is that these jobs have been upgraded to take advantage of these additional skills. Another is that the skills supplied by such graduates are similar to those possessed by the non-graduates who had done that work in the past, without any upgrading. One reason for this might be that as the university sector has expanded, many new degrees have appeared in more vocational areas or linked more closely to the initial training needs of particular employers (Chillas, 2010). Depending on whether employers begin to recognise this and make possession of the degree a requirement to get the job, there might be workers in both the ‘over-qualified and uses skills’ group and the ‘qualified and uses skills’ group that might also

be in non-upgraded traditionally non-graduate jobs. Whether a university-based route is the optimal way to produce such skills and capabilities then becomes an important follow-up question. A more concerning possibility would be if few additional skills are produced by some university courses. People typically do not experience performing the same job prior to investing in their university education, so their ability to work out which skills they have as a direct result of their degree compared to prior education (or other ways people develop their capabilities) might be limited. In order to deal with these concerns, what is needed is a measure of how work in jobs that graduates move into has changed, which we consider in section 4. Before that, it is worth giving some attention to two other types of data that can be examined in relation to graduate skill utilisation and work: qualitative case studies and wage analysis.

On the first, there is a limited amount of existing qualitative research which has looked at whether the increase in the number of graduates has led to a job upgrading process in the labour market. Much of what there is involves the work of Geoff Mason. For example, Mason (1996) looks at two sectors: financial

**Table 3.3: Genuine and apparent over-education**

% of graduates	1985–1990	1995
Well matched	82.2	65.4
Apparent over-education	11.5	19.7
Genuine over-education	6.3	14.9

Source: Chevalier (2003), Chevalier and Lindley (2009), own calculations

<sup>5</sup> Chevalier (2003) uses a 1996 postal survey conducted by the University of Birmingham on two specific cohorts graduating in 1985 and 1990, while Chevalier and Lindley (2009) use data from a 2002–3 University of Warwick survey of graduates who finished study in 1995. The subjective questions in each survey were not the same – the former asked about satisfaction with the match, while the latter asked about the appropriateness of the match.

services and steel manufacturing. The study revealed two different realities for graduates. In the manufacturing firms, there was evidence that where graduates entered traditionally non-graduate jobs, jobs were changing to take advantage of their skills. To give two examples described in the study, foreign language graduates were recruited into clerical jobs where dealing with foreign clients or customers was becoming more important, and supervisor positions were being created for technical graduates working in shop floor production teams, where they oversaw the manufacture of increasingly complex products. On the other hand, there was far less evidence of upgrading within financial services – the study estimated that 45% of recently employed graduates were working in jobs suitable for school leavers that had not changed at all.

Mason (2002) provides a more comprehensive analysis by looking at 27 firms spread across telecoms, rail transport, retail and computer services. In the study, employer-led upgrading was observed in retailing, particular in Head Office marketing, buying and business planning departments, where graduates were increasingly expected to use analytical and creative skills as compared to the more clerical nature of the work in the past. Other examples of upgrading typically occurred when individual employees were able to expand their tasks through their own initiative and competence, often leading to internal promotion or better prospects with alternative employers (which meant that the upgrading was temporary and lasted only as long as that particular graduate stayed in the job). This was most frequently the case in telecoms and rail transport jobs, while there was no real scope to do the same in low-level service jobs like retail assistant, or in data

entry or telesales jobs in computer services. Overall, upgrading of non-graduate jobs did not appear to be the norm in these sectors, which was more in line with the earlier findings about financial services.

The case study approach to particular occupations or sectors has been deployed more recently. In particular, we have in-depth studies of estate agents (James et al 2012), press officers, software engineers, financial analysts and laboratory technicians (Tholen 2014). These studies have suggested only limited use of specifically graduate skills in jobs that have recently become dominated by, or exclusive to, those with degrees. For example, the work of estate agents and press officers appears to have changed very little – the managers of estate agents in England report preferring to hire graduates for a variety of presentational attributes that recent graduates tend to have over non-graduates, but not because there are particular aspects of the work which relate to graduate-level skills. On the other hand, we would be more cautious about concluding something similar about the more technical graduatising occupations in Tholen's study. If anything, this research may not capture the full extent of graduate-level skill usage by recent software engineers and laboratory technicians, because it is difficult for those being interviewed to disentangle the direct effect of university on their skill set when they (and we) do not observe what they would have been like in that job absent of higher study.

While case study based qualitative evidence allows for a deep analysis of particular firms, occupations or sectors, it is difficult to say anything general about the UK labour market as a whole from the conclusions of these studies. They also rely on the perceptions of workers and (sometimes)

employers, and it is easy to imagine the potential unreliability of answers to questions such as 'to what extent are you using the skills you acquired at university?'

Looking at data on wages, it is clear that graduates earn a significant premium over non-graduates (for example, Conlon and Patrignani 2011), and this does not appear to have declined significantly even as more and more graduates have entered the labour market (Walker and Zhu, 2008). However, while a constant graduate premium is potentially consistent with a labour market where the supply and demand for graduate skills increase with each other – that is, job upgrading has occurred – it is not the only possible explanation. A falling premium would mean insufficient demand for graduate skills only if non-graduate wages, which is the level against which the graduate premium is evaluated, were largely unaffected by a fall in the number of non-graduates. However, as we described in section 2.2, when a degree helps with labour market positioning and competition for the existing distribution of jobs, then those with degrees push those without further down the occupational hierarchy or skill demand distribution. In this case, the increasing numbers of graduates end up performing less skilled work on average, but then so do the remaining non-graduates, which makes a constant premium possible and uninformative. Such work tends to focus on a single statistic – the average return – with far less attention paid to the wide range of outcomes around this point. For those investing in education and training, this range is in part due to the riskiness of the investment, and in particular the possibility of finding higher or lower skilled jobs after graduation.

## 4 New evidence on job upgrading in the UK

In this section, we explore the issue of job upgrading in more detail, using data from the *UK's Workplace Employment Relations Survey* (WERS). The approach and methodology is discussed in greater detail in Luchinskaya, Tzanakou and Holmes (forthcoming). Here, we present an overview of how we have used these data, and demonstrate a range of different experiences which lie behind the evidence discussed in the previous section. The key point to bear in mind is that this analysis is motivated by the view that the questions we have raised can only be answered satisfactorily by directly examining the nature and content of specific jobs, something that most of the work (with the exception of specific case studies) we have surveyed until now does not do.

### 4.1 The data

High-skilled work is typically associated with elements of employee autonomy and decision-making, whereas deskilling accompanies tighter managerial control and a greater reliance on routine tasks (Gallie et al 2004; Braverman 1974). We use the extent to which workers can use their own discretion and can influence their own work as our proxy for the skill requirement of the job. We use the three most recent waves of the *Workplace Employment Relations Survey* (WERS) from 1998, 2004 and 2011, which asks respondents a number of questions on influence and discretion. We focus on the

questions relating to job influence over tasks, pace, approach, order and timing of work, three of which appear in all three waves of the WERS data, and a further two are available from 2004 onwards. These variables are scored on a 4-point scale, with 4 representing no influence and 1 representing a lot of influence. We also consider a number of other variables relating to satisfaction with decision-making and feedback between workers and management. All of the questions used are given in the Appendix.

We combine the available questions on influence and discretion to give a single measure for job influence and discretion – we use this as our proxy for the skill requirements of a job.<sup>6</sup> The other variables about decision-making and manager-worker relationships do not correlate with the questions about influence and instead relate to a different aspect of work. We do not use any of those other variables in the remainder of this report and focus on the influence/skill requirement measure. The measure is constructed to have a mean of zero – so positive scores are above average relative to the whole of the workforce across the time period, and vice versa for negative values.

How well does our measure actually capture skill requirements? We believe relatively well. Table 4.1 shows that higher job influence is associated with higher

*'High-skilled work is typically associated with elements of employee autonomy and decision-making, whereas deskilling accompanies tighter managerial control and a greater reliance on routine tasks.'*

<sup>6</sup> This was achieved using factor analyses, shown in Appendix Table A.1 and A.2. These analyses confirm that the different questions about influence are strongly correlated. Unless noted, we use the factor identified in table A.1, which covers the time period from 1998–2011, for much of what follows. Table A.2 shows that not much is lost by having this smaller set of questions, as answers to these questions are highly correlated.

skilled occupations, which are the managerial, professional, technical or associate professional occupations. It is perhaps slightly surprising that, in two of the three years, influence is higher for associate professional and technical occupations than for professional occupations. Moreover, by 2011, sales occupations – typically considered

a lower-skilled group of jobs – report high levels of discretion, which indicates that our measure is not a perfect measure of skill demand. Nevertheless, we would argue that it remains a more revealing measure than possible alternatives.

We find that it is higher for graduates compared to

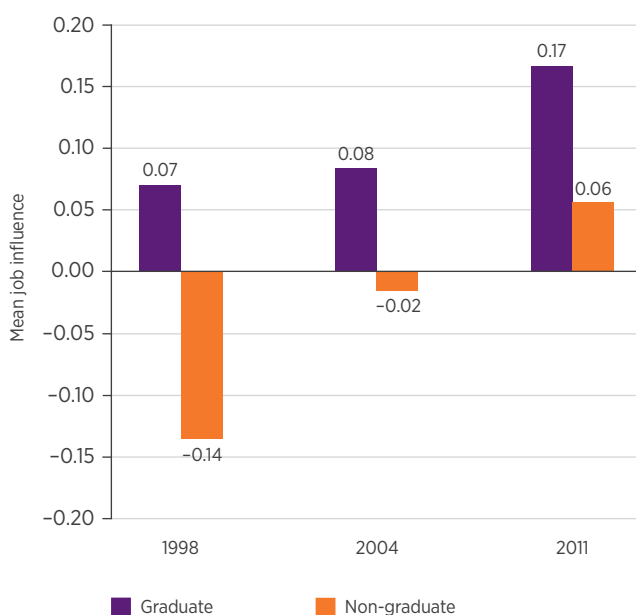
non-graduates across the time period, as shown in Figure 4.1. Moreover, within the educational groups, it is higher for those who report having about the right level of skills for their jobs as compared to those who report that they have more skills than are necessary for their jobs, as shown in Figure 4.2.

**Table 4.1: Job influence by occupational group**

SOC 1990	Job influence		
	1998	2004	2011
1 Managers and administrators	0.44	0.41	0.43
2 Professional occupations	0.03	0.06	0.17
3 Associate professional and technical occupations	-0.01	0.13	0.18
4 Clerical and secretarial occupations	-0.15	-0.07	-0.03
5 Craft and related occupations	-0.13	-0.03	0.07
6 Personal and protective service occupations	-0.18	-0.07	0.01
7 Sales occupations	-0.22	0.11	0.23
8 Plant and machine operatives	-0.42	-0.20	-0.14
9 Other occupations	-0.27	-0.11	-0.13

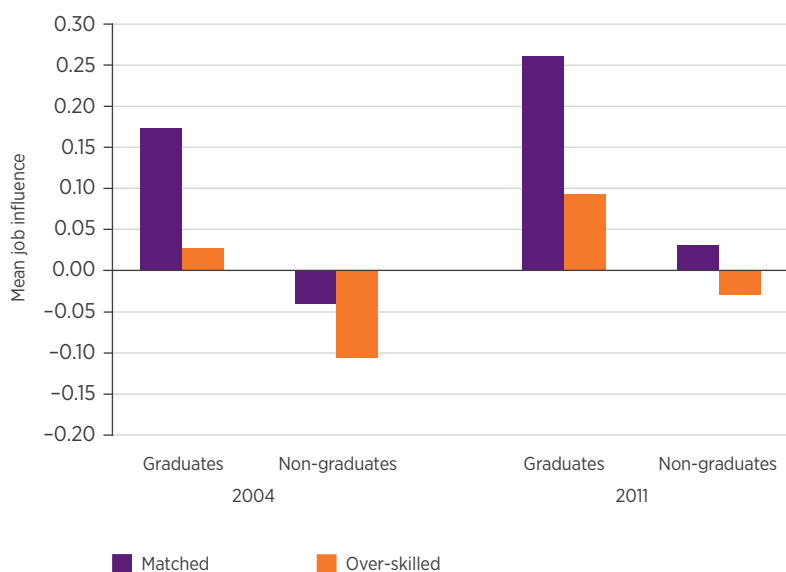
Source: WERS 1998, 2004 and 2011

**Figure 4.1: Job influence by year and education**



Source: WERS 1998, 2004 and 2011

**Figure 4.2: Job influence by year, education and degree of skill matching**



Source: WERS 2004 and 2011, own calculations

## 4.2 Occupations and job influence

We use job influence as a measure of skill requirement to identify job upgrading. Our analysis focuses on occupations. Given the data that are available and the sample sizes of the surveys, we have two possible approaches to defining an occupation. The first is to use detailed occupational

classifications. These are not recorded in the 1998 survey, but they are in 2004 and 2011, giving us around 70 possible jobs<sup>7</sup> (see Appendix), although some are not used since there are only a small number of workers in the WERS sample. A second option is to look at the top-level occupational groups combined with the industry

sector groups (see Table 4.2). On this basis, we classify 108 occupation–industry pairs in the WERS data between 1998 and 2011 (9 occupational groups x 12 industry groups).

When we examine the industry–occupation pairs and impose a minimum of 100 workers

**Table 4.2: Industry and occupational classifications**

Industry (SIC 2003)	Occupation (SOC90)
D: Manufacturing	1 Managers and administrators
E: Electricity, gas and water	2 Professional occupations
F: Construction	3 Associate professional and technical occupations
G: Wholesale and retail	4 Clerical and secretarial occupations
H: Hotels and restaurants	5 Craft and related occupations
I: Transport and communication	6 Personal and protective service occupations
J: Financial services	7 Sales occupations
K: Other business services	8 Plant and machine operatives
L: Public administration	9 Other occupations
M: Education	
N: Health	
O: Other community services	

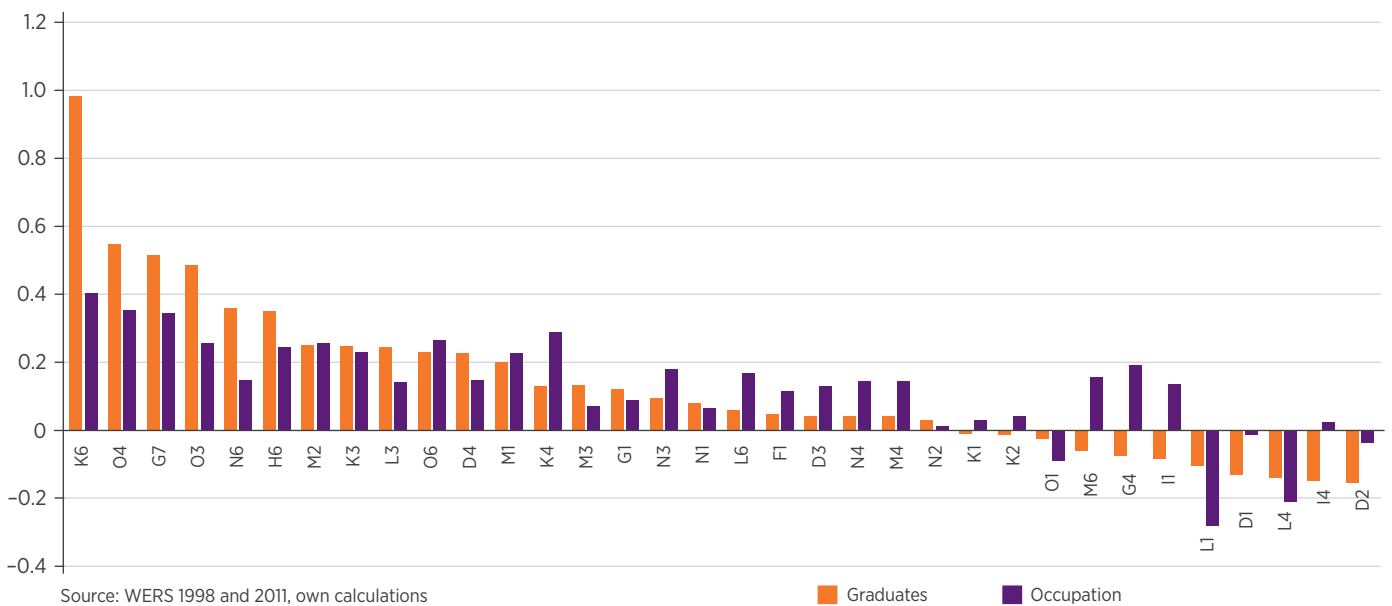
<sup>7</sup> SOC 2000 at the 3 digit level.

per pair per year to ensure a reasonable sample size, there are 45 job groups for our analysis, which covers around 80% of the total sample. In the analysis that follows, we remove skilled trades, plant and machine operatives and elementary occupations (SOC major group

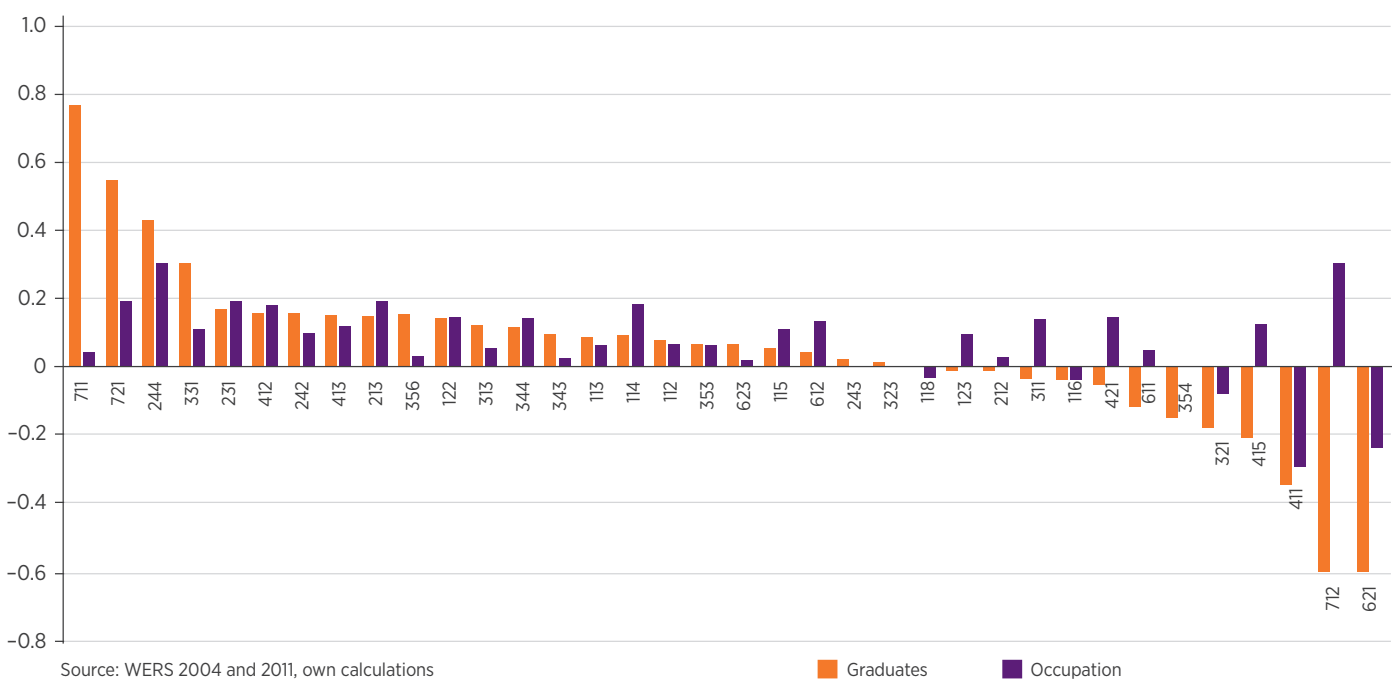
5, 8 and 9, respectively) – these are occupations which historically have seen low levels of graduate employment and have experienced little change in this aspect during the time period. For reasons of space, in the following sections, we will sometimes refer to jobs as a combination of their

industry letter code and their occupational group number – so, for example, D1 means managers and administrators working in manufacturing. Where possible, we illustrate these group descriptions with some specific sorts of job titles that would be found within

**Figure 4.3: Changes in influence by occupation–industry pair, 1998–2011**



**Figure 4.4: Changes in influence by occupation, 2004–2011**





the groups. These should be treated as illustrative only.

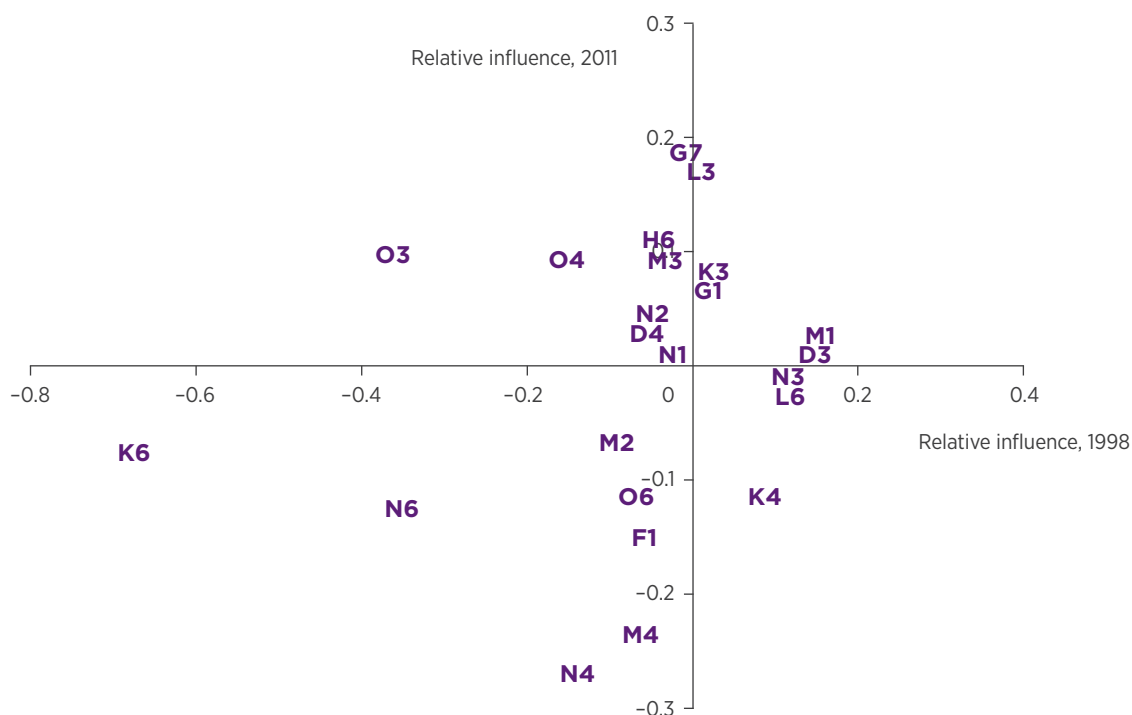
A relatively straightforward way in which we can use our measure is to examine how average graduate influence has changed in an occupation over time. At the very least, we would expect occupations that are upgrading to have, as a minimum, increasing levels of influence and discretion. Figure 4.3 shows that for most occupation-industry pairs this is the case between 1998 and 2011, but that a number see a fall in the absolute level of discretion and the influence of graduates in those occupations. Figure 4.4 shows the same thing using the 3 digit SOC groupings between 2004 and 2011. Some of these occupations

are experiencing deskilling – that is, the occupation as a whole has experienced a fall in discretion, which is affecting graduates as well as non-graduates. Examples include senior- and lower-level public administrators (L1, L4 and 411) and leisure and travel service occupations (621, which would include travel agents, leisure assistants and air and rail travel assistants). The remainder exhibit a form of job competition – the occupation as a whole has not seen a particular fall in influence and discretion, meaning that what is pulling graduates down is that they are performing increasingly less-skilled jobs within that occupation. Examples of this include managers in manufacturing, transport and

communication (D1 and I1), health associate professionals (321, which would include nurses), nursery nurses and child-minders (M6) and a number of examples from clerical work (G4, I4 and 415).

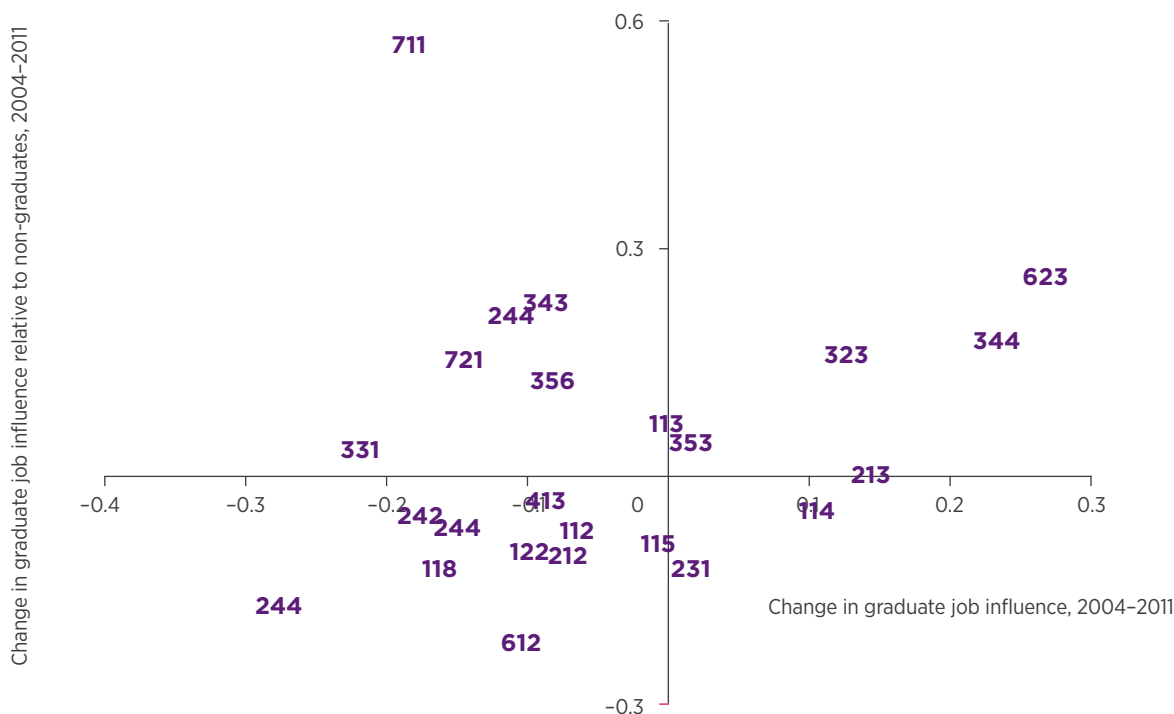
Putting these occupations to one side, we now turn to occupations where influence and discretion have been increasing over time. The hypothesis of job upgrading makes the assumption that graduate work has a higher skill requirement than non-graduate work, everything else being equal. Figures 4.5 and 4.6 show the relative influence of graduates as compared to non-graduates in each occupation at the beginning and end of the time period for which we have data. In each case

**Figure 4.5: Graduate relative influence, 1998 and 2011**



Source: WERS 1998 and 2011, own calculations

**Figure 4.6: Graduate relative influence, 2004 and 2011**



Source: WERS 2004 and 2011, own calculations

the earlier year is on the horizontal axis and the later year on the vertical axis.

The figures show that there are a number of occupations where the relative influence of graduates is not positive either at the beginning or at the end of the time period. In these cases, we would argue that graduate skills have not been key to performing adequately in a particular occupation and may, in some cases, represent a mismatch of skills compared to what non-graduates have traditionally offered. The most striking examples here include managers in construction (F1), administrators in education and healthcare (M4 and N4), childcare service occupations (621), production and office managers (112 and 115),

and administrative occupations in finance (412). There are then a number of occupations where the relative position of graduates has improved but remains negative – this might indicate a limited amount of upgrading for graduates compared to their jobs in the past, but still doesn’t suggest that being a graduate is hugely important compared to other routes into the labour market. Examples here include managers in health and social care (118) and leisure and hospitality (122), personal services in healthcare (K6, which would include care or nursing assistants), record-keeping administrative occupations (413) and IT technicians (313).

On the other hand, there is some evidence of occupations where

graduate skills are better employed now where they were not in the past. For example, graduate retail assistants and to a lesser extent, customer service occupations (G7, 711 and 721) have seen a large increase in job influence compared to their non-graduate counterparts. Similarly, media associate professionals (O3 and 343) and public service associate professionals (M3, L3 and 356) now exhibit significant positive differences in influence between graduates and non-graduates.

The remaining group of occupations are those which, at least before graduate numbers in the labour market reached its current high levels, graduates tended to work in more demanding jobs than non-graduates. If we take

one such occupation and imagined that there was a significant influx of recent university leavers then, if nothing else changed, we would expect to see some of those graduates entering jobs in this occupation which had previously been designed for non-graduates, where the work has a lower-skill requirement. The average level of skill required of graduates in that occupation would therefore fall as compared to the remaining non-graduates as some of the new graduates enter non-upgraded jobs. On the other hand, if those jobs previously held by non-graduates were upgraded, allowing them to use the wider set of skills that existing graduates in the occupation had been allowed, then the average level of skill required for graduates would not decrease relative to non-graduates. Moreover, if existing graduate jobs increased their skill requirements, the relative influence of graduates in these occupations should increase. Therefore, one thing we examine closely is the change in the difference of influence and discretion between graduates and non-graduates within occupations – a fall in the difference, especially where the occupation has seen an influx of graduates, would suggest that not all jobs have upgraded sufficiently.

One advantage of this measure is that it controls for occupation wide changes in skill requirements that affect both graduates and non-graduates, for example, if technology improved in such a way as to make both types of job in the occupation more demanding. Suppose that this happened at the same time as the increase in the number of graduates, some of whom take jobs which would have been suitable for a non-graduate. If we just observed what was

happening to graduates, as we did in Figures 4.3 and 4.4, we might conclude that graduate work is still as skilful as it was before, even though there are more graduates in the occupation than before. However, this masks two distinct effects – an occupational upgrading that is not neutral towards graduate skills, and increased job competition.

Using this, we identify several examples of occupations which seem to have upgraded in this fashion, including managers in retail (G1), associate professionals in business services and finance (K3 and 353), functional managers (113) and social welfare associate professionals (323, including counsellors and social workers). On the other hand, some occupations exhibit the effects of graduate job competition, most notably technicians in manufacturing (D3), associate professionals in health care (N3), managers and senior administrators in education (M1), customer and quality managers (114) and sports coaches and fitness instructors (344).

The final element in compiling this typology is to focus on the occupations which have exhibited the greatest overall change in graduate share. So, for example, while managers and shop floor workers in retail (G1 and G7) have seen some favourable changes in terms of graduate influence and skill requirements, these have not been occupations that have become particularly graduatised (the share of graduates increased by 5.5 and 2.5 percentage points, respectively between 1994 and 2007). Table 4.3 summarises the various categories discussed above for occupations – defined both ways – with the largest increase in graduate share between 1994

and 2007.<sup>8</sup> It is worth noting that because of imperfect overlap between the two ways of defining jobs, similar sounding areas of work appear in different boxes. For example, nursing appears in both the job competition and mismatch boxes depending on which occupation definition is being used (N3 and 321). However, both point away from a job upgrading story towards one of insufficient demand for skills. Another example, which shows why using both sets of occupational definitions is helpful to more accurately describe the data, is associate professionals in business service (K3). This overlaps with a number of 3 digit SOC groups including associate business and financial professionals (353, which comprises of jobs such as financial advisers or tax consultants), IT technicians (313) and sales associate professionals (354). Each of these three occupational groups appears in a different box, which shows that even within an occupational group in a single industry, the experience of graduates can be diverse.

The main conclusion that can be seen straightaway from the Table is that there is no relationship between heavily graduatising occupations and either job upgrading or job competition – there are examples of both kinds, as well as a number of rapidly graduatising occupations where we find evidence of mismatch.

There are undoubtedly lots of explanations for the ways different occupations have evolved over time, some of which might be specific to particular employers or industries and could be supplemented by existing or new case study research. To give one example, estate agents are a significant part of the sales

<sup>8</sup> We omit professional occupations (SOC group 2) from this Table as most start from a position of being highly graduatised already, so a sizeable increase in the share of graduates is less significant in proportional terms. In general, these occupations offer few examples of significant job upgrading – the one notable example is public service professionals (244).

associate professionals group (354) – our data suggest these jobs have not been upgraded, which is consistent with James et al (2012).

It is possible to look at a number of more general changes that have affected some occupations. One of these is the way having a graduate degree has replaced vocational

training-based routes into occupations. Table 4.4 shows the occupation-industry pairs which most heavily recruited workers that had completed an apprenticeship.<sup>9</sup>

**Table 4.3: Typology of graduatising occupations**

	Occupation description	Code	Increase in graduate share, 1994–2007
<b>Upgrading</b>	Managers in healthcare	N1	8.2
	Functional managers	113	11.5
		K3	15.3
	Associate professionals in business services and finance	353	14.1
	Public sectors associate professionals, vocational instructors, careers advisors	L3	12.4
		356	9.3
		M3	15.1
	Associate professional in other community services, including:	O3	8.1
	Media associate professional	343	37.4
	Social welfare associate professionals (eg social workers)	323	12.2
Protective service occupations (eg police officers)	331	11.4	
Administrative occupations in other community services	O4	9.5	
<b>Competition</b>	Managers in manufacturing	D1	10.0
	Managers in business services	K1	11.6
	Managers and proprietors in other services	123	15.2
	Science and engineering technicians/technicians in manufacturing	D3	14.1
		311	11.2
	Associate professionals in health (including nurses and therapists)	N3	21.4
	Sales associate professionals	354	15.0
	Personal service occupations in education (eg nursery nurses)	M6	9.6
<b>Mismatch</b>	Office managers	115	10.1
	Managers in hospitality and leisure services	122	8.2
	IT technicians	313	33.8
	Administrative occupations in education	M4	13.8
	Administrative occupations: records	413	8.0
	Personal services in business services	K6	13.5
	Childcare and related personal services (eg nursery nurses)	612	11.1
<b>Deskilling</b>	Senior public administrators	L1	12.0
	Health associate professionals (eg nurses)	321	22.5

Source: WERS 1998 and 2011, QLFS 1994 and 2007, own calculations

<sup>9</sup> Note that the data available does not distinguish if an apprenticeship is relevant, so some workers may have an apprenticeship but now be working in a different occupation that does not directly use those skills.

The overwhelming majority of the occupations where apprenticeships have been of historic but declining importance are not graduate destinations that have reacted to the change in the composition of workers by upgrading jobs. In the two groups with the highest historic reliance on apprentices, graduates have been mismatched since non-graduates, including those with vocational qualification, have

more influence. Two of the three occupations that we classify as having been deskilled also appear in this Table. Job competition is a feature of most of the remaining occupations in the Table, suggesting that while many new recruits have higher education qualifications, the jobs they are largely entering are exactly those they would have found in an earlier generation without the need for university study.

**Table 4.4: Occupations with declining apprenticeship route**

	Occupation-industry pair	Apprenticeship share, 1994	Change in apprenticeship share, 1994–2007	Graduate outcome
<b>F1</b>	Managers in construction	39	-12	Mismatch
<b>O6</b>	Personal service workers in community sector	33	-15	Mismatch
<b>D3</b>	eg Technicians in manufacturing	30	-15	Job competition
<b>D1</b>	Managers in manufacturing	26	-10	Job competition
<b>L3</b>	Associate professionals in public administration	21	-12	Upgrading
<b>M3</b>	eg vocational instructors	19	-12	Upgrading
<b>I1</b>	Managers in transportation	19	-5	Job competition
<b>O1</b>	Managers in community sector	17	-10	Deskilling
<b>K3</b>	eg IT technicians, tax consultants	16	-11	Upgrading
<b>G1</b>	Managers in retail	16	-7	Upgrading
<b>L6</b>	Public sector personal service workers	14	-11	Job competition
<b>L1</b>	Senior public sector administrators	11	-5	Deskilling
<b>M1</b>	Managers in education	11	-5	Job competition
<b>N3</b>	eg nurses, therapists	11	-8	Job competition
<b>M6</b>	eg nursery nurses	10	-4	Job competition

## 5 Conclusions

*‘The simplest interpretation of this development is that HE is acting as a filtering device to identify the most able individuals and that these individuals are no more or less productive in such jobs than their mothers or fathers.’*

Recent decades have seen a major increase in participation in higher education throughout the developed world. This has raised concerns that many graduates are, in some sense, being underutilised in the labour market. HE expansion has been greater in the UK than in most of the rest of Europe. This has led to a phenomenon known as occupational filtering down – graduates entering jobs that were once done by their non-graduate mothers and fathers. A degree has become a necessity for getting an ever-larger proportion of jobs. The simplest interpretation of this development is that HE is acting as a filtering device to identify the most able individuals and that these individuals are no more or less productive in such jobs than their mothers or fathers. Or, to put it differently, the graduates are no more productive than they would have been had they emulated the previous generation and gone into these jobs without going to university. If this interpretation were the correct one, then serious questions would have to be asked about the social returns to HE. However, there are many alternative (not necessarily exclusive) interpretations. It could be that the content of the jobs now being entered by graduates has been upgraded, so that, although occupational title has not changed, the jobs are more productive. The extra skills that graduates have acquired in HE are being fully utilised. Thus the central question posed in this report is the extent to which graduate skills are being utilised and the ways in which occupations are changing in order to take

advantage of available skills. Further issues that consideration of this question brings to the fore include: could the skills which graduates bring to their jobs have been acquired more efficiently in other ways, for example through an apprenticeship system? To what extent does the HE system in fact enhance labour market skills? Answers to these questions are beyond the scope of this report but our findings suggest that they are questions that need answering.

Although decisive evidence for Europe as a whole is lacking, concern has been expressed about the likelihood of graduate underutilisation in the face of the expansion of HE. Our own calculations, using conventional methodology, from the European Working Conditions Survey suggest that it is widespread but variable from country to country. Underutilisation is higher in the UK than in most EU27 countries. It is greater only in Croatia, Greece, Latvia, Romania and Slovenia.

However, we argue the conventional methodology provides far from decisive evidence for the phenomenon. The most common research approach is to use surveys that essentially ask respondents about the extent to which the skills that they acquired, while undertaking any given level of education, are being used by their employers. There are a multitude of problems involved in interpreting responses. Among these are the following: it is possible that there is a response bias that could go either way – respondents might

overestimate or underestimate the degree of usage; there may be uncertainty in respondents' minds about exactly what skills they did acquire during a specific educational experience; there is also the problem that a graduate reporting they use their skills well in a traditionally non-graduate job might have been the recipient of a lower quality course that produced relatively few skills. It is for this reason, assuming that these interpretative difficulties are reasonably constant through time, that analysis of developments over a period of years, or comparisons between countries in a given year, are often more revealing than a simple snapshot of one country at a particular point in time. In an attempt to offer a different perspective on these issues, we have adopted a new approach. This is to use information from the *Workplace Employment Relations Surveys* for 1998, 2004 and 2011 about job influence or discretion – influence over what you do, how you do it and the pace at which you do it. The degree of influence or discretion a worker has in their job is thought to be a good proxy for the skill requirement of that job. On this measure, we see a number of occupations which demonstrate upgrading, but more than half of the job groups (defined by occupation and industry) showed no evidence of this process, and in some cases, graduate workers report lower levels of influence and discretion than their non-graduate counterparts within the same occupation. What we observe in much of the labour market is that graduates are successful in finding jobs that require more skills, but we do not find that when a graduate and a non-graduate find themselves in the same occupation, the former necessarily has some advantage over the latter.

Perhaps we should not be over-concerned if large numbers of our workers believe that their capabilities are not being fully utilised. It was probably always thus. In the 1950s and 1960s when manufacturing industry had many mind-numbing, routinised repeat cycle unskilled and semi-skilled jobs, union leaders used to remark that their members had far more capabilities than they were allowed to demonstrate at work. Nevertheless the apparent extent of graduate underutilisation does raise questions about the size of the HE sector in relation to our labour market needs. In a recent publication Alison Wolf (Wolf, 2015) expressed concern about lack of funding for the FE sector. She wrote:

*'Are we right to be moving towards a system which continues to value all and any increases in university enrolments and in HE participation rates among the young? Should we accept that the adult skills sector, outwith apprenticeship, may as well vanish into history, as a low priority area of expenditure?'* She goes on:

*'In post-19 education we are producing vanishingly small numbers of higher technician level qualifications, whilst massively increasing the output of generalist bachelor degrees and low-level vocational qualifications. We are doing so because of the financial incentives and administrative structures that governments themselves have created, not because of labour market demand, and the imbalance looks set to worsen further. We therefore need, as a matter of urgency, to start thinking about post-19 funding and provision in a far more integrated way.'*

We believe that our findings add further urgency to that plea.

They suggest that there may be more cost-effective (for both government and individuals) ways of preparing many of our young people for entry into the labour market. Policy-makers need to scrutinise the range of courses offered by the HE sector and seriously consider the social and private returns to them. We conjecture that they will conclude that, in many cases, public funds could more usefully be deployed elsewhere in the education and training system. Our findings suggest that the presence of a large HE sector will not necessarily lead to the attainment of the knowledge economy so beloved by successive UK governments.

# References

- BATTU, H., BELFIELD, C. and SLOANE, P. (2000) How well can we measure graduate over-education and its effects? *National Institute Economic Review*. Vol 171. pp82–93.
- BRAVERMAN, H. (1974) *Labor and monopoly capital: the degradation of work in the twentieth century*. New York: Monthly Review Press.
- BROWN, P. (2001) Globalisation and the political economy of high skills. In: BROWN, P., GREEN, A. and LAUDER, H. *High skills: globalization, competitiveness, and skill formation*. Oxford: Oxford University Press.
- BROWN, P., LAUDER, H. and ASHTON, D. (2011) *The global auction*. Oxford: Oxford University Press.
- CHEVALIER, A. (2003) Measuring over-education. *Economica*. Vol 70, No 279. pp509–531.
- CHEVALIER, A. and LINDLEY, J. (2009) Overeducation and the skills of UK graduates. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*. Vol 172, No 2. pp307–337.
- CHILLAS, S. (2010) Work-readiness: what employers really want from graduate employees. *Paper presented at the International Labour Process Conference 2010, Rutgers University, New Jersey*.
- CONLON, G. and PATRIGNANI, P. (2011) *The returns to higher education qualifications*. BIS Research Paper No 45. London: Department for Business, Innovation and Skills.
- DEPARTMENT FOR BUSINESS, INNOVATION AND SKILLS. (2013) *Participation rates in higher education: academic years 2006/07 to 2011/12 (provisional)*. London: Department for Business, Innovation and Skills.
- DOLTON, P. and VIGNOLES, A. (2000) The incidence and effects of overeducation in the U.K. graduate labour market. *Economics of Education Review*. Vol 19, No 2. pp179–198.
- ELIAS, P. and PURCELL, K. (2004a) Is mass higher education working? Evidence from the labour market experiences of recent graduates. *National Institute Economic Review*. Vol 190. pp60–74.
- ELIAS, P. and PURCELL, K. (2004b) *SOC (HE): a classification of occupations for studying the graduate labour market*. ESRU/WIER Research Paper, No 6. Bristol: University of the West of England. Employment Studies Research Unit and Warwick: Warwick Institute for Economic Research.
- EUROPEAN COMMISSION. (2013) *Employment and social developments in Europe 2012*. Brussels: European Commission. Employment, Social Affairs and Inclusion.
- FINEGOLD, D. and SOSKICE, D. (1988) The failure of training in Britain: analysis and prescription. *Oxford Review of Economic Policy*. Vol 4, No 3. pp21–53.
- FLISI, S., GOGLIO, V. and MERONI, E. (2014) *Occupational mismatch in Europe: understanding overeducation and overskilling for policy making*. Joint Research Centre of the European Commission, Science and Policy Report, No EUR 26618 EN. Luxembourg: Publications Office of the European Union.
- FREY, C. and OSBORNE, M. (2013) *The future of employment: how susceptible are jobs to computerisation?* Oxford: Oxford University. Oxford Martin School. Available at: [http://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf) [Accessed 11 August 2015].
- GALLIE, D., FELSTEAD, A. and GREEN, F. (2004) Changing patterns of task discretion in Britain. *Work, Employment and Society*. Vol 18, No 2. pp243–246.
- GLOBAL AGENDA COUNCIL ON EMPLOYMENT. (2014) *Matching skills and labour market needs: building social partnerships for better skills and better jobs*. Geneva: World Economic Forum.
- GOOS, M. and MANNING, A. (2007) Lousy and lovely jobs: the rising polarization of work in Britain. *Review of Economics and Statistics*. Vol 89, No 1. pp118–133.



GRAZIER, S., O'LEARY, N. and SLOANE, P. (2008) *Graduate employment in the UK: an application of the Gottschalk-Hansen Model*. IZA Discussion Paper, No 3618. Bonn: Institute for the Study of Labor (IZA).

GREEN, F. and ZHU, Y. (2010) Overqualification, job dissatisfaction, and increasing dispersion in the returns to graduate education. *Oxford Economic Papers*. Vol 62, No 4. pp740–763.

JAMES, S., COMMANDER, J., THOLEN, G. and WARHURST, C. (2012) Graduate skills or the skills of graduates, what matters most? An analysis from a graduatising occupation. *Paper presented at the 30th International Labour Process Conference, Stockholm University, Stockholm*.

LEITCH, S. (2006) *Prosperity for all in the global economy – world class skills. Final report*. Leitch Review of Skills. London: Stationery Office.

LUCHINSKAYA, D., TZANAKOU, C. and HOLMES, C. (forthcoming) *Job upgrading and the expansion of higher education in the UK*. SKOPE Research Paper. Oxford: Centre on Skills, Knowledge and Organisational Performance (SKOPE).

MASON, G. (1995) *The new graduate supply-shock: recruitment and utilisation of graduates in British industry*. London: National Institute of Economic and Social Research.

MASON, G. (1996) Graduate utilisation in British industry: the initial impact of mass higher education. *National Institute Economic Review*. Vol 156. pp93–103.

MASON, G. (2002) High skills utilisation under mass higher education: graduate employment in service industries in Britain. *Journal of Education and Work*. Vol 15, No 4. pp427–456.

MAVROMARAS, K., SLOANE, P. and WEI, Z. (2012) The role of education pathways in the relationship between job mismatch, wages and job satisfaction: a panel estimation approach. *Education Economics*. Vol 20, No 3. pp303–321.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT. (2014) *Education at a glance 2014*. Paris: OECD.

QUINN, M. and RUBB, S. (2006) Mexico's labor market: the importance of education-occupation matching on wages and productivity in developing countries. *Economics of Education Review*. Vol 25, No 2. pp147–156.

SPENCE, M. (1973) Job market signalling. *Quarterly Journal of Economics*. Vol 87, No 3. pp355–374.

THOLEN, G. (2014) The role of higher education within the labour market: evidence from four skilled occupations. *Paper presented at SKOPE/ESRC Festival of Science, St. Anne's College, Oxford*.

THUROW, L. (1976) *Generating inequality*. London: Macmillan.

WALKER, I. and ZHU, Y. (2008) The college wage premium and the expansion of higher education in the UK. *Scandinavian Journal of Economics*. Vol 110, No 4. pp695–709.

WARHURST, C. and THOMPSON, P. (2006) Mapping knowledge in work: proxies or practices? *Work, Employment and Society*. Vol 20, No 4. pp787–800.

WOLF, A. (2015) *Heading for the precipice: can further and higher education funding policies be sustained?* Issues and Ideas. London: King's College. The Policy Institute at King's.

# Appendix

**Table A.1: Job influence factor analysis, 1998–2011**

	Factor 1	Factor 2	Uniqueness
The tasks you do in your job	0.6998		0.4848
The pace at which you work	0.7205		0.4843
How you do your work	0.7447		0.4518
How well managers respond to employee suggestions		0.7581	0.4234
Relations between managers and employees		0.7551	0.4229
<i>Cronbach alpha</i>	0.7970	0.8130	

Source: WERS 1998, 2004 and 2011, factor analysis results, principal factors, promax (oblique) rotation.

**Table A.2: Job influence factor analysis, 2004–2011**

	Factor 1	Factor 2	Uniqueness
The tasks you do in your job	0.7227		0.4489
The pace at which you work	0.7153		0.4810
How you do your work	0.8051		0.3580
The order in which you carry out tasks	0.7656		0.4261
The time you start or finish your working day	0.4545		0.7811
How well managers respond to employee suggestions		0.8350	0.3288
Relations between managers and employees		0.7865	0.3907
Satisfaction with involvement in decision-making		0.7222	0.3993
<i>Cronbach alpha</i>	0.8157	0.8545	

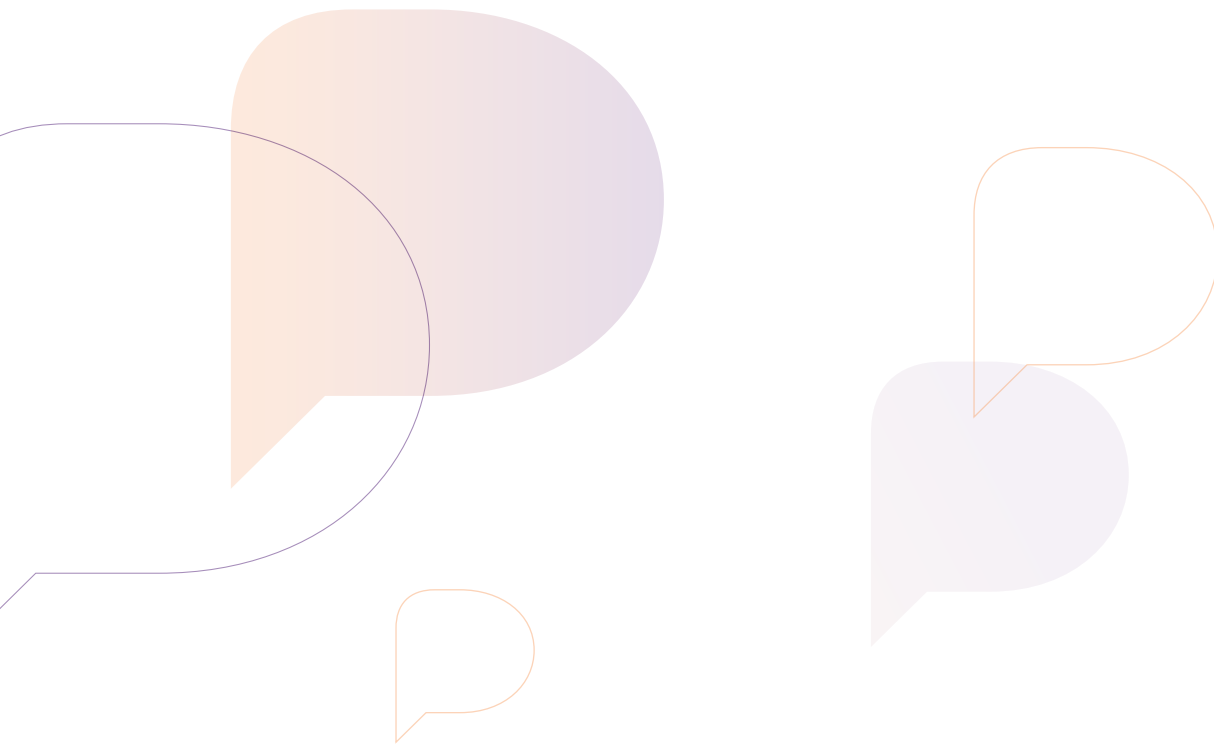
Source: WERS 1998, 2004 and 2011, factor analysis results, principal factors, promax (oblique) rotation.

**Table A.3: SOC2000 3 digit occupational groups**

---

111 Corporate managers and senior officials	331 Protective service occupations
112 Production managers	341 Artistic and literary occupations
113 Functional managers	342 Design associate professionals
114 Quality and customer care managers	343 Media associate professionals
115 Financial institution and office managers	344 Sports and fitness occupations
116 Managers in distribution, storage and retailing	351 Transport associate professionals
117 Protective service officers	352 Legal associate professionals
118 Health and social services managers	353 Business and finance associate professionals
121 Managers in farming, horticulture, forestry and fishing	354 Sales and related associate professionals
122 Managers and proprietors in hospitality and leisure services	355 Conservation associate professionals
123 Managers and proprietors in other service industries	356 Public service and other associate professionals
211 Science professionals	411 Administrative occupations: Government and related organisations
212 Engineering professionals	412 Administrative occupations: Finance
213 Information and communication technology professionals	413 Administrative occupations: Records
221 Health professionals	414 Administrative occupations: Communications
231 Teaching professionals	415 Administrative occupations: General
232 Research professionals	421 Secretarial and related occupations
241 Legal professionals	611 Healthcare and related personal services
242 Business and statistical professionals	612 Childcare and related personal services
243 Architects, town planners, surveyors	613 Animal care services
244 Public service professionals	621 Leisure and travel service occupations
245 Librarians and related professionals	622 Hairdressers and related occupations
311 Science and engineering technicians	623 Housekeeping occupations
312 Draughtspersons and building inspectors	629 Personal services occupations N.E.C.
313 IT service delivery occupations	711 Sales assistants and retail cashiers
321 Health associate professionals	712 Sales related occupations
322 Therapists	721 Customer service occupations
323 Social welfare associate professionals	

---



# CIPD

Chartered Institute of Personnel and Development  
151 The Broadway London SW19 1JQ United Kingdom  
**T** +44 (0)20 8612 6200 **F** +44 (0)20 8612 6201  
**E** [cipd@cipd.co.uk](mailto:cipd@cipd.co.uk) **W** [cipd.co.uk](http://cipd.co.uk)

Incorporated by Royal Charter  
Registered as a charity in England and Wales (1079797) and Scotland (SC045154)  
Issued: August 2015 Reference: 7079 © CIPD 2015