

Policy report

October 2016

Alternative
pathways into
the labour market



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Executive summary

Our CIPD report (*Over-qualification and Skills Mismatch in the Graduate Labour Market*, 2015) published last year attracted great interest and controversy. It documented the vast expansion of the UK's higher education sector and asked what was happening to its graduates in the labour market. It is clear that graduates are occupying more and more jobs that were once occupied by their non-graduate parents. This raises the question as to what the graduates themselves, and what society at large, gains from their university attendance. The answer critically depends on whether their skills are being used by their employers. Our way of investigating this was to try to assess whether the jobs that had become graduatised had been made more demanding or had been upgraded. We explored this by examining how various dimensions of influence or discretion exercised in the job had altered and how the picture differed between graduates and non-graduates doing the same job. The story that emerged was a mixed one but suggested widespread under-utilisation of graduate skills and capabilities.

This report expands the discussion. It first responds to some of the criticisms made of the original report. Perhaps the most common of these is that graduate skills must be being used because the graduate wage premium has remained pretty constant. This argument seems to ignore a simple statistical point. Imagine that the wage hierarchy of jobs has remained unchanged over time. Then, as the graduate population

expands, graduates filter down this hierarchy, thus driving down the average graduate wage. But non-graduates are also driven down the hierarchy, thus reducing their average wage. The consequence could well be an unchanged graduate premium but the skills of many graduates would still be under-utilised.

The report goes on to document the extent of occupational filtering down since the 1970s. We then concentrate our attention on 29 occupations. These are occupations that have seen a pronounced increase in graduates working in them and they account for nearly 30% of all employment in the UK and for 30% of jobs held by graduates.

Our tentative conclusion is that the growth of graduates in these occupations in the UK has not systematically replaced other post-school formal routes. Rather, it has largely substituted for people leaving school without subsequently acquiring formal vocational education. We compare the routes taken into similar occupations in continental Europe, showing that some countries deploy the non-HE (higher education) route more intensively than we do. Before looking at costs, we discuss the debate surrounding five particular occupations – nurses, accountants, police officers, nursery nurses and teaching assistants. In the case of nurses we document the controversy as to whether the switch to degree entry has in fact increased demonstrated competencies and capabilities.

Like nursing, accountancy is a profession which moved from non-graduate to graduate entry, but there are now signs of a 'push-back' against this. By contrast, there are proposals to make entry into the police graduate-only but, as with nursing, there is controversy about what exactly would be gained. The final two occupations were traditionally very much non-graduate ones but both have increasingly been populated by graduates. Concern has been expressed about how these graduates could progress to better jobs within the sector but it is unclear that their degrees will help them in this endeavour.

In assessing the relative costs of different pathways into occupations, we have used the work of KPMG on university costs and the work of the Institute for Employment Research and IFF on apprenticeship costs. It is apparent that the latter vary considerably by level and by sector. We have categorised school-leavers into several types and deployed the most appropriate apprenticeship cost as a comparator with the university route. In all cases not only is the cost of the non-university route significantly smaller, the individual bears a lower proportion of that cost. Thus, at least on this narrow economic calculus, for the higher cost to be justified, it would need to be shown that universities give people more human capital than the alternative route and that this human capital is used by employers. In the majority of the occupations this study has considered, this cannot be demonstrated.

1 Introduction

Over half a million people entered higher education in the UK in 2015, nearly 90% of whom were home students (UCAS 2015). The figure has grown in almost every year over the past three decades despite an increase in the cost of study to individual students, albeit less than might have been the case had costs not increased (Dearden *et al* 2011). Consequently, the current participation rate of UK domiciled students is closing in on the 50% target of the New Labour government – measured by the higher education initial participation rate (HEIPR), participation stood at 46.6% for 2013/14, a 0.6 percentage point increase compared with 2010/11.¹ However, many are in favour of even greater expansion. For example, the former Universities Minister David Willetts, speaking on a BBC Radio 4 programme, recently expressed a desire to see 75% of young people attend university.

In our earlier report for the CIPD, we argued that far from producing too few graduates for the needs of the UK labour market, reports of graduate over-qualification and under-utilisation suggested many young people simply did not enter work which required the skills they possessed. We also argued that in many jobs, even if they could be described as high skill,² it was not clear that it was graduates that were uniquely suited to this work. Only a proportion of workers in most occupations were graduates and it was often not evident that such individuals did noticeably different sorts of jobs than their non-graduate colleagues. Moreover, where they might have done so in the past, many occupations were

not keeping pace with the influx of new, better-qualified workers – these differences between the two groups were narrowing over time as the graduate population grew.

Where our analysis finished was at the point where we concluded that only a proportion of the work that graduates do would not have been done if fewer of them had been available.³ What we did not look at is the costs of a university-based route into work as opposed to an alternative. It is this that we attempt to better understand in this report.

We first return to our earlier report to follow up on the debate that emerged after its publication. There were a number of counter-arguments which we attempted to address at the time, but here we restate or re-emphasise them, particularly in relation to the use (and misuse) of wage premia, and the choice of the measure of over-qualification.

The following sections of the report turn to our main question: does university education represent the optimal way to produce the skills necessary for the current UK labour market? We note up front that this means taking a deliberately narrow, instrumental view of why people might want to go to university and of what they might get out of the experience. There may be a number of broader benefits of a university education that are not considered here. However, for good or ill, policy-makers give every indication that the production of highly skilled future workers is the primary role of the higher education sector, and so we take that function as a given

and leave assessment of the wider benefits to future research.

We go through a number of steps. First, in order to make our analysis as concrete as possible, we focus on 29 occupations which have seen significant shifts towards graduate recruitment and employment over the past 30 years. These occupations are also chosen because they are large. They account for nearly 30% of both overall employment in the UK and for over 30% of the work performed by university graduates, while 329 other classified occupations account for the rest. Our chosen occupations include ones recognisable from popular discourse around graduate employment, including nurses, accountants and police officers, as well as a variety of managerial and clerical roles and lower-skilled personal or retail service jobs. We explore how routes into these occupations have changed as they have become, to varying degrees, more graduated as well as compare these entry routes with those observed in other countries.

Second, we review the available evidence on the cost of different routes into the labour market, focusing particularly on the cost of university courses as compared with apprenticeships and publicly provided vocational education.⁴ We show that taken from a variety of different angles, university education is significantly more expensive to the state and in total, as opposed to many vocational routes.

We conclude that, in the cases of many occupations that have become increasingly inhabited by graduates, this extra cost cannot be justified.

2 Over-qualification and skills mismatch in the graduate labour market: an update

In our previous report (Holmes and Mayhew 2015) we showed that the UK has one of the largest higher education sectors in the OECD, while the available data at the European level suggested that over-education is a particular problem in our country.⁵ To summarise, 58% of UK graduates in the European Social Survey reported themselves as being in jobs requiring less than four to five years of post-compulsory education in 2010 (the most recent year for that survey), which was far higher than most other countries, including all of the major Western European countries and high-participation countries in Scandinavia. This picture was supported by self-reports of skill utilisation in the European Working Conditions Survey. While the disparity between the UK and its neighbours was less striking here, incidence of under-utilisation amongst graduates was still higher – around 40% of graduates, as compared with closer to 30% in, for example, Belgium, Denmark, Germany, Italy, the Netherlands and Sweden.

The main thrust of our report was to argue that most, if not all, existing measures of over-education have significant weaknesses. Given that, we argued that a greater focus on what it is graduates do within their work and not proxy measures that look only at outcomes was needed. We presented a measure of skill demand that looked at the extent to which workers, both graduates and non-graduates, have discretion or influence over various aspects of the jobs they do. However,

notwithstanding our reservations about existing measures of over-education, they have some value. Importantly, and unlike our discretion/influence measure, they enable comparison across countries – and, to the extent that self-reported information can be biased away from the true value – we could at least expect those biases to be similar in each country, so that the differences between countries are insightful.

There were two main lines of critical response to our report. The first was to point to the favourable position graduates continue to occupy in the labour market – for example, graduates have higher employment rates, find it easier to get work and earn more, on average, than non-graduates.⁶ A number of studies have suggested that the average earning premium in particular has remained stable or dropped far less than might be expected even while the relative supply of graduates has increased (Walker and Zhu 2008, Blundell *et al* 2016). From a human capital-marginal productivity perspective, these facts are typically interpreted as suggesting demand for skills has increased in line with supply – if it had not, the extra supply would have either driven down wages or, if wages did not fall, driven down employment prospects.

It is first worth noting that not all studies agree with the conclusion that the graduate premium has remained at its historically high level. For example, Abel *et al* (2016) document a fall in the relative wage of graduates as compared with someone with

no education – after controlling for tenure, age, industry and occupation – from over 45% to under 35% between 1995 and 2015. Moreover, there is evidence that around the average graduate premium, pay is becoming more dispersed, with those in the lower part of the graduate distribution experiencing far smaller earnings differentials (Walker and Zhu 2008, Green and Zhu 2010). Studies that find that the premium has fallen very little on average have also found larger drops for different subgroups, for example, when the graduate workforce is split along gender or age cohort lines.

There is a more fundamental problem, however, which is that even if the graduate premium is not falling, that finding only indicates that there is no oversupply problem if a human capital view of the functioning of the labour market is adopted. A constant graduate premium is also entirely consistent with signalling or job competition models – that is, where education itself does not produce scarce skills, but helps in the process of matching workers to employers and jobs. For example, if degrees are simply being used by employers to filter out applicants for the stock of currently available jobs, those with the relevant signal – here, a degree – have better access to those jobs which are higher-paying while those that do not have the signal tend to take lower-paying jobs. If more people obtain the signal and employers continue to use it to screen even for jobs previously going to non-graduates, those with degrees end up taking a wider variety of

work, pushing their average wage down. However, at the same time, those without degrees now find it harder to get the highest-paying jobs that graduates used not to take, so their average pay falls as well. Hence, the graduate premium might be maintained as the average pay of both groups falls. At the same time, some of those who hold degrees end up in lower-paying, less demanding work, which would represent greater over-skilling than previously. Thus, we argued in the report that wage premia and other measures of labour market outcomes are not informative unless you know about the sort of labour market in which these things are happening – for that, directly examining the work of graduates is necessary.

Although it is not the focus of this report, it can be noted that macro-level analysis should provide a good sense-check on what estimates of wage premia to higher education tell us. For example, if they do reflect extra human capital being effectively used, we should also see growth in output and productivity at the national level. Alternatively, if they are really about allowing people to compete for scarce good jobs that already exist, there should be no such relationship. Although there is a lot of work on growth and education broadly defined, far less has looked at tertiary-level education specifically. In simple cross-country comparisons, a relationship between long-run growth rates and the expansion of higher education is hard to find (Holmes 2013, Holland *et al* 2013) and for developed countries specifically, may even be slightly negative (Holmes and Mayhew 2016). This contrasts with primary and secondary education, where correlations can be more readily found – although establishing causality here is a separate issue.

Other approaches have found positive relationships. For example, Holland *et al* (2013) estimate that a one percentage point increase in the employment share of graduates raises productivity by 0.2–0.5 percentage points.⁷ Moreover, the cross-country comparisons do not mean that higher education never has any effect on growth anywhere, but more that there is an automatic relationship between simply having more graduates and increases in productivity. There are specific channels where a relationship can be found, especially involving innovation and research (Aghion *et al* 2009), and of course if a country can create more and more highly skilled, high-productivity job opportunities for which graduates are necessary, this too will have an effect at the macro level. It is this final point that we look to examine in this report.

The second line of criticism has been to focus on other objective over-education measures that we did not use. For example, the most recent Destinations of Leavers from Higher Education (DLHE) survey data cited by HEFCE⁸ and others shows that 75% of recent graduates have entered occupations in SOC groups 1–3 (managerial occupations, professional occupations and associate professional occupations). Putting aside the fact that 25% have not entered such jobs, which is a significant proportion, it is a mistake to think that all occupations in these three categories are graduate jobs simply because they are labelled the highest skilled. Our report showed that, historically, most workers in these occupations were non-graduates – in the early 1990s only professional occupations employed more graduates than non-graduates, while the proportion was below

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20% for both managerial and associate professional occupations. In recent classifications of graduate occupations that focus on the requirements of the job (Elias and Purcell 2013, Green and Henseke 2014), a number of occupations in SOC groups 1 and 3 are explicitly classified as non-graduate.⁹ Moreover, as a recent report by the Edge Foundation emphasised, the Office for National Statistics does not consider occupations in SOC group 3 as requiring a degree and that they can be performed by individuals with higher-level vocational qualifications.

As we will argue throughout this report, from a skills policy perspective it is not sufficient for HE advocates to demonstrate that university graduates simply find relatively high-skilled jobs. It is also necessary for them to show that the skills required in these jobs are not, or could not, be supplied adequately by other workers, or that they are produced less expensively through university study. Many of the occupations the above studies describe as graduate jobs would have been classified similarly in the 1990s,¹⁰ when few people in those jobs were in fact graduates. This could have implied a skill shortage – if so, this would have been reflected in differences, within the occupation, between what sorts of work and tasks the available graduates and the majority of non-graduates were doing. On the other hand, if the skills required to perform the job could be developed through other routes – for example, vocational education and training or even working experience and informal on-the-job learning – there may be little observable difference between workers from either group. In the report, our main analysis found very mixed evidence of differences in levels of discretion and autonomy exhibited by graduates

and non-graduates. What we would need to see is that something was changing about the work in these occupations as graduates replace non-graduates, which is what our main analysis showed was not systematically the case.

A final counterclaim that was made after our report was released related to survey evidence that 42% of graduates said their degree was a formal requirement while 23% said it gave them an advantage.¹¹ In our report, we made the point that needing a degree to get a job and needing one to do the job, though frequently conflated, are in fact very different things – hence our distinction between being over-qualified and being over-skilled (see footnote 5). Faced with a huge number of graduates, employers are able to set a degree as a minimum requirement, regardless of the work that the job will eventually entail. These data are simply silent on whether the jobs actually need graduate skills in order to be performed.

3 An abridged history of occupational filtering down in the UK

In this section we examine UK labour market data on graduate employment since the 1970s. We use data from the UK Labour Force Survey to track the proportion of individuals in any narrowly defined occupation who hold, as a minimum, an undergraduate degree. With narrowly defined occupations, sample size can be an issue and so we focus on 29 occupations (using the most recent SOC2010 occupational standards), which we use to illustrate more general trends in the discussion later in this paper. These occupational titles are given in Table 1. They have the largest sample sizes (more than 200 in 2014), and involve significant employment of graduates (more than 10% in 2014).¹²

We do not include professional occupations with traditionally very high shares of graduates (for example, medics, management and business consultants, secondary school teachers and university academics) since our interest is in occupations where graduate share has increased significantly rather than in work which has long been performed by graduates. However, not all professional occupations fall into this category – for example, thirty years ago only a minority of chartered accountants, software programmers and nurses had degrees.

We also exclude some occupations where it is not straightforward to

find an equivalent occupational title in earlier iterations of the Standard Occupational Classification – at the very least, we looked for comparable data going back to the 1990s, if not the 1980s or earlier.¹³ Finally, we excluded some large but vaguely titled occupational groups that are included in the classification. For example, almost 1,000 workers out of a sample of 45,000 UK workers are classified as ‘other administrative occupations’.

Table 1 lists the 29 occupations that we have chosen, while Appendix Table A2 gives details as to how we have matched these to earlier Standard Occupational Classifications.

Table 1: Selected occupations

SOC2010 major group	Occupational title
Managers, directors and senior officials	<ul style="list-style-type: none"> • Production managers and directors in manufacturing • Production managers and directors in construction • Financial managers and directors • Marketing and sales managers¹⁴ • Managers and directors in retail and wholesale • Property, housing and estate managers
Professional occupations	<ul style="list-style-type: none"> • Nurses • Primary and nursery education teaching professionals • Programmers and software developers • Chartered and certified accountants
Associate professional and technical occupations	<ul style="list-style-type: none"> • Police officers (sergeant and below) • Finance and investment analysts • Marketing associate professionals • Human resources and industrial relations officers • Vocational and industrial trainers
Skilled trades occupations	<ul style="list-style-type: none"> • Gardeners and landscape gardeners
Administrative and secretarial occupations	<ul style="list-style-type: none"> • National government administrators • Book-keepers, payroll managers and wages clerks • Bank and post office clerks • Office managers • Personal assistants and other secretarial occupations
Caring, leisure and other service occupations	<ul style="list-style-type: none"> • Nursery nurses and assistants • Teaching assistants • Nursing auxiliaries and assistants • Care workers and home carers
Sales and customer service occupations	<ul style="list-style-type: none"> • Sales and retail assistants
Elementary occupations	<ul style="list-style-type: none"> • Security guards and related occupations • Waiters and waitresses • Bar staff

‘In managerial, associate professional and technical occupations there are now nearly as many graduates as non-graduates.’

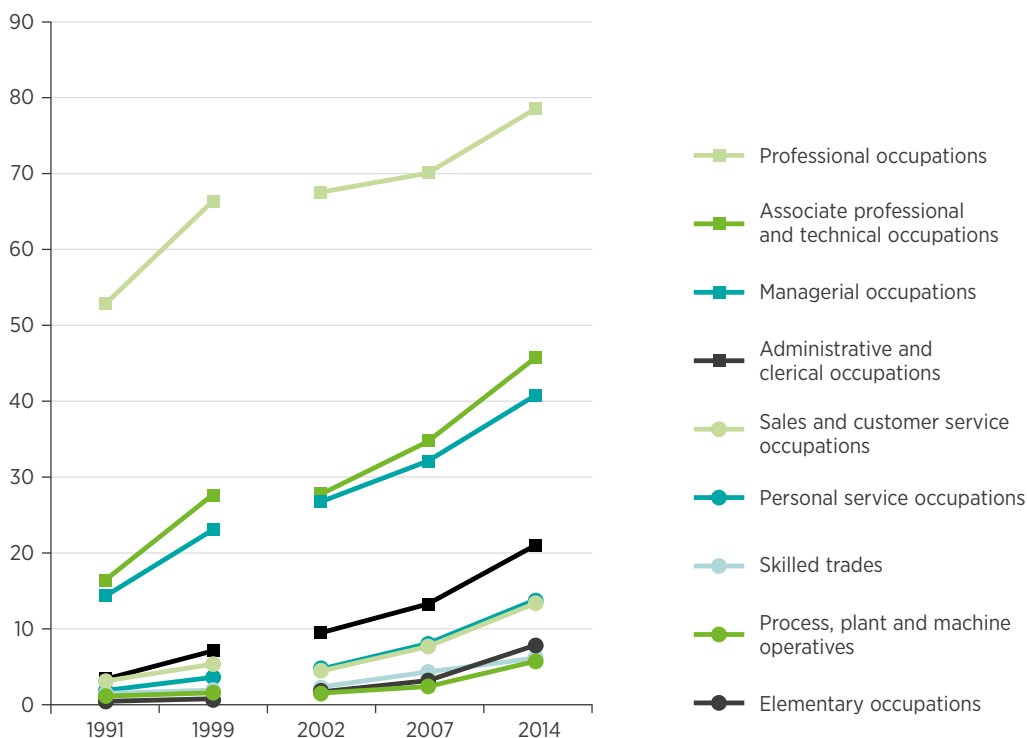
Overall these 29 occupations account for 28.9% of all employment in the UK in 2014 and for 30.2% of jobs held by graduates. For comparison, a further 36.2% of employed graduates work in the remaining 67 professional occupations that have always had high graduate shares, 12.7% in the remaining 59 associate professional and technical occupations, 7.5% in the remaining 30 managerial occupations and the rest – 13.4% of all employed graduates – are spread across the rest of the 183 occupations found in SOC10 major groups 4 to 9 that are not included in Table 1. On this basis, we argue these 29 occupations are highly relevant for understanding the changing nature of graduate work in the UK.

3.1 Graduate shares of employment since 1979

Our earlier report (Holmes and Mayhew 2015) showed how the graduate share of occupations had evolved in the UK between 1991 and 2014, and we reproduce that analysis in Figure 1.

Figure 1 shows that 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

Figure 1: Graduate share of major occupational groups (%)



Source: Labour Force Survey

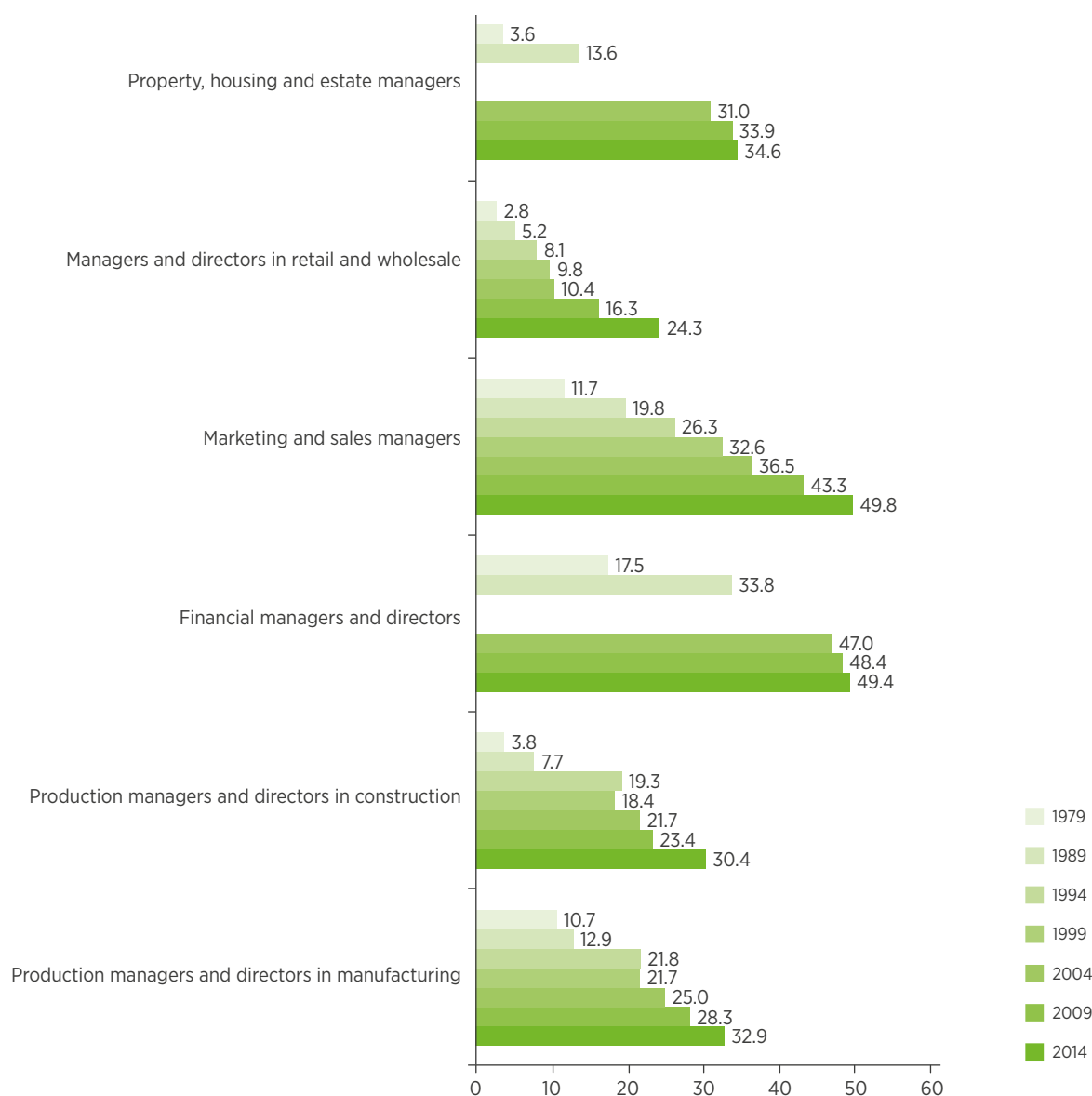
Notes: Occupational groups by SOC90 major groups in 1991 and 1999, SOC2000 major groups thereafter.

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.

Figures 2, 3, 4, 5 and 6 describe the growth of graduate share for our selected occupations within each broad occupational category. The transformation of these occupations towards accepting and employing graduates in significant numbers occurs in a variety of ways. For many occupations, this has been an ongoing change over a fairly long period of time. This is clearly the

case for nurses and police officers, but more generally happens to differing extents across many of the higher-level occupations. The administrative and clerical occupations we examine have a similar pattern (albeit with lower graduate shares), but this group of occupations is distinct for being a routine occupation (Autor *et al* 2003), more easily substitutable with technology and has been in

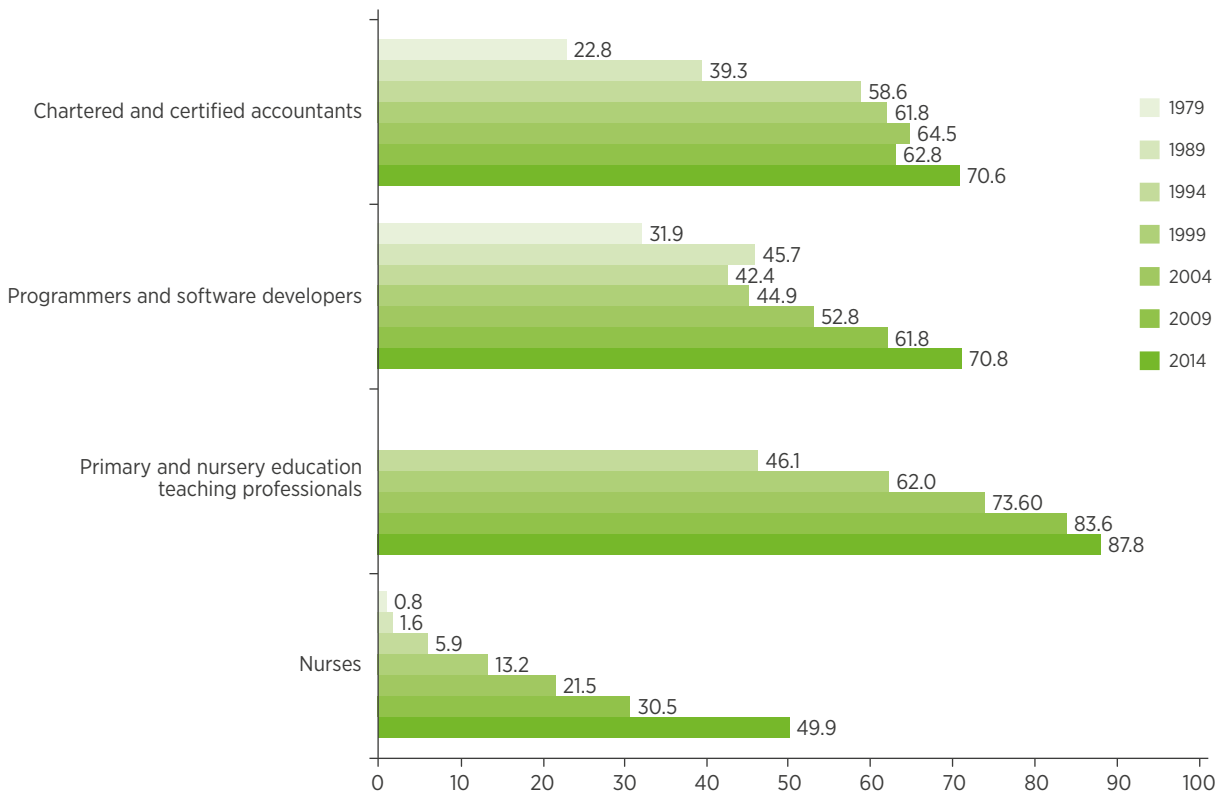
Figure 2: Graduate share of selected managerial occupations (%)



Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

Figure 3: Graduate share of selected professional occupations (%)



Source: Labour Force Survey

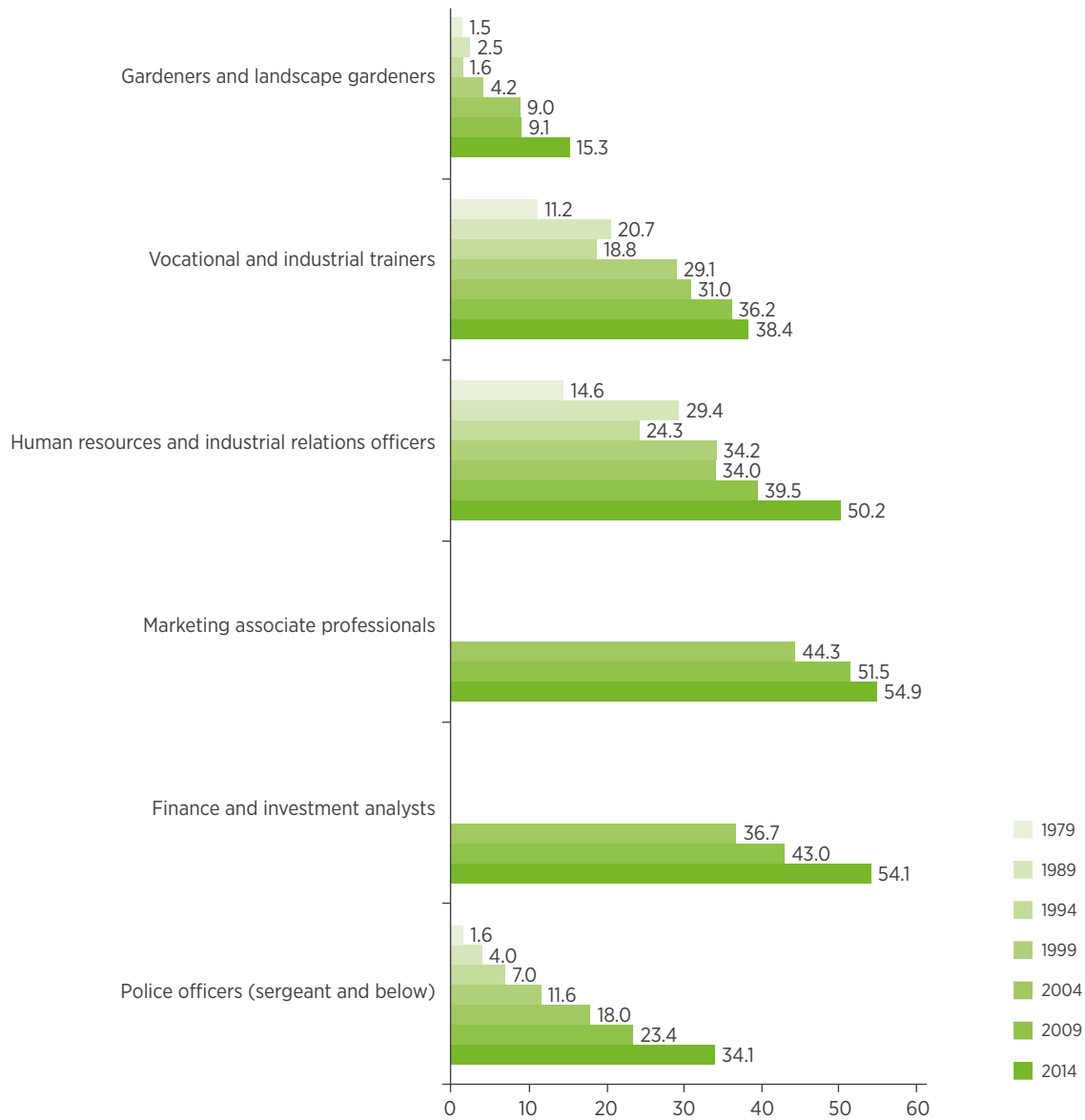
Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

decline since the 1970s. Hence, part of the explanation for growing graduate shares here could be the greater likelihood that, as jobs are being lost, employers make less educated workers redundant first. That said, new graduates have also continued to enter such occupations.

A small number of our chosen occupations changed over a relatively short timeframe – chartered accountants, finance

directors and office managers, for example, have essentially plateaued since the mid-1990s in terms of their relative employment of graduates. Finally, the lower-skill service occupations we examine essentially see no increase in graduate employment throughout most of the time period – it is only after the middle of the 2000s, or in the case of a couple of occupations, after 2010, that the share of graduates starts to become significant.

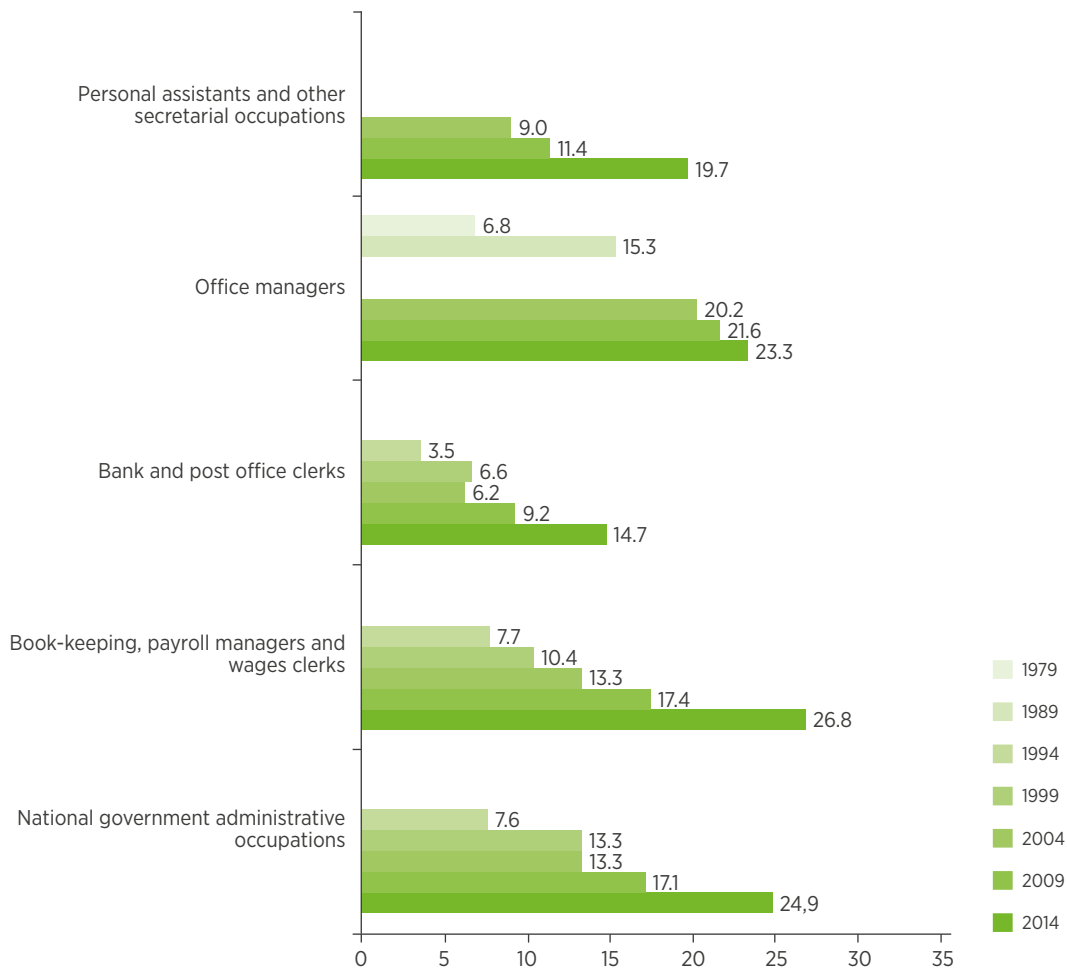
Figure 4: Graduate share of selected associate professional, technical and skilled trade occupations (%)



Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

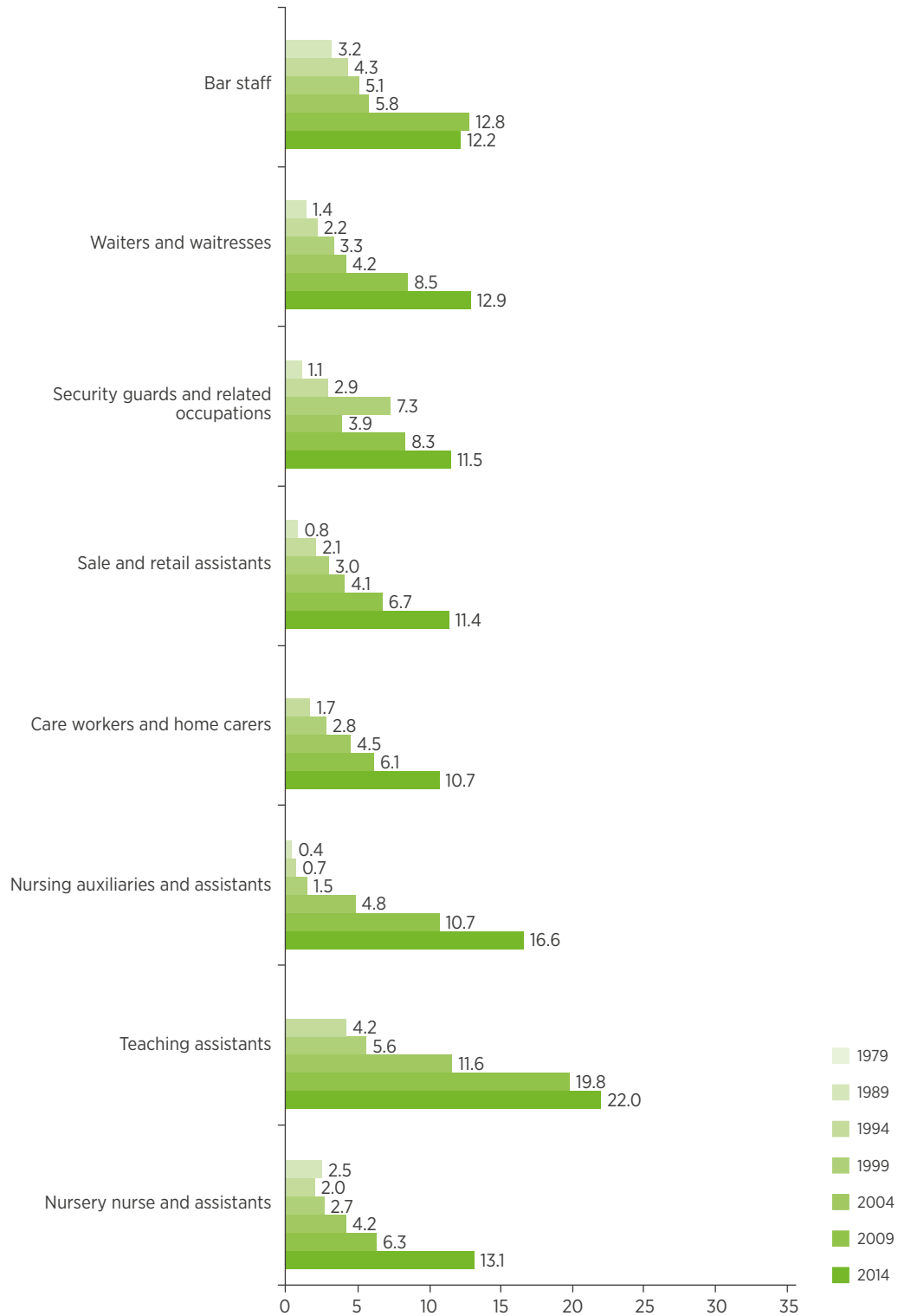
Figure 5: Graduate share of selected administrative and clerical occupations (%)



Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

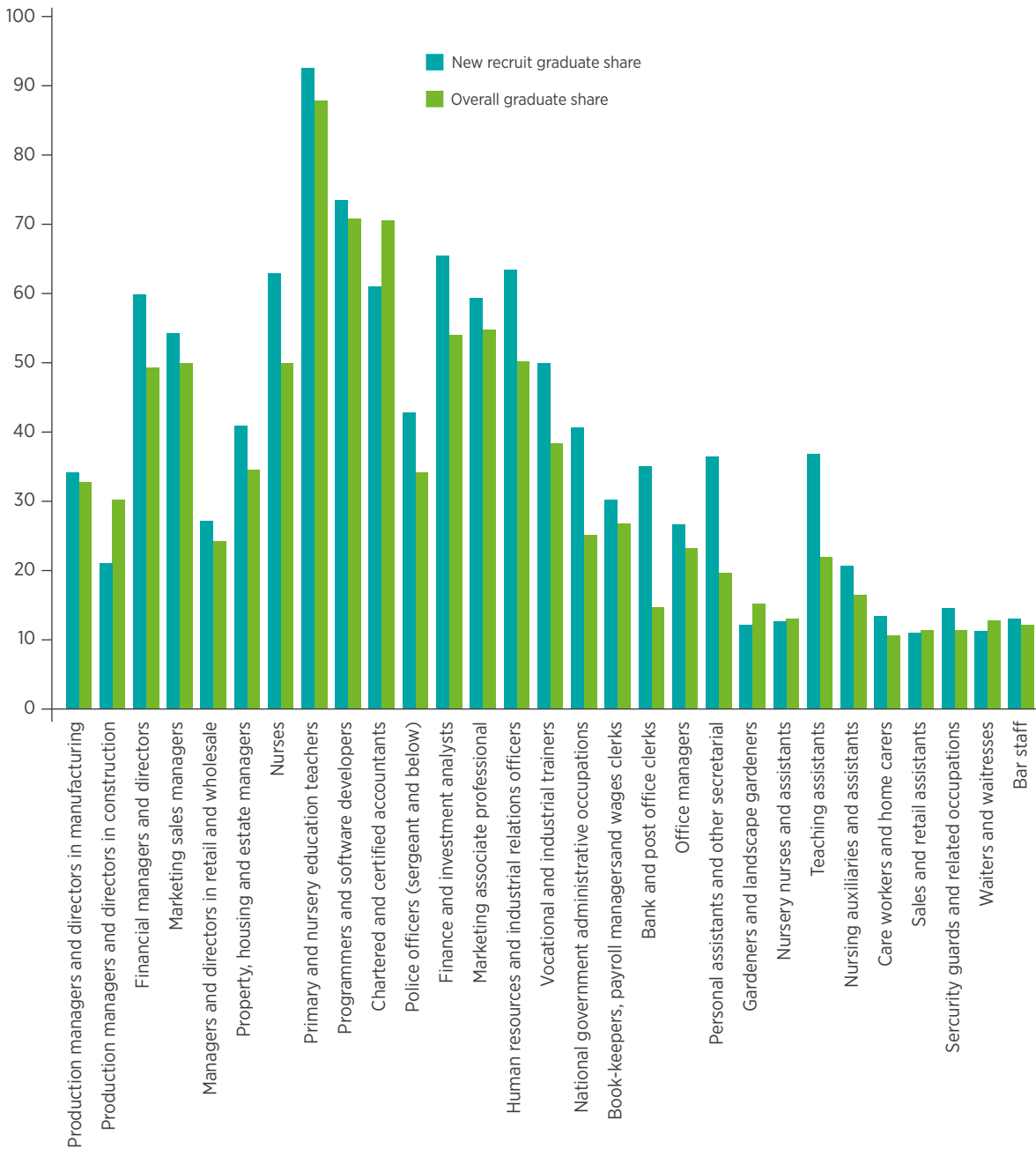
Figure 6: Graduate share of selected service occupations (%)



Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

Figure 7: Graduate share for all workers and new recruits, 2014 (%)



Source: Labour Force Survey

One final way we show how graduates have entered these occupations is to focus on the qualifications of those recently recruited as compared with the occupation as a whole. Figure 7 shows the proportion of workers who had been in their current job for less than two years who

have a degree, as compared with the overall graduate share of the occupation.¹⁵

Unsurprisingly, in most of these occupations – which were chosen in part because of their increasing graduate share – more recent recruits are more

likely to be graduates than the occupation as a whole. There are a couple of counter-examples (managers in construction and chartered accountants) where recent recruits are less likely to have a degree – we return to the particular circumstances surrounding the latter occupation

at the end of this section. Figure 7 reveals the occupations where entry requirements have been changing most recently. In higher-skill occupations, we see this for nurses (where almost two-thirds of those in their job for less than two years have a degree), financial directors and financial analysts, human resource and industrial relations officers, and vocational instructors. Further down the occupational hierarchy, noteworthy in this regard are some clerical occupations (national government administrators, bank and postal clerks, and PAs), and teaching assistants, where over a third of new recruits have a degree.

3.2 Skill requirements and upgrading

The starting point is to consider whether our selected occupations have the sort of skill requirements consistent with graduate work or are able to take advantage of the particular skills graduates may bring. We first use the existing analyses of Elias and Purcell (2013, henceforth EP) and Green and Henseke (2014, henceforth GH) to allocate these occupations into graduate or non-graduate jobs. Both analyses focus on the requirements of the job. For EP, each occupation is assessed in terms of the three areas of knowledge which they argue higher education is fundamental in producing: expertise, orchestration and communication. Graduate jobs are those which score highly – over 5 out of 10 – for at least one of the three areas of knowledge. Graduate jobs are then separated by the type of knowledge which is most important.

GH analyse jobs in terms of the self-reported necessity to have a degree to perform it adequately, as predicted by measured aspects

of job skill requirements such as generic skill intensity, required training and computer use.¹⁶ From this, they produce an index of high skill requirements per occupational group. They then use cluster analysis to form two groups of occupations. There is a cut-off point in the index above which an occupation would be found in the graduate cluster.

Table A3 summarises these two typologies for our 29 selected occupations. The first point to note is that essentially all occupations outside of the professional, managerial and associate professional or technical occupations are classed as non-graduate in both typologies. The one exception to this is administrators in national government, which EP consider to be a graduate job on the basis of the orchestration knowledge score. However, in terms of skill requirements, the GH measure places it at a very similar level to other administrative and clerical occupations.

Both typologies describe all professional occupations as graduate-level jobs, including the four we have focused on here – nurses, chartered accountants, software programmers and primary school teachers – which were not, historically speaking, dominated by graduates even though they are now. EP and GH call most managerial occupations graduate jobs, although this is not unambiguously the case for two of our selected occupations: managers in retail and property managers. Office managers are also a non-graduate occupation, but this is recognised now to be a lower-skilled occupation – since 2010 it has been grouped with administrative occupations rather than managerial occupations.

The biggest area of disagreement between EP and GH comes in the associate professional and technical occupations. EP tends to find more examples of non-graduate work in this group, whereas GH describes most of these types of occupations as graduate jobs. For our selected occupations, all apart from two are classed as graduate jobs in both analyses. The exceptions are police officers (where EP and GH agree these are non-graduate jobs) and vocational instructors, which only GH labels as a graduate occupation.

Both EP and GH focus on occupations as a whole and capture the level of skill required to perform the job, particularly as it relates to having a degree. These approaches raise the question over what happens when people enter these occupations without degrees in graduate jobs and with degrees in non-graduate jobs. In the first case, the question is whether non-graduates have a different experience of the job because of their lower level of qualifications, while in the second case, it is possible that graduates find ways to use their particular skillset even in a less demanding work environment – this is what Mason (2002) labels ‘individual upgrading’.

Our earlier report (Holmes and Mayhew 2015) drew on our own research on job influence, discretion and autonomy using data from the UK Workplace Employment Relations Survey (Luchinskaya *et al* forthcoming). Table 2 shows that the measure we produce for 2004 and 2011 – the two years of the survey with relevant occupational data – lines up well with other measures of skilled work. Managers typically exhibit the highest level of discretion, professionals and

Table 2: Job influence scores for selected occupations, 2004–11

Occupation (SOC2010)	SOC2000 3-digit description	Influence 2004	Influence 2011
Production, works and maintenance managers Managers in building and contracting	Production managers	0.512	0.597
Financial managers and chartered secretaries Marketing and sales managers	Functional managers	0.528	0.601
Retail and wholesale managers	Managers in distribution, storage and retailing	0.533	0.478
Property, housing and land managers	Managers and proprietors in other service industries	0.520	0.624
Nurses	Health associate professionals	0.100	0.032
Primary and nursery education teaching professionals	Teaching professionals	-0.014	0.181
Software professionals	Information and communication technology professionals	0.013	0.215
Chartered and certified accountants	Business and statistical professionals	0.256	0.358
Police officers (sergeant and below)	Protective service occupations	-0.473	-0.373
Finance and investment analysts/advisers	Business and finance associate professionals	0.113	0.174
Marketing associate professionals	Sales and related associate professionals	0.219	0.227
Personnel and industrial relations officers Vocational and industrial trainers and instructors	Public service and other associate professionals	0.237	0.262
Civil Service administrative officers and assistants	Administrative occupations: government and related organisations	-0.155	-0.444
Accounts and wages clerks, book-keepers, other financial clerks Counter clerks	Administrative occupations: finance	-0.087	0.093
Office managers	Financial institution and office managers	0.360	0.466
Personal assistants and other secretaries	Secretarial and related occupations	-0.017	0.118
Nursery nurses Childminders and related occupations Educational assistants	Childcare and related personal services	-0.334	-0.193
Nursing auxiliaries and assistants Care assistants and home carers	Healthcare and related personal services	-0.163	-0.106
Sales and retail assistants	Sales assistants and retail cashiers	-0.261	-0.157

Source: WERS 2004 and 2011

technical occupations usually score above average (which is constructed to be zero for the two years), while occupations outside of SOC groups 1 to 3 tend to score near to or below average. SOC groups 5, 8 and 9 are missing from the table. Overall, influence

was increasing between 2004 and 2011, with only a few exceptions.

Of the managerial, professional and technical occupations, the main outliers are teachers and nurses, police officers (which are non-graduate occupations in both

EP and GH) and financial analysts – although it is worth noting that because of sample size, the data are disaggregated into three-digit rather than four-digit occupational classifications, so that all of these occupations are part of larger groups alongside other types of jobs.

We now compare influence scores for graduates and non-graduates within the same occupations.¹⁷ Figure 8 shows the results. We distinguish three types of occupations based on these data.

Firstly, there are occupations where the most recent data show graduates with higher levels of influence, which in some cases is a change since 2004 – suggesting some form of upgrading – and in

other cases it is a continuation of existing patterns. This group includes functional managers, managers in distribution, storage and retailing, protective service occupations, business and finance

Figure 8: Difference in job influence scores for graduates and non-graduates, 2004 and 2011



‘As graduates have moved into jobs previously performed by non-graduates, these jobs have not been upgraded and as a result new graduate work in these occupations is different from what it was in the past.’

associate professionals, and public service and other associate professionals. Secondly, there are occupations where graduates had higher influence scores in 2004 but where this gap has narrowed or even reversed since then. We take this as an indicator that as graduates have moved into jobs previously performed by non-graduates, these jobs have not been upgraded and as a result new graduate work in these occupations is different from what it was in the past. Examples here are managers and proprietors in other service industries, health associate professionals, teaching professionals, information and communication technology professionals, sales and related associate professionals, administrative occupations in government and related organisations, secretarial and related occupations, and healthcare and related personal services. Thirdly, there are occupations where non-graduates have higher levels of influence in both time periods. We think of these occupations as where graduates are mismatched. Here the examples are production managers, business and statistical professionals, administrative occupations in finance, financial institution and office managers, and childcare and related personal services.

In the rest of this section, we discuss exactly how routes into these graduatising occupations have changed over time. In section 4 we then look at some of the available data on the costs associated with different routes. In section 5 we bring these components together to assess the balance between the benefits of increasingly recruiting individuals with degrees into our selected occupations and the costs of doing so as compared with some alternative method of producing these skills.

3.3 Have degrees replaced apprenticeships and professional qualifications?

The number of workers who have completed formal apprenticeships¹⁸ in the UK labour market between 1989 and 2014 fell from 17.6% to 10.1%. Table 3 shows the proportion of individuals in our selected graduatising occupations that had completed an apprenticeship.¹⁹

What this reveals is that there are a small number of the occupations we are examining where apprenticeships have become far less commonplace – the most striking examples are in production managers in manufacturing and construction, marketing and sales managers, vocational instructors, chartered accountants, nurses and, to a lesser extent, office managers and human resource and industrial relations officers.

In a number of these examples, we could suppose that the qualified apprentice worked in a related trade prior to progressing into those jobs – for example, people might have done an apprenticeship to learn a construction or manufacturing trade and then advanced to management in those sectors some point later in their careers. Similarly, vocational trainers might have turned to teaching having been practitioners earlier in their working lives. This is consistent with the age profile of these occupations, where older workers are particularly numerous relative to younger workers.

At this point, we should really question whether a graduate is actually preferable to someone who followed a route involving apprenticeship, work experience and progression. Using our discretion measure in Figure 8, it would seem that graduates in production management (which largely covers the construction and

Table 3: Apprenticeship rates for selected occupations, 1989–2014 (%)

	1989	2004	2014
Production managers and directors in manufacturing	39.9	36.4	27.3
Production managers and directors in construction	53.2	42.3	28.9
Financial managers and directors	10.0	5.2	5.2
Marketing and sales managers	18.8	14.9	8.1
Managers and directors in retail and wholesale	15.7	11.3	7.1
Property, housing and estate managers	12.8	20.7	11.1
Nurses	12.6	5.6	2.6
Primary and nursery education teachers	-	1.8	1.0
Programmers and software developers	7.7	6.3	5.4
Chartered and certified accountants	14.5	7.8	4.3
Police officers (sergeant and below)	17.3	11.4	6.1
Finance and investment analysts	-	4.7	3.7
Marketing associate professionals	-	3.1	2.1
Human resources and industrial relations officers	10.8	5.7	4.7
Vocational and industrial trainers	26.5	14.5	11.4
National government administrative occupations	-	4.6	6.0
Book-keepers, payroll managers and wages clerks	4.4	3.2	2.6
Bank and post office clerks	4.4	1.4	2.4
Office managers	11.4	5.7	3.9
Personal assistants and other secretarial	1.9	3.1	2.3
Gardeners and landscape gardeners	12.4	14.7	13.3
Nursery nurses and assistants	4.9	4.0	6.2
Teaching assistants	4.8	4.2	3.0
Nursing auxiliaries and assistants	7.3	6.8	4.2
Care workers and home carers	4.8	5.1	3.8
Sales and retail assistants	5.8	4.3	3.2
Security guards and related occupations	16.9	16.8	11.1
Waiters and waitresses	6.8	1.5	2.0
Bar staff	7.2	2.3	2.4

Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

manufacturing sectors) have less autonomy and have lower levels of influence over their work than their non-graduate counterparts.

In most occupations where individuals held or hold a trade apprenticeship, however, it is not clear that it is actually connected to the job.

For chartered accountants and nurses, for instance, there has historically been a work-based training route, but that is largely covered by looking at professional or non-degree higher qualifications (as we do below) rather than what is described in the LFS data as an apprenticeship. For police officers there has not been a formal

apprenticeship entry route, which suggests that apprentices found in this occupation are people moving into it having trained for something unrelated. For other types of managers, it is more difficult to say at this level of abstraction. It could be that such workers are similar to the production managers discussed above in that they did

Table 4: Professional and higher qualifications for selected occupations, 1989–2014 (%)

	1989	2014
Production managers and directors in manufacturing	13.4	17.2
Production managers and directors in construction	20.2	16.2
Financial managers and directors	20.0	12.7
Marketing and sales managers	14.4	11.9
Managers and directors in retail and wholesale	5.2	10.9
Property, housing and estate managers	13.7	14.0
Nurses	65.6	46.5
Primary and nursery education teachers		8.5
Programmers and software developers	16.4	8.6
Chartered and certified accountants	31.5	20.5
Police officers (sergeant and below)	3.2	11.5
Finance and investment analysts		13.1
Marketing associate professionals		7.9
Human resources and industrial relations officers	23.0	14.6
Vocational and industrial trainers	20.8	21.5
National government administrative occupations		11.8
Book-keepers, payroll managers and wages clerks	4.2	14.8
Bank and post office clerks	4.2	8.1
Office managers	11.8	13.0
Personal assistants and other secretarial	2.6	11.8
Gardeners and landscape gardeners	2.8	8.3
Nursery nurses and assistants	40.3	16.2
Teaching assistants	4.0	14.4
Nursing auxiliaries and assistants	5.5	17.3
Care workers and home carers	4.0	9.5
Sales and retail assistants	1.2	6.7
Security guards and related occupations	1.1	8.9
Waiters and waitresses	1.4	3.3
Bar staff	2.7	3.1

Source: Labour Force Survey

Note: Groups are labelled using SOC10 occupational titles. See Table A1 for occupational titles used in earlier classifications for comparison.

apprenticeships relevant for their work earlier in the career, and progressed into management from that point. However, as the starting position is a far lower proportion of apprentices (and because finance, sales and general office management are not as closely related to sectors where trade apprenticeships are commonplace),

it is equally possible that these qualifications are unrelated to entry into these occupations.

A similar conclusion emerges when examining other qualifications beyond those acquired at school. Table 4 shows the proportion of individuals in our selected occupations whose highest

qualification was a professional or higher qualification that did not result in an undergraduate degree or higher.²⁰ Again, there are a small number of occupations where such qualifications are disappearing, particularly nurses, accountants, nursery nurses and assistants, and, to a lesser extent, finance managers and directors,

software programmers and HR and industrial relations officers. For the most part, our selected occupations did not really feature such qualifications even before the supply of degree-holding graduates emerged.

Our tentative conclusion from Tables 3 and 4 is that the growth of graduates in these occupations in the UK has not systematically replaced other post-school formal routes. The growth of people holding degrees has largely substituted for people leaving school without subsequently acquiring specific vocational education.

There are two caveats to this conclusion. The first is that in some occupations it is clearly the case that the graduate route has replaced a specific alternative – typically this has occurred in a profession that regulates entry through qualification standards and has explicitly shifted these standards towards graduate entry routes. At the end of this section we consider a number of these occupations in greater detail.

The second is that those who have historically been able to enter these occupations without a degree or a relevant non-degree higher qualification will, in some other way, have trained to do their current occupation through some combination of informal firm training and on-the-job experience. Therefore, the definition of apprenticeship might be too narrow in the available data, capturing only those who had some form of accreditation. When thinking about an alternative route to having a degree into many graduatising jobs, we should really be thinking about a variety of work-based routes. We would further suppose that formal apprenticeships are

at the upper end in terms of skill development and, for the purposes of the following section, total cost. Moreover, looking across Europe reveals that other formal routes into our selected occupations are possible, even if they have not historically been a feature of the UK education system and labour market. We explore this in the next subsection.

3.4 European comparisons

Across Europe, workers enter the same occupations on which we focus here through a wide variety of routes, as they do in the UK. Appendix Table A4 shows the percentage of university degree graduate shares across Europe in occupational groups closest to those we study. We observe that in most of these occupational categories, the UK is not drawing the most heavily on graduates relative to its closest neighbours. This is less true in lower-skilled jobs, where the UK tends to have more graduates. That said, in some countries, university education is not a widely used route into these sorts of occupations, which indicates that other routes are possible – some of these might be tertiary level but not leading to university degrees, while others are below tertiary level. Figures 9 to 13 illustrate some particular cases.

Figure 9 shows that across Europe, many nurses are qualified to a tertiary level, either at university or through a higher vocational course. The UK is currently ‘behind’ a number of countries which have university graduate-only entry, including Denmark, Norway and Spain, but over the coming years the non-university tertiary share (which includes vocational nursing qualifications) will be replaced with university graduates. However, a number of countries have not followed

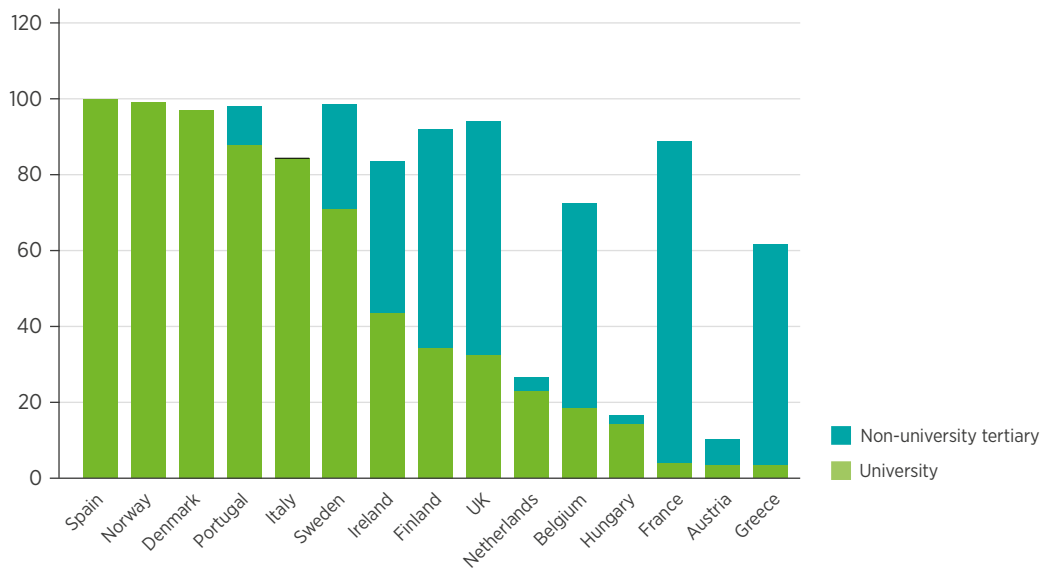
this path. France, for example, continues to use a non-university tertiary route. Moreover, in the Netherlands and Austria, entry into nursing is typically not at the tertiary level at all, with non-tertiary vocational qualifications providing the main way into the profession.²¹

Figure 10 shows that for higher-level administrative occupations, the UK has a relatively high share of university graduates, although it ranks quite low for tertiary education more broadly. The difference here is that many other European countries (such as Spain, France, Portugal, Belgium and Finland) place a greater emphasis on non-university tertiary routes. Moreover, a number of countries that have higher graduate shares than the UK in higher-skilled occupations (such as Denmark and Sweden) also have a non-tertiary route into some of these occupations. This emphasises a general pattern that graduate workers are less occupationally stratified in the UK than in most other European countries – hence the UK having lower university graduate shares in high-skilled occupations but generally higher university graduate shares in lower-skilled occupations.

Figures 11 and 12 illustrate this further – in these two lower-skilled occupations (protective services workers and personal care workers), the UK’s graduate share is relatively high. In many other countries, we see a greater use of other routes. For example, protective service workers in Denmark are highly qualified, but few go to university. In most other cases, workers have below tertiary-level qualifications.

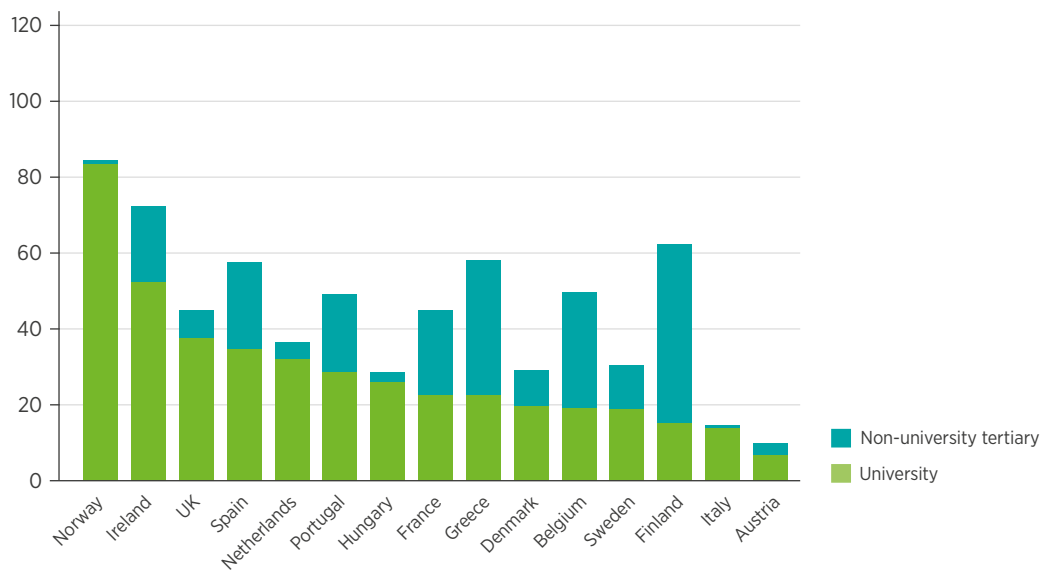
Finally, Figure 13 shows an interesting case. For salespeople, the UK has relatively moderate

Figure 9: Qualification levels of nurses in Europe, 2008 (%)



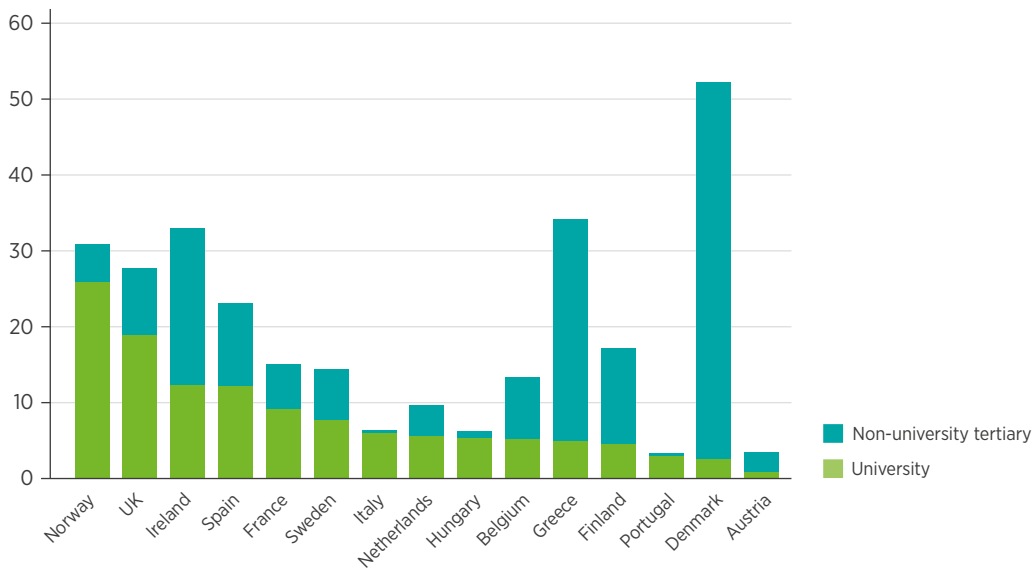
Source: EU-LFS

Figure 10: Qualification levels of administrative associate professionals in Europe, 2008 (%)



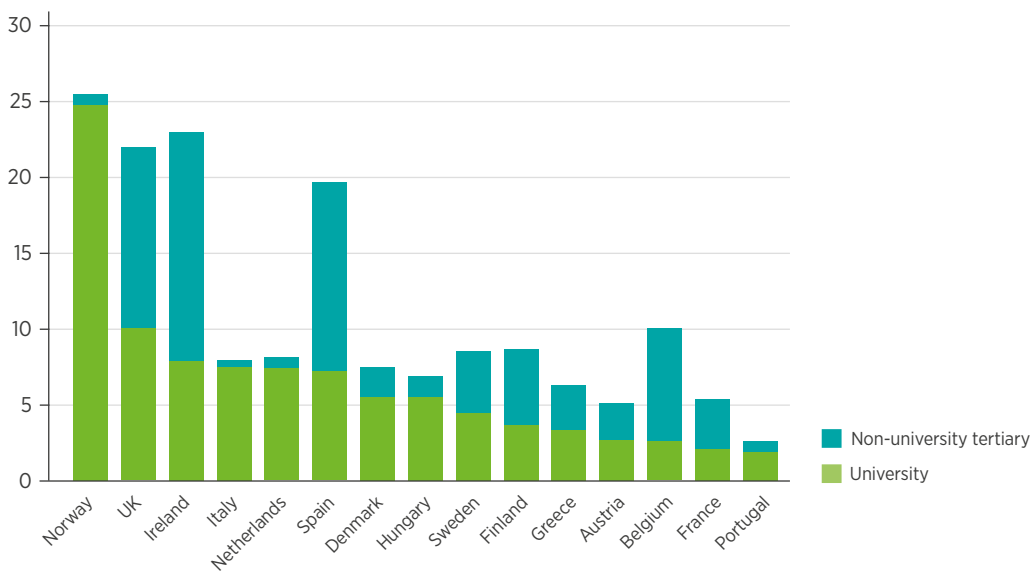
Source: EU-LFS

Figure 11: Qualification levels of protective service workers in Europe, 2008 (%)



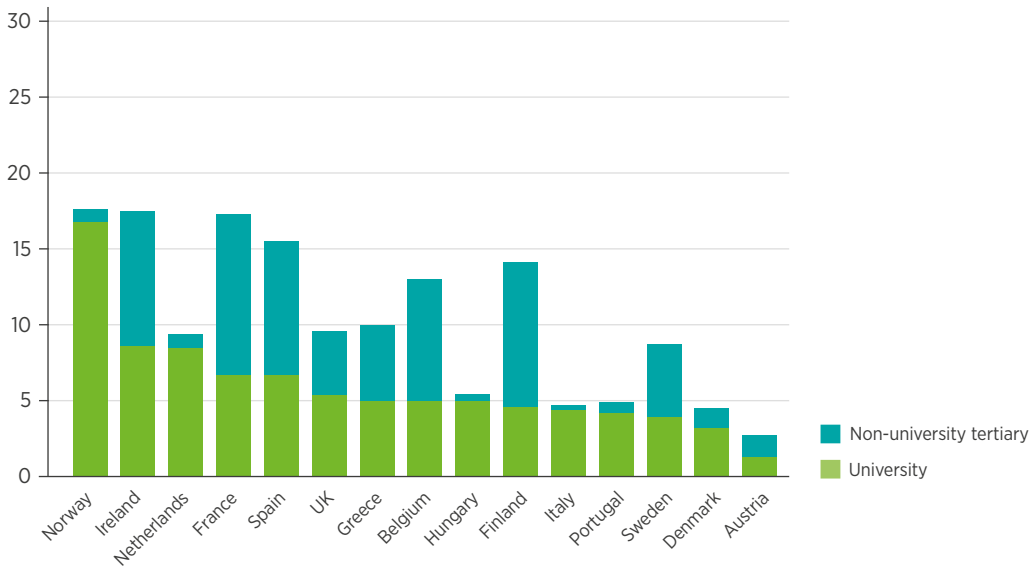
Source: EU-LFS

Figure 12: Qualification levels of personal care workers in Europe, 2008 (%)



Source: EU-LFS

Figure 13: Qualification levels of salespeople in Europe, 2008 (%)



Source: EU-LFS

levels of tertiary graduates, both from university and overall. We observed in our earlier report that sales work, albeit starting from a low level, exhibited some trend towards job upgrading for graduates. It might apply to only a subset of what we categorise as salespeople in Europe, but this could indicate that there is some scope in this occupation to create higher-skilled work for better-qualified individuals. However, we should note that there are still plenty of examples of countries where non-tertiary routes are in place, with other forms of training and/or vocational education supplying the necessary skills – once again, being higher skilled does not necessarily mean uniquely graduate skilled.

3.5 A more detailed look at some occupations

Below we consider a number of specific occupations in greater detail, drawing on both academic research and insights coming from media interest in graduates in the UK labour market.

Nurses

According to both the EP and GH classifications, nursing is a high-skill graduate job – moreover, the GH analysis would describe it as such in the late 1990s and early 2000s, which was before the occupation moved from the associate professional group to the professional group in the most recent occupation classification. Using our own analysis, graduate health associate professionals, who include nurses but also other related occupations such

as midwives and therapists, typically displayed higher levels of discretion and influence than non-graduates, but this difference has reduced significantly as more university graduates have entered the occupation, suggesting a downgrading of work requirements for recent entrants relative to graduates in the past, possibly due to graduates replacing non-graduates without a corresponding change in the skill level of the work that is being performed.

There is a significant amount of existing research on the nursing profession as it has shifted towards all-graduate entry. A bachelor's degree is now the dominant qualification held by those in the profession, but this reflects a dramatic change throughout the 2000s. Before 1989, the traditional

pathway to nursing was mainly through apprenticeships in hospitals, leading to professional qualifications. In addition, high attrition rates, along with the desire of nurses to upgrade their professional status and work with their colleagues from the medical profession on 'equal terms', led to the integration of nurse education in higher education establishments and the three-year diploma course for registration as a nurse (Wilson and Stilwell 1992; Ousey 2011). While nursing degrees have existed since 1969, this change laid the foundations for an all-graduate entry.

The degree-level minimum was backed up by arguments – voiced especially by organisations such as NHS Employers and higher education institutions (HEIs) – that degree graduates would be more likely to meet the increasing needs of the healthcare sector. According to its proponents, graduate entry in nursing would not only increase the analytical and critical thinking skills of the nursing workforce but would lead to enhanced participation of young people and subsequently a more diversified workforce due to the transferability of the 'degree' in the labour market. In addition, this would bring the UK into line with other countries in respect of the qualifications required for such a profession (see Figure 7) and it would contribute to the governmental targets for higher education (UKCC 1999; Robinson *et al* 2003; NMC 2008).

It is worth noting that nursing education before this was often criticised for not preparing appropriately those enrolled in the existing programmes (Robinson *et al* 2003). Many studies have been conducted to explore whether the co-existence of degrees with diplomas in

nursing and the pressure for an all-graduate entry was justified by comparing education preparation, competencies and careers of diploma and degree nurses. A few studies identified benefits of degree programmes in terms of enhanced competencies and qualities such as creativity, innovation, leadership, critical thinking, reflection, transferring knowledge, and better research skills (While *et al* 1995; Burke and Harris 2000; Robinson and Leamon 1999). However, research by Girot (2000), Bartlett *et al* (2000) and Clinton *et al* (2005) demonstrated that there were no marked differences between skills and competencies developed by the different routes.

Accountants

Chartered accountants are, like nurses, treated as graduate professions in the Standard Occupational Classification and in the EP and GH schema. Our own analysis is unable to look at the profession closely given the way it is grouped with other similarly skilled but very different business-related professions. However, in general graduates in this broader occupational area demonstrate small but positive differences in discretion and job influence. Like nursing, accountancy has gone from being a profession with a minority of graduates to one with a majority since the 1980s, while non-degree tertiary qualifications are less commonly found. However, this profession differs in two respects. Firstly, there are professional qualifications on top of entry-level qualifications. Secondly, accountancy firms recruit both graduates and non-graduates through school-leaver programmes (which typically lead to an employer-sponsored degree alongside work placements) and higher apprenticeships. Moreover,

'Before 1989, the traditional pathway to nursing was mainly through apprenticeships in hospitals, leading to professional qualifications.'

the trend towards graduate recruitment slowed in the early 2000s and, if anything, there is slight pushback against this in the most recent years (see Figure 7).

A recent *Financial Times* in-depth study examined the relative position of both types of recruits (Devi 2013) and found that:

- When fully trained, entrants in all the routes are seen as similar in terms of skill provided. In the specific case of Deloitte, those in charge of recruitment estimated that the catch-up period was two years, after which the two groups are seen as equivalents. There was even a perception that beyond that point, non-graduates had some advantages over graduates for individual firms in terms of loyalty and retention.
- Although there are some functions in some firms that are still seen as graduate-only (for example auditing at KPMG and advisory business at Ernst & Young), it is common for apprentices, once they have proven their abilities, to be able to progress onto the 'graduate track'. Both types of recruits progress up towards senior management.
- The non-graduate schemes are expanding as higher tuition fees are pushing young people to seek alternative ways into the profession. Firms actively recruit and lower formal entry standards for school-leaver schemes because school qualifications, while important, disadvantage some individuals who have other desirable traits.

Police officers

The graduate share of the police officer occupation – that is, those in the police up to and including the rank of sergeant – has grown

significantly, essentially tripling, since the late 1990s. In 1999, it had roughly the same level of graduatisation as nurses, vocational instructors and national governmental administrators, and while graduatisation among nurses (where, unlike policing, a graduate-only entry route was introduced) has grown faster since then, the latter two comparators have seen slower growth of graduate entry.

In September 2015, the College of Policing proposed that graduate entry become the norm for police officers (Peach 2015), citing a number of different reasons including comparison with other professions, comparison with other European countries and improvements in both academic skills (such as critical thinking, reflection, communication, critical analysis, independent judgement and research skills) and 'soft skills' such as tolerance, willingness to embrace alternative perspectives, empathy, and moral and ethical reasoning. The proposal also noted the financial saving associated with a switch in cost-sharing of initial education and training towards the individual.

Many of these arguments are familiar from the changes within the nursing profession, but from our analysis here, it is even less clear that police officers perform work that requires university degrees. Police officers are, by all objective measures provided in this report, non-graduate jobs. This is the conclusion of both the EP and GH classifications. In addition, they score low on our discretion measure.

The College of Policing cite research that *“college-educated” officers were better at dealing with complexity, had a wider understanding of their role*

in society, used force more appropriately and had wider belief systems'. Moreover, they argue in their consultation that *‘[m]any in the policing workforce already take decisions in complex and unpredictable settings, with limited information, meaning they tend to operate at the equivalent of Level 6 in the UK national qualifications framework, itself equivalent to graduate level’*.

These arguments illustrate a key point in this debate. There is a difference between highly skilled and graduate-skilled work – if police officers are doing this work now, and it is highly demanding as suggested above, clearly it is possible to develop those high-level skills without a degree. In the consultation, a higher apprenticeship route was proposed alongside degree and degree-conversion routes – in effect, that might be what police officers currently have, except without the formal qualification at the end. There has been criticism of these plans from the Police Federation (the staff association for police in the UK), who are concerned with access and diversity as well as disputing whether graduate-level study is needed to perform the job given that many are currently able to effectively deal with its growing complexity despite not having a degree.²²

Nursery nurses and teaching assistants

The two final occupations to which we draw attention in this subsection are similar in that they are much further down the occupational hierarchy and are definitively non-graduate jobs by every available classification. They have seen a growth in graduate presence very recently – for teaching assistants this accelerated

from the early 2000s, whereas for nursery nurses graduate numbers have shot up since the end of the last decade. Both nursery nurses and teaching assistants complement the work of highly qualified professionals. However, there are some differences. Firstly, teaching assistants typically did not hold post-school qualifications, while many nursery nurses did (see Table 4). These were typically nursing qualifications, the decline of which in favour of a degree-based route has clearly had a knock-on effect to the type of qualifications held by nursery nurses. Secondly, recently hired teaching assistants are far more likely to have a degree than the occupation as a whole (over one third of those who started with their current employer in the last two years do, as compared with 15% overall), while newly hired nursery nurses are very similar in qualification level to everyone else. Part of this reflects tenure within the occupation – teaching assistants tend to be older and work within the same job for longer.

The key issue is about progression into better jobs. For example, nursery nurses may move into nursery management positions or into early years teaching for which higher qualifications are required. Therefore, it might not be a significant problem to have lots of graduates in these lower-skilled jobs if they subsequently move into graduate-level work. The Nutbrown Review of early years' education and childcare qualifications (Nutbrown 2012) proposed a system of progression from early years assistants through early years practitioners (such as nursery room leaders) up to senior practitioners and early years teachers. While assistants would train to a recognised Level 3 qualification as they progressed to

practitioner status, further advance into professional roles would coincide with degree-level study. However, the pathway proposed suggests study alongside working in a course relevant to childcare, rather than entry into the lower-level positions with an existing degree (which may be unrelated to childcare and early years education).

Similarly for teaching assistants, it is absolutely possible that gaining practical experience in the classroom at a lower level, following on from academic study, could be a desirable route into the teaching profession. The problem is whether such progression routes actually exist, or whether the large number of graduates moving into this job will be unable to advance further and remain either trapped within non-graduate work or move to a different type of work entirely.

'The key issue is about progression into better jobs. For example, nursery nurses may move into nursery management positions or into early years teaching for which higher qualifications are required.'

4 Assessing the costs of alternative pathways

To summarise our analysis thus far, we have described how graduates have filtered down the occupational hierarchy, focusing for analytical purposes on those occupations where this phenomenon has been particularly marked. We have identified a limited number of occupations which were once entered via some form of formal apprenticeship route or a non-university vocational or professional qualification, and it would appear that the graduate entry route has, to a significant extent, replaced these routes. Many more occupations have seen graduate employment rising where there were previously no alternative, formal qualifications pathways – in these cases, graduates are replacing school-leavers, either at 16 or 18, who might have received training either on- or off-the-job provided by the employer, as well as informal skill acquisition through working experience and learning-by-doing. Furthermore, we have produced evidence on alternative pathways into our selected occupations in other European countries. To an extent, we are all the prisoners of our extant institutions but the European examples do suggest that alternative pathways are possible.

The overarching question is whether those other routes are/were more cost-effective. This in turn involves answering three questions:

- Was the old route cheaper?
- Did the old route produce entrants who were more or less capable or skilled?

- Are the capabilities of the entrants from either route being used?

A further, important, question is who bears the cost in each of these different routes – the individual, the employer or the state? In the next section, we attempt to answer the first question about the costs of producing different sorts of qualifications.

4.1 Costs of formal education and training across Europe

We first look at cross-European data on annual expenditures for different broad categories of education – upper secondary vocational (ISCED 3), post-compulsory non-tertiary vocational (ISCED 4), short-cycle tertiary education (ISCED 5) – which includes higher technical education, community college education, technician or advanced/higher vocational training, and associate degrees – and tertiary excluding short-cycle programmes (ISCED 6 to 8). There are four expenditure categories – government, non-educational private sector, other non-educational private entities and international organisations. The available European data are not perfect or complete across all countries for all categories of expenditure (in particular, private expenditures are not available at all times in all places), so we use these data to illustrate some general difference before exploring more exact cost data in the UK in the following section.

First, we look at only those countries for which we have mostly complete information that is consistent over the different levels of education – that is, where data have been reported for government expenditure and for at least one of the private expenditure categories, and where the same level of information is available for vocational programmes and tertiary programmes. So, for example, there are consistently missing data for Austria on non-educational private sector expenditure and for Hungary in other non-educational private entities. Figure 14 gives expenditure per full-time equivalent student in 2013.²³ Countries are ordered by expenditure on tertiary education. It shows that, in most cases, annual per-student expenditure on tertiary education exceeds that of vocational programmes at the upper secondary or post-compulsory level or short-cycle tertiary level, with the first and last of these typically being closer to tertiary education than the second.

Figure 14: Total expenditure per full-time equivalent student by level of education, 2013

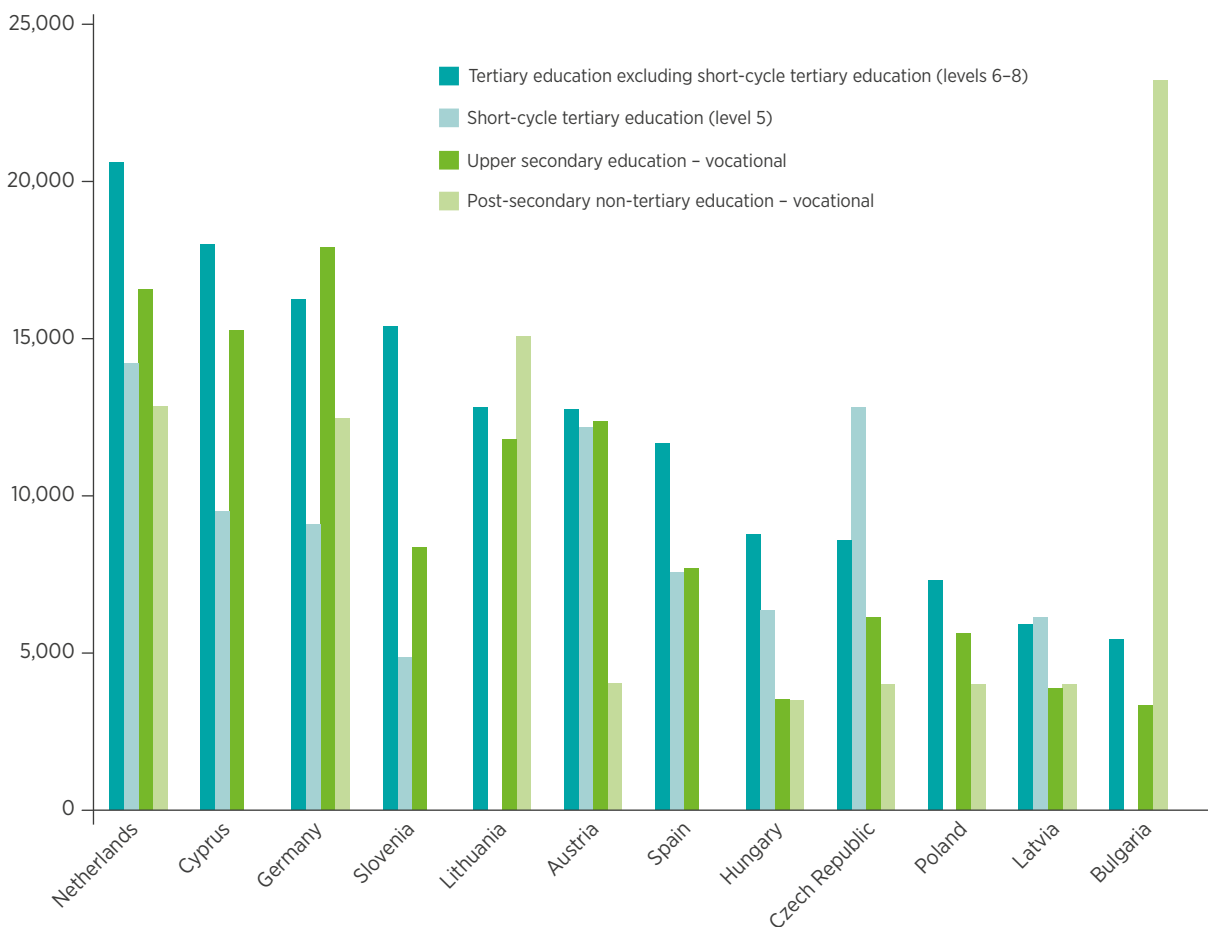


Figure 15: Total expenditure per full-time equivalent student on tertiary education by source of funding, 2013

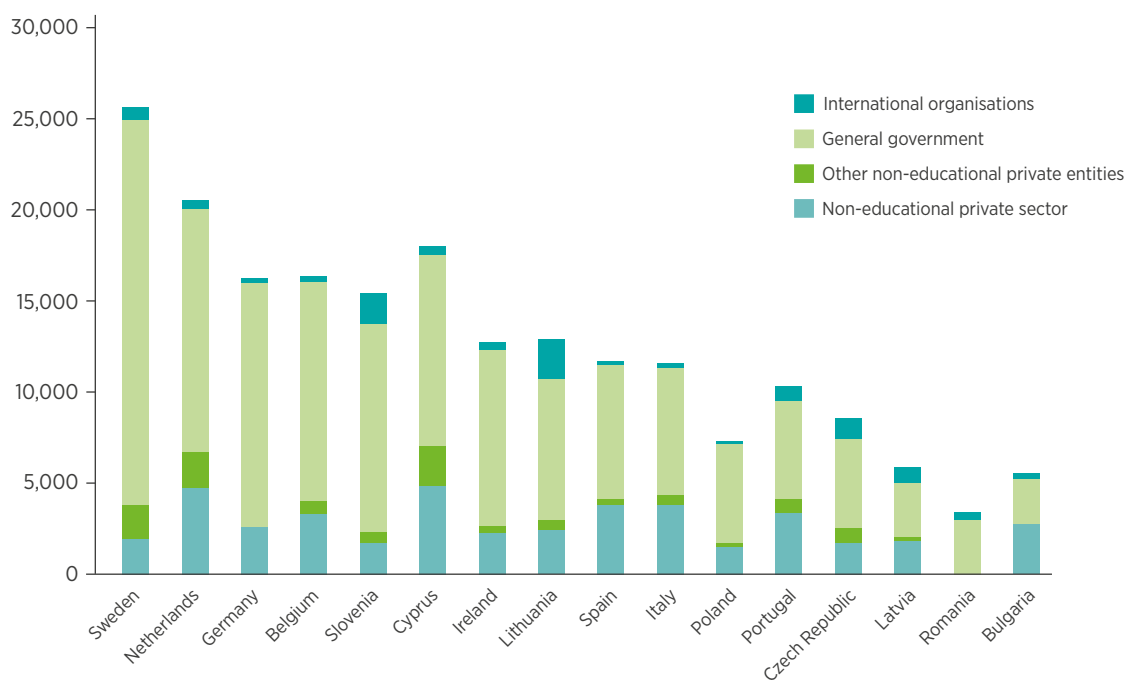


Figure 16: Total expenditure per full-time equivalent student on upper secondary vocational education by source of funding, 2013

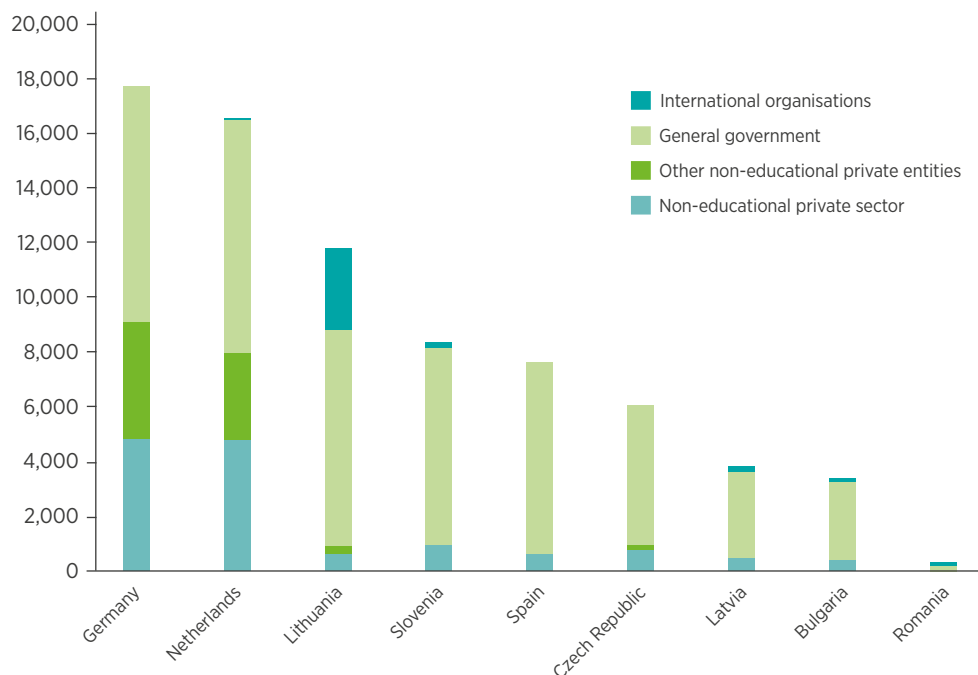
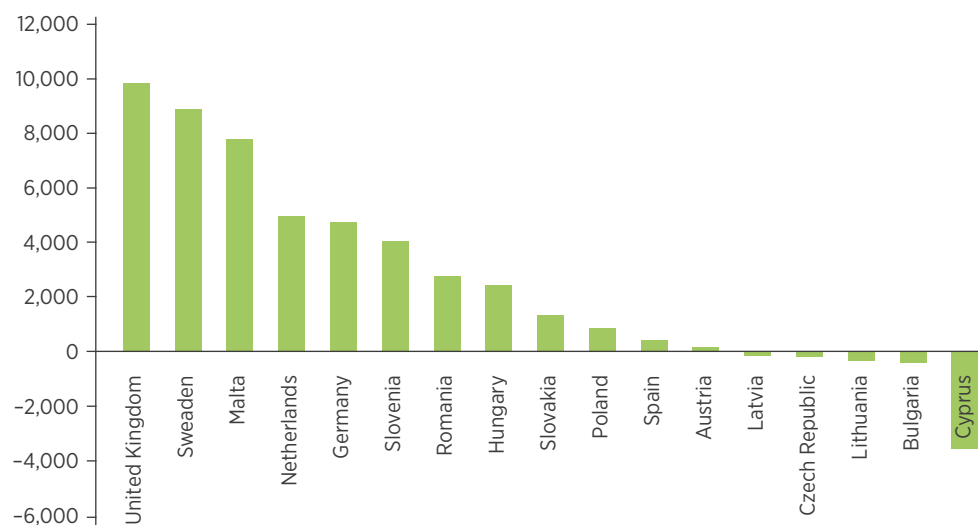


Figure 17: Difference in public expenditure per full-time equivalent student – ISCED 3 vocational vs. ISCED 6–8



Figures 15 and 16 show total expenditure for all countries where all categories of expenditure are available (we do not include the same figures for ISCED 4 and 5 as there are more incidences of missing data for those programmes). They show that the majority of expenditure for tertiary education and vocational education across most countries

is from the Government, either directly or in the form of transfers to households. Moreover, public expenditure gives a good indication of overall expenditure – countries in Figures 15 and 16 are lined up in order of the size of government expenditure, which is not dissimilar to the order of overall expenditures.

Given this, Figures 17, 18 and 19 show the difference between public expenditure on tertiary education and vocational education programmes – since figures on public expenditure are more frequently available, this allows us to increase the size of the sample.

Figure 18: Difference in public expenditure per full-time equivalent student – ISCED 4 vocational vs. ISCED 6–8

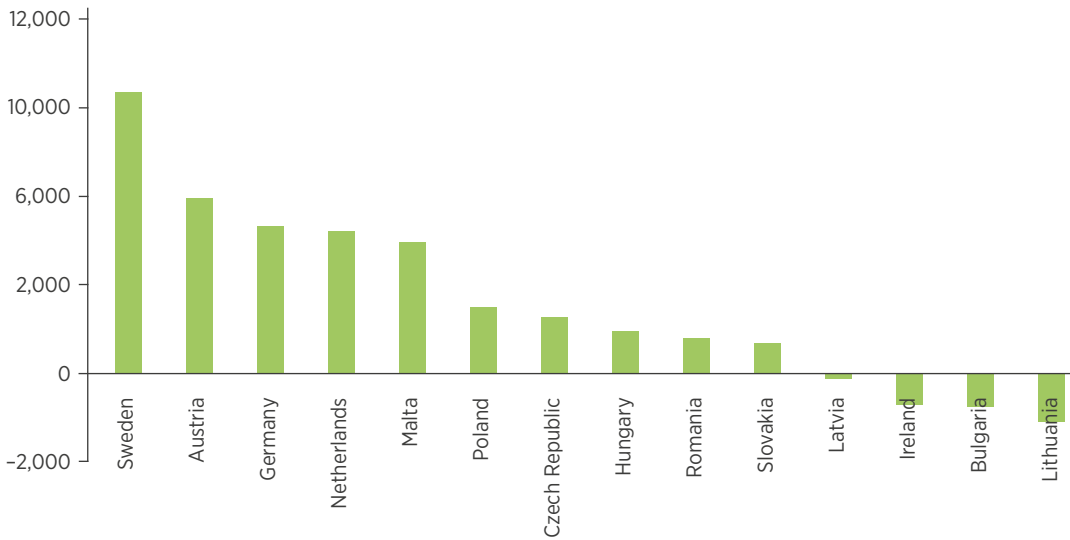
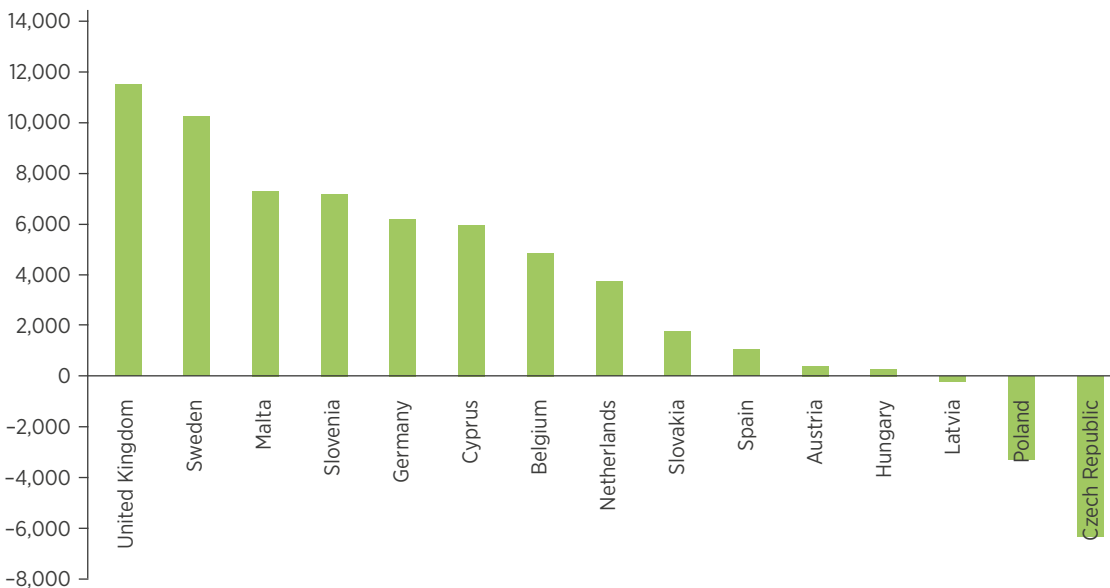


Figure 19: Difference in public expenditure per full-time equivalent student – ISCED 5 vs. ISCED 6–8



The picture that emerges is that vocational education at a variety of different levels is typically less costly than university degree courses, both to the state and in total. In the UK, this seems to be particularly the case even when looking just at public expenditure – notwithstanding the increased amount of private finance in higher education. The figures would likely

represent an underestimate of the cost differences.

These data are meant to illustrate some broad features. At this level of abstraction, there are numerous things about which to remain cautious. First, data on tertiary education extend from bachelor’s degrees to doctoral degrees – to the extent that

there are differences in costs by the types of higher education, these numbers might represent over- or under-estimates of the costs of undergraduate education (see the next section for more on cross-subsidisation within higher education institutions). Second, the data do not differentiate between different subjects or industries, and so might not be precisely

comparing expenditure on the degree courses that are the closest substitutes to vocational routes. Third, these are annual costs – in general, vocational programmes are shorter (or at least not longer) than undergraduate degree programmes, implying that the true cost difference should be larger than the numbers given here. Finally, at no stage are we claiming that, because there are cost differences, it necessarily follows that it would be better to move away from university degrees towards alternative vocational routes. However, in cases where university graduates work in jobs that either do not require their degrees or where they do similar work to someone with relevant vocational qualifications, that argument could be made. For other jobs where graduates have unique skills that are not offered by other routes into those jobs, this becomes an issue for a thorough cost–benefit analysis. We return to this in section 6, but first we look in more detail at costs in the UK.

4.2 Cost estimates for the UK

First we consider the cost of university education to bachelor's level. In the academic year beginning in 2012, all but a handful of universities increased tuition fees to £9,000 per annum. This rate applied across the vast majority of subjects and was paid by the students themselves. Most took out an income-contingent student loan to cover the cost. Student loans were also available to cover living costs but we do not directly include these in the cost of obtaining a bachelor's degree since, whatever an individual was doing in these three years, they would have to have covered their living costs. However, there is a potentially major additional cost, which is foregone earnings. Add to this the facts that the student's

living costs were almost certainly much higher than had they not gone to university since a large percentage of them would not have been living away from home and that a real interest rate of up to 3% is applied to the balance on the loan, and the debt burden on leaving university of £40,000 is almost certainly an under-estimate of the true cost (to the individual) of obtaining a bachelor's degree. The allocation of the overall cost between the individual and the state depends on the proportion of loans that remain unpaid. The Department for Business, Innovation and Skills estimates that this percentage will be 45%. However, a partially hidden cost to all, including individuals who pay back only part of their loan, is a cash flow issue. Once a person hits a gross income of £21,000 per annum, the state starts to claw back the loan by applying an extra marginal income tax rate of 9%. This additional tax burden could create difficulties for young people earning only modest salaries and wishing to save in order to get into the housing market.

There is evidence that at least some undergraduates are paying too much for their courses. In 2014 KPMG produced a study for the Higher Education Funding Council on the cost of the provision of postgraduate taught courses. In pursuit of their task, KPMG produced estimates of the cost of undergraduate teaching.

As KPMG readily acknowledge, allocating university costs is a tricky process and subject to wide margins of error. The KPMG team initially aimed to cover between 30 and 40 HEIs to capture about 30% of all students. Their preliminary work discovered that insufficient HEIs collected *'the required data, particularly on the split of staff time between postgraduate and*

undergraduate teaching to achieve this coverage'. This left them with 17 institutions and, even in these, it was not possible to calculate costs for some subjects. The study calculated total cost from four components – *'staff costs, direct course costs, indirect support costs, and estates costs'*. The detailed results are given in Appendix Table A6.

According to KPMG's calculations, the average cost of an undergraduate bachelor's course in 2012/13 was £7,694; in other words, significantly less than the full £9,000 fee. There was huge variation between courses. Nine courses cost more than £9,000, with costs ranging from £13,965 for clinical dentistry to £9,249 for chemical engineering. Twenty-seven courses had costs which were less than the £9,000 fee. These costs ranged from £8,899 (mechanical, aero and production engineering) to £5,539 (law). This suggests that there is some cross-subsidisation between subjects. However, it also raises the possibility that undergraduate tuition fees are also being used to subsidise other university activities. Johnes and Johnes (2016) suggest that this may well be research. Applying sophisticated analytical techniques to the Higher Education Statistics Agency (HESA) income and expenditure data, they conclude: *'...each pound of research income is associated with more than twice as much expenditure. This confirms the conventional wisdom that income from teaching is used to cross-subsidise research.'*

Even if university undergraduate fees could be reduced somewhat, the cost of three years spent acquiring a bachelor's degree is considerable. Taking into account all of the factors mentioned above, a central estimate of £40,000 seems modest. The cost is entirely borne by the individual unless their

labour market fortunes turn out to be poor – with an assumed default rate of 45%, the Government appears to accept that this will be the case for a significant proportion of graduates.

Estimating the cost of apprenticeship is, if anything, more difficult than estimating undergraduate course costs. Useful information is provided in a series of reports by researchers from the Institute for Employment Research at Warwick University. The latest of these was produced jointly with IFF Research Limited in 2012 for the Department for Business, Innovation and Skills (Hogarth *et al* 2012). As with the KPMG work on universities, a case study approach was used.

The researchers calculated the following elements of cost:

- the wage cost of the apprentice net of their productive contribution
- National Insurance contributions
- supervisory costs
- training manager costs
- cost of production line staff helping the apprentice
- other staff costs
- direct expenditure on training
- other costs (for example, tools or books).

Table 5 shows their estimates.

The foundation modern apprenticeship was meant to be the equivalent of Level 2 – five good GCSE passes (A*–C, including maths and English). The advanced modern apprenticeship was Level 3 – the equivalent of three A-level passes. Of course apprenticeship policy and terminology has changed frequently over the years. Current policy has been particularly concerned with improving the quality and level of apprenticeship training and now recognises four categories of apprentice. There are three broad levels: intermediate, advanced and higher. Intermediate and advanced are as described above. Higher leads to a qualification at Level 4 or above. The relevant levels are set out in Appendix Table A7. A further complication was introduced in 2014 when the Government announced the creation of degree apprenticeships as a subset of higher apprenticeships. Higher apprenticeships cannot progress to more than Level 4, a foundation degree or its equivalent. Degree apprentices can qualify at the bachelor's or equivalent level.

In terms of cost and benefit comparisons with degree entry routes into an occupation, much depends on the extent to which job content has changed so as to use the skills acquired at university.

Assuming for the moment that job content has not changed, we would suggest the following:

- For occupations which were once entered straight from school at 16, with or without some form of training short of an apprenticeship, a high estimate of cost would be the cost of training for an intermediate apprenticeship.
- For occupations which were once entered straight from school at 18, with or without some form of training short of an apprenticeship, a high estimate of cost would be the cost of an advanced apprenticeship.
- For occupations where entry was once characterised by some form of apprenticeship, the cost would of course depend on the level and type of apprenticeship but, maintaining the strategy of producing high estimates, we assume that would be the cost of an advanced apprenticeship.

Whichever category of occupation we are considering, it is evident from the Warwick research that cost is heavily dependent on the occupation and sector involved. Nevertheless, it is clear from the above figures that alternative routes are generally significantly less costly than the university route. At the same time, the

Table 5: Total cost estimates of apprenticeships

Sector	Advanced modern apprenticeship	Foundation modern apprenticeship
Engineering	£16,265	
Construction	£10,253	
Business administration	£2,729	£3,562
Hospitality		£2,560
Retail		–£318

Source: Hogarth *et al* (2012)

individual bears a much smaller proportion of the cost.

There is the further complication of the new degree apprenticeships. To the extent that these substitute for a more conventional university route, what are the relative costs? At the moment this is hard to quantify, but one's suspicion is that the new route will be less costly and certainly the apprentice will bear a smaller proportion of the cost.

Before considering how we might use this information to further evaluate different pathways, we turn to an often neglected aspect of acquiring and enhancing work skills and capabilities – learning on the job.

4.3 Learning on the job

This section so far has considered the relative costs of two formal education and training-based routes into the labour market – academic, university-based on the one hand and largely work-based vocational programmes on the other. However, in many, if not most, cases such a clear substitution between the two routes has not occurred – instead, increasing numbers of graduates are found in occupations where previously entry occurred straight from school or college at the ages

of 16 or 18, where employers relied on mainly on-the-job training and learning by doing the work.

One of the benefits of a more educated workforce entering these sorts of jobs could therefore be the formal education system has partially reduced the need for firm-based initial training and/or has sped up the rate at which new employees develop full competence in the occupation.

In this section we look at data from the UK Skills Surveys to explore this hypothesis. The UK Skills Surveys are nationally representative studies of employment, skill and job requirements conducted in 1997, 2001, 2006 and 2012 (when it was renamed the Skill and Employment Survey). We compare data from 2001 and 2012 to see how learning in employment has been affected by a graduatising workforce over the previous decade.

We focus on one particular question: *'How long did it take for you, after you first started doing this type of job, to learn to do it well?'* Table 6 shows the overall responses. We split these responses between graduates and non-graduates, where a graduate is defined as anyone in the survey who reports that they have,

at some stage, completed an undergraduate university degree.

To simplify, we divide this learning time into short (up to three months), medium (over three months but less than a year) and long (over a year). Between 2001 and 2012, learning time appears to have fallen – the proportion of individuals with short learning times increased from 35.3% to 37.8%, while the proportion of individuals with long learning times fell from 39.3% to 37.9%. These figures can be decomposed into two components – the learning time of non-graduates (which we take as a baseline), and the relative difference in learning time of graduate and non-graduates weighted by the graduate share. Therefore, the change of time can be decomposed into three parts – the change in the learning time of non-graduates (or the change in our baseline), the change in the relative difference in learning time of graduate and non-graduates (again, weighted by the graduate share) and an effect due to the change in the graduate share, holding the relative difference in learning time of graduate and non-graduates as it was in 2001.²⁴ To illustrate, Figure 20 shows this decomposition for the labour market as a whole.

Table 6: Learning times

Learning time	2001			2012		
	Non- graduate	Graduate	Total	Non- graduate	Graduate	Total
< One week	357	21	378	294	32	326
< One month	451	49	500	309	56	365
1–3 months	631	63	694	377	83	460
3–6 months	454	80	534	264	80	344
6–12 months	497	97	594	286	109	395
1–2 years	409	101	510	295	133	428
2+ years	936	303	1,239	502	222	724
Total	3,735	714	4,449	2,327	715	3,042

Figure 20: Changes in learning time (%)

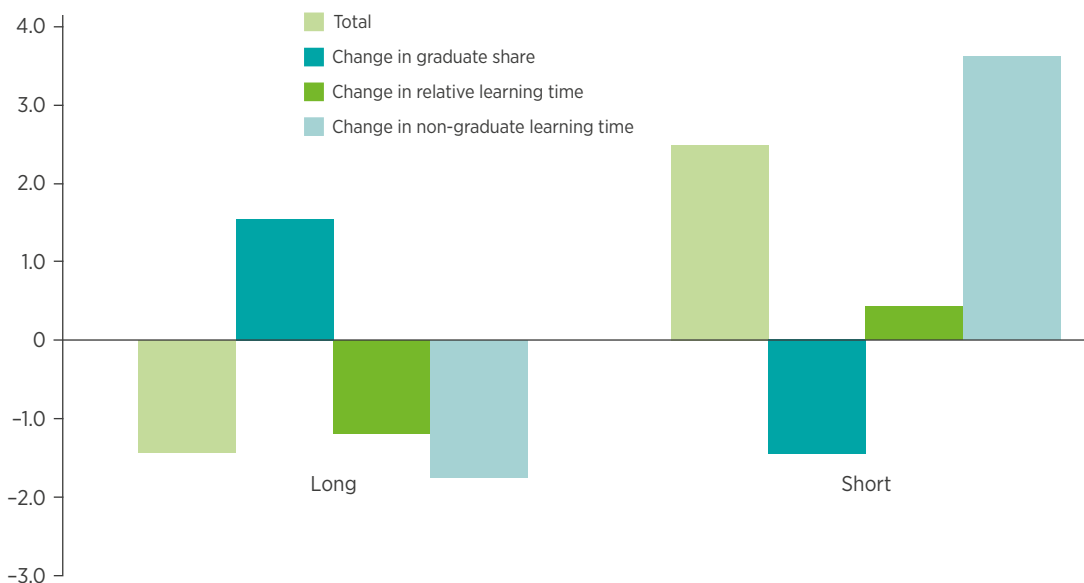


Figure 20 shows that, everything else being equal, the increase in graduate share has increased learning times rather than lowered them. Of course, one reason for this is because the sorts of jobs graduates typically do are more complex and would naturally require more time. Because of the difference in the types of jobs graduates do, this decomposition is more insightful at a more finely grained occupational level to effectively control for these differences. Because of the sample size in the Skills Surveys, this is only really possible to do at the two-digit SOC2000 level. Figure 21 shows the results for long learning time for professional, managerial, associate professional and technical occupations, as well as a couple of larger lower-skill occupations where graduate share has grown to non-negligible levels. Figure 22 shows the decomposition of the change in the occurrence of short learning times within these same occupations.

The general pattern here is that relative differences between graduates and non-graduates make little difference to overall learning times for an occupation. Where they have fallen, this is typically for both to similar extents. If anything, relative graduate learning times have increased compared with non-graduates, as shown when the ‘change in relative learning time’ bar is positive in Figure 21 or negative in Figure 22. Hence we conclude that in terms of on-the-job training, the costs are not significantly impacted by the greater supply of university graduates, and that this should not be seen as mitigating differences in educational costs.

Figure 21: Change in proportion of workers with long job learning times (%)

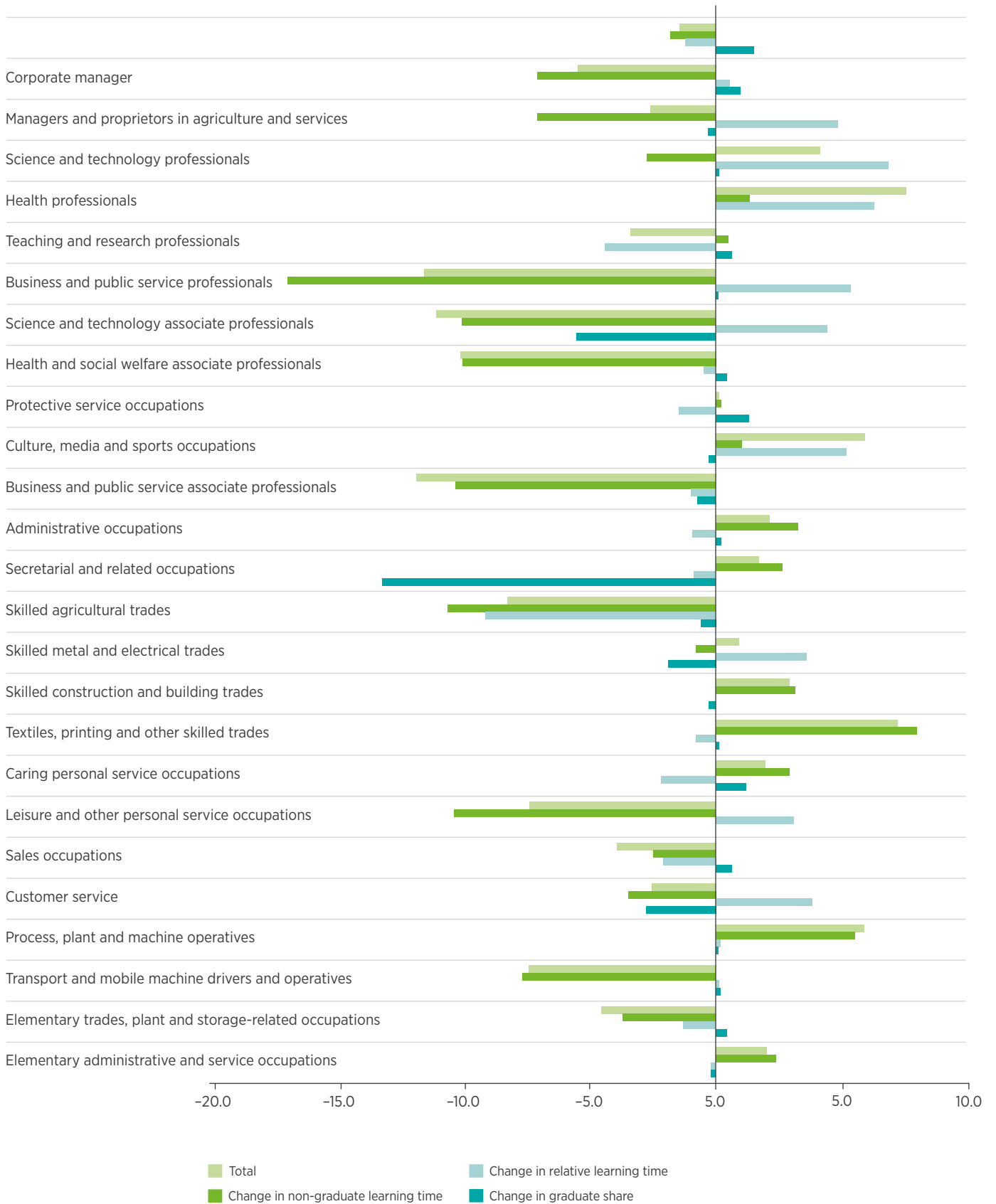
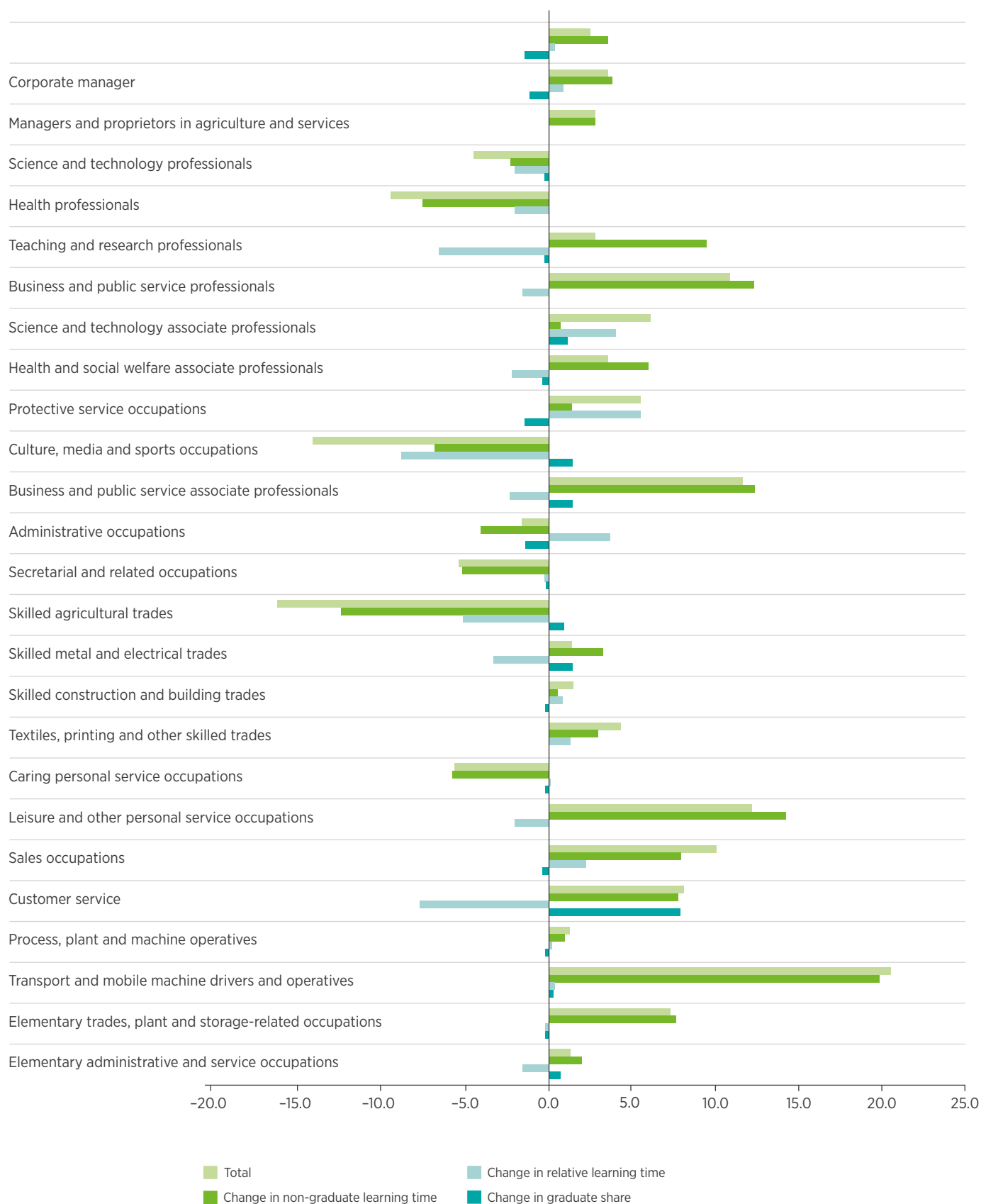


Figure 22: Change in proportion of workers with short job learning times (%)



5 Conclusion

The fact that many of the UK's graduates are doing jobs that were not so long ago done by non-graduates is uncontested. In this paper we have presented a detailed picture of the extent of filtering down for a wide array of occupations. We document the entry routes into these occupations that university education has replaced and show that entry routes in other European countries are sometimes very different; so we know that alternative routes are possible. We have also attempted to provide some estimates of the costs associated with these different routes. In general, the costs of alternative routes into many of the occupations that have absorbed a large proportion of students leaving the expanding higher education sector are lower than the costs of a university education, and a significantly smaller proportion of this lower cost falls upon the learner. In this final section, we attempt to come to some conclusions about whether, given that non-university routes into these occupations are possible and less costly, there is any evidence that there are significant benefits of hiring graduates that, can outweigh those costs.

5.1 How should the UK's skill requirements be met?

We simplify by considering three main routes mentioned earlier in the report:

- occupations which have long attracted high numbers of graduates
- occupations where entry was once characterised by some form of formal vocational training

- occupations which were once entered straight from school at 16 or 18, with or without some form of training short of an apprenticeship or other formal vocational qualification.

We can also categorise occupations in three main ways:

- occupations requiring high-level skills ('graduate job' using GH/EP classifications), where graduate work is distinct from non-graduate work and jobs have upgraded as more graduates enter (using our discretion and influence measure)
- occupations using high-level skills ('graduate job' using GH/EP classifications), where, using our discretion and influence measure, graduate work is either not distinct from non-graduate work ('graduates mismatched'), or jobs have not upgraded as more graduates enter ('job competition')
- lower-skilled jobs ('non-graduate job' using GH/EP classifications).

Table 7 places our 29 selected occupations in a typology along these dimensions (a small number of occupations cannot be analysed using our discretion measure, since in our analysis they are grouped together with other occupations that are quite different – we label this category 'unclassified').

For non-graduate jobs, the conclusion is straightforward – work in these jobs does not require a degree, so the costs of university study here must outweigh the

immediate benefits. In section 3 we looked in greater detail at three of these – police officers, nursery nurses and teaching assistants. We emphasise again that what matters for these jobs is progression – that people in these jobs are able to move on to higher-skilled work, which does require graduate-specific skills, but also that spending some time in these lower-skilled jobs is an important part of ongoing skill development (taking place in work rather than in full-time education).

For graduate jobs, we can establish a number of different cases. First, we have the 'upgraded' jobs – financial managers, analysts and marketing managers – where graduates' skills are more highly valued and graduates appear to be doing work that differs from non-graduates. This is not to say that there could never be a lower-cost vocational pathway that produces the required skills, but among all the occupations we have examined, concerns about the system as it currently stands should be less strong.

Conversely, we have some occupations, such as managers in construction and manufacturing or marketing associate professionals, where even though the work is highly skilled, it is striking that non-graduates (which frequently means apprentices) do work at least as skilled, if not more so, than their graduate counterparts.

Then there are highly skilled occupations which fall between the two categories above – for example, nursing, chartered accountancy, software development and government

Table 7: Typology of meeting skill requirements

	Degree route	Higher vocational qualification route	School qualification route
Graduate job – graduate job upgrading	Financial managers and directors Marketing and sales managers		Finance and investment analysts
Graduate job – job competition		Chartered and certified accountants Nurses	Programmers and software developers National government administrative occupations
Graduate job – graduates mismatched		Production managers and directors in manufacturing Production managers and directors in construction	Marketing associate professionals
Non-graduate job		Nursery nurses and assistants	Managers and directors in retail and wholesale Property, housing and estate managers Police officers (sergeant and below) Gardeners and landscape gardeners Book-keepers, payroll managers and wages clerks Bank and post office clerks Office managers Personal assistants and other secretarial occupations Teaching assistants Nursing auxiliaries and assistants Care workers and home carers Sales and retail assistants Security guards and related occupations Waiters and waitresses Bar staff
Unclassified	Programmers and software developers	Human resources and industrial relations officers Vocational and industrial trainers	

administration – where there is some quantitative and qualitative evidence that a supply of graduates can be effectively utilised but where, as the number of graduates has increased, the availability of such jobs has not kept pace. There is then a question of balance between supplying some graduate skills, and the extra cost of providing them as compared with formal vocational routes

(such as professional qualifications or a high-level apprenticeship) or entering with only school qualifications and learning on the job (as was largely the case for non-graduate administrators and programmers). A move to all-graduate entry, as in the case of nursing, would certainly seem to incur greater costs than the benefits, whereas the willingness to actively facilitate multiple pathways

into an occupation – as is arguably the case in accountancy – could be an effective approach.

Finally, an argument that is often deployed is that university education at least reduces the training time needed when people actually have entered a job, even if the job has not changed. We considered this in section 4 and can find no evidence to support this contention.

‘The broader benefits of a university education will depend on the tastes of the student, the institution attended and the course taken.’

5.2 Final thoughts – from the CIPD and the report’s authors

In most of the cases discussed above, there is limited evidence that the job content of particular occupations has been increased to require what skills new graduates may bring. Furthermore, even in occupations where there has been or could be upgrading to take advantage of graduate skills, the fact that lower-cost alternative routes could or do exist means that such benefits are not necessarily sufficient to justify a switch towards a university-based route.

We stress again that we have taken a deliberately narrow, instrumental view of why people might want to go to university and of what they might get out of the experience. The broader benefits of a university education will depend on the tastes of the student, the institution attended and the course taken. But what is clear is that it is time to take a more realistic view of the narrow economic costs and benefits both to the individuals concerned and, by extension, to society at large.

These findings raise a number of issues for policy-makers.

1 Increasing availability of quality of careers, advice and guidance for young people

If there is to be a step-change over time in the attitudes of young people and parents to non-university routes to employment so that pathways such as apprenticeships, for example, receive greater interest and attention, there needs to be a significant improvement in the quality of careers advice and guidance. A 2016 survey of 1,000 16–18-year-olds by ACCA found nearly a third had received no career advice relating to apprenticeships, with

61% believing employers prefer graduates and 65% saying their parents would prefer them to go to university.

This is perhaps not surprising given that research by OFSTED in 2013 found very few of the schools it had visited knew how to provide a service effectively or had the skills and expertise needed to provide a comprehensive service. Few schools had bought in adequate service from external sources. The report’s findings showed that schools were not working well enough with employers to provide students with direct experience of the world of work in order to help broaden their minds about realistic employment opportunities in their local area.

Government has since created the Careers and Enterprise Company to try and build more links between education providers and business at a local level, including through enterprise advisers (EAs), volunteers from businesses who will work directly with the school’s leadership team to develop effective employer engagement plans. The CIPD is extremely supportive of the Careers and Enterprise Company and is actively working with it to help recruit EAs from the HR community. However, the CIPD does not believe it is a replacement for good-quality careers advice delivered in schools. The CIPD believes there should be minimum standards for the provision of careers advice and guidance delivered in schools. Interactive careers websites such as Plotr provide a great basis for the delivery of exciting, up-to-date advice on the whole breadth of careers available to young people and

there is no reason why schools should not use such technology as the basis for providing relevant and engaging careers guidance.

2 Improving alternative pathways into the labour market

Where alternative pathways do exist, as in the case of chartered accountancy or HR, for example, better careers advice and guidance to allow individuals to make more informed choices would be helpful. However, absent of alternative pathways, many students will continue to quite rationally want to follow a university route into the labour market even if it leads to work that does not require graduate skills, because the alternative is typically accepting far less skilled work. Therefore, improving the availability of high-quality alternative pathways into the labour market is key if young people are to be given a genuine choice rather than take the default university route.

The existing quality of vocational education and training in the UK needs to be improved. An OFSTED report (2015) into apprenticeship provision found that too much provision was weak and failed to provide sufficient training to develop substantial new skills. More recently, a report by the National Audit Office (NAO 2016) found that one in three Level 2 and Level 3 apprentices claimed to be unaware that the training they undertook constituted an apprenticeship. And one in five reported that they had not received any formal training at all, either at an external provider or in the workplace.

In addition, nearly two-thirds of all apprenticeships are created at Level 2, equivalent to five passes at GCSE, with just 36% at Level 3 and 4% at Level 4 and above (House of Commons Library 2015). Unless there is a very significant increase in the proportion of apprenticeships created at these higher levels, it is difficult to see how the current bias towards university education will be addressed.

The Government has pledged to increase the number and quality of apprenticeships and has set an objective of 3 million apprenticeship starts by 2020. It is also planning to introduce an apprenticeship levy in April 2017 for firms with an annual pay bill of £3 million or above to try and increase investment in apprenticeships. The CIPD has expressed concern that the 3 million target will boost numbers at the expense of quality and that the levy will also encourage some firms to invest more in shorter Level 2 apprenticeships as they seek to reclaim their levy payment. CIPD research on employer attitudes to the apprenticeship levy finds that it will encourage many employers to invest more in Level 2 rather than in Level 3 and above apprenticeships and to rebadge existing training as apprenticeships (CIPD 2016a).

To address these concerns, the CIPD has called for the levy to be repositioned as a more flexible training levy and for funding to be weighted to favour Level 3 and above apprenticeships. The CIPD has also called for Local Enterprise Partnerships and Business Growth Hubs to support the creation of more strategic partnerships between education providers and

‘Improving the availability of high-quality alternative pathways into the labour market is also key if young people are to be given a genuine choice rather than take the default university route.’

employers to boost the number of advanced and higher-level apprenticeships.

The CIPD believes that over time there needs to be a shift from the current market-led system focused on the narrow needs of individual employers towards a more co-ordinated approach that meets the broader needs of learners and the economy (CIPD 2016b).

3 Changing employer recruitment behaviour

Changes in attitudes are also required on the employers' side of the market as much as on the side of those entering the labour market. Without this, the availability of good apprenticeships and advice will have limited effect as young people will still, quite reasonably, follow the route that gives them the best access to good jobs. There is evidence that some employers are already adapting recruitment practices and no longer requiring degrees as a prerequisite to apply for certain jobs. Barclays and Random House are examples of companies that have broadened their recruitment practices in this way. The CIPD has been advocating change through its 140,000-strong membership and has produced research (CIPD 2013) making the case for employers to adapt their recruitment practices to make them more inclusive for young people from a non-university background.

A particular challenge is to encourage small businesses to think more broadly about investing in young people, including through apprenticeships. The CIPD has suggested that a proportion of apprenticeship levy funding

should be allocated to Local Enterprise Partnerships/ Business Growth Hubs to enable them to encourage and support smaller non-levy-paying employers to use levy funding to invest in apprenticeships.

4 Increasing the number of high-skilled jobs

The growth of graduates significantly outstripping the growth of high-skilled jobs generated by the labour market is prevalent among most OECD countries, but is particularly pronounced in the UK. We have argued that providing alternative pathways into the labour market would, in many cases, reduce the cost of producing needed skills and may, in some cases, improve the skills available for certain occupations. However, this is not a fix to the problem of an overall lack of demand for high skills, regardless of how they are produced. Someone going through an apprenticeship to become a retail assistant or book-keeper may be just as underutilised as someone who took on such a job after getting a degree. There is a need for a much greater emphasis from policy-makers on how to create more high-skilled jobs and improve skills utilisation in the workplace through an emphasis on enhancing organisations' leadership and people management capability, improving progression routes and job design.

The Government's ambition to create a new industrial strategy presents an opportunity for a new joined-up approach involving employers, training providers, professional and representative bodies and unions at a national,

sectoral and local level that encourages, incentivises and facilitates employers to move towards higher-skill, higher-valued-added production, supported by cost-effective skill development pathways that young people and their parents will see as a viable alternative for attaining a successful career.

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Endnotes

- ¹ The figures for 2011/12 and 2012/13 are distorted by students looking to avoid the new £9,000 per year fees. HEIPR increased to 49.3% in 2011/12, and fell to 42.2% in 2012/13, as many who might otherwise have opted for delayed entry in 2012/13 decided against it.
- ² We used data from the Workplace Employment Relations Survey to examine elements of discretion, influence and autonomy within work, as a proxy for work demanding high levels of skill.
- ³ We also concluded that in some jobs, the work of graduates was less demanding than their non-graduate colleagues, suggesting that a university education could be inferior preparation for certain jobs as opposed to simply unneeded.
- ⁴ For professional qualifications, as are common in nursing or accountancy, we look at other related evidence.
- ⁵ As we previously argued, the literature uses numerous words interchangeably – for example, over-education, over-qualification, under-utilisation and under-employment. Part of the problem is that there are two dimensions of the concept that we could be examining – whether an individual's qualification is needed to get a particular job, and whether it is necessary to do that job. The latter is the one we are interested in here – we refer to someone whose qualifications are not needed to do their current job as being 'over-skilled'. Where someone has more qualifications than are necessary to acquire a particular job given the recruitment procedures that are in place, we refer to this as being 'over-qualified'. In some survey questions, it is not clear which aspect responses relate to, and so we will refer to someone who is either over-skilled and/or over-qualified as over-educated.
- ⁶ Nicola Dandridge, Chief Executive of Universities UK, responded to say that graduates are '*still in a substantially better position to obtain a job and, on average, earn substantially more than non-graduates over a working lifetime ... employment figures looking at what graduates are doing three and a half years after graduation show that the vast majority are in full-time employment.*' A recent report by Work Foundation (Foley and Brinkley 2015) concludes that the international evidence on wage premia would imply that in the aggregate, demand has not outstripped supply, a position supported by Andreas Schleicher, Director of Education and Skills at the OECD.
- ⁷ It should be noted that the estimate of 0.5 is found using the time period 1982–2005, while the estimate of 0.2 is found when the time period is reduced by one year, so there may be some issues about the robustness of the finding.
- ⁸ <http://blog.hefce.ac.uk/2015/08/21/yes-higher-education-is-worth-it/>
- ⁹ Both studies agree that just over 30% of managerial occupation groups – defined at the four-digit level – were non-graduate. In addition, Elias and Purcell's classification placed just under 60% of associate professional occupations in the non-graduate column. Green and Henseke's method is less restrictive, with just 15% of the occupational groups being classed as non-graduate.
- ¹⁰ Green and Henseke identify only 13 occupations out of their 132 graduate occupations which are 'new' using 2006–12 skills data as compared with 1997–2001 data.
- ¹¹ <http://blog.hefce.ac.uk/2015/08/21/yes-higher-education-is-worth-it/>
- ¹² Appendix Table A1 shows how these selected occupations were matched to earlier Standard Classifications, going back to 1979. Appendix Table A2 shows the graduate share of these occupations between 1979 and 2014.
- ¹³ We make three exceptions to this where even looking at trends between 2014 and 2004 demonstrate a dramatic shift towards graduate employment. These are 'finance and investment analysts' and 'marketing associate professional' – both of which now exhibit a majority of employment by graduates which was overwhelmingly not the case even ten years before – and 'personal assistants and other secretarial occupations', where graduate employment share doubled from 2004 onwards. There are related occupational titles in earlier years which could provide a crude comparator for these groups in the 1990s – for example, 'Other secretarial personnel' under SOC90 and 'Typist, shorthand writer, secretaries' under the 1980s classification, but these groups likely contain other sorts of work as well.
- ¹⁴ This combines 'Marketing and sales directors' with 'Sales accounts and business development' managers, in order to increase comparability with earlier occupational classifications.
- ¹⁵ Looking at those who have been with their current employer for less than two years does not capture people moving into the occupation for the first time – some people will move between employers within the same occupation. As a result, it will likely be an underestimate of current entry requirements for new entrants into the occupation if employers are willing to hire more experienced workers with lower qualifications.
- ¹⁶ The approach uses a linear probability model to estimate the likelihood that a job will need a degree based only on these skill requirement variables. The predicted likelihood that a job will need a degree for each individual captures just that part which can be related to aspects of the job itself, which, when averaged over all workers in that whole occupation, should predict how likely it is the type of work and skill needs in that occupation would be associated with having a degree.
- ¹⁷ We do a simple correction for age differences between younger graduates and older non-graduates by estimating how influence increases with age and subtracting this from individual influence scores before constructing an occupational graduate and non-graduate mean. In general, this makes little difference to the analysis.

- ¹⁸ Respondents to this question are not given an exact definition of a formal apprenticeship – for example, the question does not state that a qualification needs to be earned at the end, although they are prompted to include advanced, foundation and modern apprenticeships.
- ¹⁹ Note the data only allow us to look at the completion of an apprenticeship, rather than the completion of an apprenticeship that is relevant to the occupation the individual is working in. We assume here that the two will be sufficiently correlated for the indicator to be instructive.
- ²⁰ This covers a range of qualifications, including nursing and teaching professional qualifications, Higher National Diplomas, BTECs, diplomas in higher education and NVQs at Level 4.
- ²¹ Austria is a low tertiary graduate outlier in almost all occupations, which we could attribute to high-quality, non-tertiary vocational education through the dual system meeting these skill needs. German and Swiss data is missing from the EU-LFS, but we might expect a similar story in both of those countries too.
- ²² <http://www.policemag.co.uk/updates/3441.aspx>
- ²³ Expenditures are given in the Euro Purchasing Power Standard, which allows for differences in the purchasing power of a common unit of currency across different countries. The PPS is constructed so that one PPS = one euro at the average purchasing power of all countries in the European Union.
- ²⁴ Formally, if T_i is learning time in year i , G_i and N_i are the learning times of graduates and non-graduates respectively in year i and p_i is the proportion of the workforce that are graduates in year i then:

$$T_i = p_i G_i + (1 - p_i) N_i$$

$$= p_i (G_i - N_i) + N_i$$

So, using Δ to indicate change of a variable over time:

$$\Delta T = T_{2012} - T_{2001} = p_{2012}(G_{2012} - N_{2012}) + N_{2012} - p_{2001}(G_{2001} - N_{2001}) - N_{2001}$$

$$= p_{2012}\Delta(G - N) + N_{2012} - \Delta p (G_{2001} - N_{2001}) - \Delta N$$

Appendix

Table A1: Occupational classifications of selected occupations over time

SOC 2010	Description	SOC 2000	Description	SOC 90	Description	KOS	Description
1121	Production managers and directors in manufacturing	1121	Production, works and maintenance managers	110	Production and works managers	3400	Production, works and maintenance managers
1122	Production managers and directors in construction	1122	Managers in building and contracting	111	Building and contract managers	3510	Managers in building and contracting
1131	Financial managers and directors	1131	Financial managers and chartered secretaries			250	Financial managers
1132	Marketing and sales directors	1132	Marketing and sales managers	121	Marketing and sales managers	510	Marketing and sales managers and executives
3545	Sales accounts and business development managers						
1190	Managers and directors in retail and wholesale	1163	Retail and wholesale managers	179	Service industry managers etc.	3840	Other proprietors and managers
1251	Property, housing and estate managers	1231	Property, housing and land managers			930	Property and estate managers
2231	Nurses	3211	Nurses	340	Nurses	1600	Nurse administrators and nurses
2315	Primary and nursery education teachers	2315	Primary and nursery education teaching professionals	234	Primary and nursery education teachers		
2136	Programmers and software developers	2132	Software professionals	320	Computer analysts and programmers	420	Systems analysts, computer programmers
2421	Chartered and certified accountants	2421	Chartered and certified accountants	250	Chartered and certified accountants	210	Chartered and certified accountants
3312	Police officers (sergeant and below)	3312	Police officers (sergeant and below)	610	Police officers (sergeant and below)	6110	Policemen
3534	Finance and investment analysts	3534	Finance and investment analysts/advisers				
3543	Marketing associate professionals	3543	Marketing associate professionals				
3562	Human resources and industrial relations officers	3562	Personnel and industrial relations officers	363	Personnel and industrial relations etc.	310	Personnel and industrial relations officers
3563	Vocational and industrial trainers	3563	Vocational and industrial trainers and instructors	391	Vocational and industrial trainers	1210	Vocational and industrial trainers
4112	National government administrative occupations	4112	Civil Service administrative officers and assistants	400	Civil Service administrative staff		
4122	Book-keepers, payroll managers and wages clerks	4122	Accounts and wages clerks, book-keepers, other financial clerks	410	Accounts clerks, book-keepers etc.	4630	<i>Others clerks and cashiers (not retail)</i>
						4540	<i>Supervisors of other clerks and cashiers (not retail)</i>
4123	Bank and post office clerks	4123	Counter clerks	411	Counter clerks and cashiers	4630	<i>Others clerks and cashiers (not retail)</i>
						4540	<i>Supervisors of other clerks and cashiers (not retail)</i>
4161	Office managers	1152	Office managers			3720	Office managers not elsewhere classified
4215	Personal assistants and other secretarial occupations	4215	Personal assistants and other secretaries	459	Other secretarial personnel not elsewhere classified	4920	Typist, shorthand writer, secretaries
						970	Managers' personal assistants
5113	Gardeners and landscape gardeners	5113	Gardeners and groundsman/groundswomen	594	Gardeners, groundspersons	7820	Gardeners, groundsman
6121	Nursery nurses and assistants	6121	Nursery nurses	650	Nursery nurses	6820	Nursery nurses
		6122	Childminders and related occupations	659	Other childcare occupations not elsewhere classified		
6125	Teaching assistants	6124	Educational assistants	652	Educational assistants	6830	<i>Other domestic and school helpers</i>
6141	Nursing auxiliaries and assistants	6111	Nursing auxiliaries and assistants	640	Assistant nurses and auxiliaries	7020	Hospital ward orderlies
6145	Care workers and home carers	6115	Care assistants and home carers	644	Care assistants and attendants	6830	Other domestic and school helpers
7111	Sales and retail assistants	7111	Sales and retail assistants	720	Sales assistants	5510	Shop salesmen and assistants
						5410	Supervisor of shop salesmen and assistants
9241	Security guards and related occupations	9241	Security guards and related occupations	615	Security guards etc.	6210	Security guards and officers, patrolmen, watchmen
9273	Waiters and waitresses	9224	Waiters, waitresses	621	Waiters, waitresses	6510	Waiters, waitresses
9274	Bar staff	9225	Bar staff	622	Bar staff	6520	Barmen, barmaids

Table A2: Graduate share of selected occupations (%)

SOC2010 occupational title	2014	2009	2004	1999	1994	1989	1979
Production managers and directors in manufacturing	32.9	28.3	25.0	21.7	21.8	12.9	10.7
Production managers and directors in construction	30.4	23.4	21.7	18.4	19.3	7.7	3.8
Financial managers and directors	49.4	48.4	47.0			33.8	17.5
Marketing and sales managers	49.8	43.3	36.5	32.6	26.3	19.8	11.7
Managers and directors in retail and wholesale	24.3	16.3	10.4	9.8	8.1	5.2	2.8
Property, housing and estate managers	34.6	33.9	31.0			13.6	3.6
Nurses	49.9	30.5	21.5	13.2	5.9	1.6	0.8
Primary and nursery education teaching professionals	87.8	83.6	73.6	62.0	46.1		
Programmers and software developers	70.8	61.8	52.8	44.9	42.4	45.7	31.9
Chartered and certified accountants	70.6	62.8	64.5	61.8	58.6	39.3	22.8
Police officers (sergeant and below)	34.1	23.4	18.0	11.6	7.0	4.0	1.6
Finance and investment analysts	54.1	43.0	36.7				
Marketing associate professionals	54.9	51.5	44.3				
Human resources and industrial relations officers	50.2	39.5	34.0	34.2	24.3	29.4	14.6
Vocational and industrial trainers	38.4	36.2	31.0	29.1	18.8	20.7	11.2
Gardeners and landscape gardeners	15.3	9.1	9.0	4.2	1.6	2.5	1.5
National government administrative occupations	24.9	17.1	13.3	13.3	7.6		
Book-keepers, payroll managers and wages clerks	26.8	17.4	13.3	10.4	7.7		
Bank and post office clerks	14.7	9.2	6.2	6.6	3.5		
Office managers	23.3	21.6	20.2			15.3	6.8
Personal assistants and other secretarial occupations	19.7	11.4	9.0				
Nursery nurses and assistants	13.1	6.3	4.2	2.7	2.0	2.5	1.3
Teaching assistants	22.0	19.8	11.6	5.6	4.2		
Nursing auxiliaries and assistants	16.6	10.7	4.8	1.5	0.7	0.4	0.0
Care workers and home carers	10.7	6.1	4.5	2.8	1.7		
Sales and retail assistants	11.4	6.7	4.1	3.0	2.1	0.8	0.4
Security guards and related occupations	11.5	8.3	3.9	7.3	2.9	1.1	0.6
Waiters and waitresses	12.9	9.5	4.2	3.3	2.2	1.4	0.6
Bar staff	12.2	12.8	5.8	5.1	4.3	3.2	0.6

Table A3: Graduate job classifications of selected occupations

SOC 2010	Description	Elias and Purcell (2013)				Green and Henseke (2014)	
		Expertise	Orchestration	Communication	SOC(HE)_EP	High Skills Requirement Score	SOC(HE)_GH
1121	Production managers and directors in manufacturing	6	8	5	Orchestrator	0.395	Graduate
1122	Production managers and directors in construction	6	8	5	Orchestrator	0.404	Graduate
1131	Financial managers and directors	6	8	5	Orchestrator	0.632	Graduate
1132	Marketing and sales directors	5	8	7	Orchestrator	0.612	Graduate
3545	Sales accounts and business development managers	4	2	6	Communicator	0.334	Graduate
1190	Managers and directors in retail and wholesale	5	8	5	Orchestrator	0.190	Non-graduate
1251	Property, housing and estate managers	5	4	5	Non-graduate	0.280	Graduate
2231	Nurses	7	3	5	Expert	0.654	Graduate
2315	Primary and nursery education teachers	6	2	8	Communicator	0.793	Graduate
2136	Programmers and software developers	9	2	3	Expert	0.536	Graduate
2421	Chartered and certified accountants	7	4	3	Expert	0.744	Graduate
3312	Police officers (sergeant and below)	4	3	4	Non-graduate	0.211	Non-graduate
3534	Finance and investment analysts	6	4	5	Expert	0.495	Graduate
3543	Marketing associate professionals	4	1	6	Communicator	0.325	Graduate
3562	Human resources and industrial relations officers	7	3	6	Expert	0.380	Graduate
3563	Vocational and industrial trainers	5	3	5	Non-graduate	0.416	Graduate
4112	National government administrative occupations	4	6	4	Orchestrator	0.169	Non-graduate
4122	Book-keepers, payroll managers and wages clerks	3	1	2	Non-graduate	0.190	Non-graduate
4123	Bank and post office clerks	3	1	3	Non-graduate	0.176	Non-graduate
4161	Office managers	3	2	3	Non-graduate	0.164	Non-graduate
4215	Personal assistants and other secretarial	4	1	3	Non-graduate	0.092	Non-graduate
5113	Gardeners and landscape gardeners	4	2	1	Non-graduate	-	Non-graduate
6121	Nursery nurses and assistants	3	2	5	Non-graduate	0.149	Non-graduate
6125	Teaching assistants	3	2	5	Non-graduate	0.148	Non-graduate
6141	Nursing auxiliaries and assistants	3	2	4	Non-graduate	0.076	Non-graduate
6145	Care workers and home carers	3	1	5	Non-graduate	0.079	Non-graduate
7111	Sales and retail assistants	2	1	3	Non-graduate	-0.006	Non-graduate
9241	Security guards and related occupations	1	1	1	Non-graduate	-	Non-graduate
9273	Waiters and waitresses	1	1	4	Non-graduate	-0.023	Non-graduate
9274	Bar staff	1	1	4	Non-graduate	-0.026	Non-graduate

Table A4: European comparisons of graduate shares of selected occupations

SOC2010 description (4 digit)	ISCO-88 description (3 digit)	ESP	DEN	FRA	BEL	NED	ITA	UK	GRC	AUT	FIN	SWE	POR	NOR	IRE	HUN
Production managers and directors in manufacturing	Production and operations managers	55.1	45.8	40.5	53.6	41.8	49.0	29.5	45.4	20.6	51.6	36.2	65.7	84.9	27.7	34.1
Production managers and directors in construction																
Financial managers and directors	Directors and chief executives	42.1	41.4		47.8	56.3	22.6	58.4	82.3	14.7	45.1	28.7	75.5	68.4	42.4	59.6
Marketing and sales directors																
Sales accounts and business development managers	Other specialist managers	65.4	45.8	49.2	53.4	60.3	50.7	43.6	54.3	29.5	56.4	42.5	38.8	87.3	44.2	64.9
Human resources and industrial relations officers																
Managers and directors in retail and wholesale	Managers of small enterprises	13.8	25.0	13.7	13.1	27.0	5.8	18.0	7.5	10.2	10.5	16.2	7.7	57.7	9.5	43.2
	Nursing and midwifery professionals	100.0	99.5		19.5	86.7	100.0		41.0	35.7	17.1	81.4	88.0	99.3	44.2	77.3
Nurses	Nursing and midwifery associate professionals		96.8	3.9	2.7	5.3	78.4	32.7	1.5	3.3	36.2	64.2	100.0	99.2	13.3	2.3
	COMBINED	100.0	97.3	3.9	18.6	23.2	84.5	32.7	3.4	3.6	34.4	71.0	88.0	99.2	43.7	14.5
	<i>Primary and pre-primary education teaching professionals</i>	92.7	92.2	80.8	16.7	91.7	43.6	94.9	48.1	7.9	80.6	88.8			85.3	95.1
Primary and nursery education teachers	<i>Primary education teaching associate professionals</i>		91.1		7.1	25.0	23.2						91.1	98.9		14.1
	<i>Pre-primary education teaching associate professionals</i>		85.6				13.6			3.1		29.8	87.7	97.4	11.1	15.9
	COMBINED	92.7	89.0	80.8	14.6	90.5	20.9	94.9	48.1	5.7	80.6	58.6	91.1	98.6	72.4	88.7
Programmers and software developers	Computing professionals	86.4	46.0	65.8	46.1	72.3	58.0	62.0	97.7	35.2	50.1	52.1	86.6	95.1	70.9	68.6
Chartered and certified accountants																
Finance and investment analysts	Business professionals	97.1	56.5	67.1	41.4	70.7	51.9	58.8	94.5	90.2	47.1	52.1	70.4	89.8	74.9	73.7
Police officers (sergeant and below)																
Security guards and related occupations	Protective services workers	12.3	2.6	9.2	5.2	5.7	6.0	19.2	5.0	0.3	4.6	7.8	2.9	26.3	12.5	5.4
National government administrative occupations	Administrative associate professionals	34.5	19.6	22.4	19.1	31.9	13.9	37.6	22.4	6.7	15.0	18.9	28.5	83.4	52.3	25.9
	Customs, tax and related government associate professionals	43.1	31.4	23.2	8.8	33.9	23.8	42.4	35.8	8.3	22.2	27.2	23.0	83.8	0.0	19.5
Book-keepers, payroll managers and wages clerks	Numerical clerks	43.5	10.5	13.0	28.1	19.8	13.0	13.7	12.9	3.2	14.4	12.6	19.9	38.9	20.9	17.2
Bank and post office clerks	Cashiers, tellers and related clerks	15.8	2.4	11.8	4.2	3.4	12.2	11.6	11.7	6.9	9.8	6.6	17.2	41.2	20.9	5.0
Gardeners and landscape gardeners	Market gardeners and crop growers	3.1	1.6	3.3	3.6	2.1	1.6	12.0	0.9	2.3	4.0	3.1	1.3	29.4	10.2	4.6
Nursery nurses and assistants	Personal care and related workers	7.3	5.6	2.1	2.6	7.5	7.6	10.2	3.4	2.7	3.7	4.5	1.9	25.2	8.0	5.6
Sales and retail assistants	Shop, stall and market salespersons and demonstrators	6.7	3.2	6.7	5.0	8.5	4.4	5.4	5.0	1.3	4.6	3.9	4.2	16.8	8.6	5.0
Waiters and waitresses	Housekeeping and restaurant services workers	6.3	3.4	3.7	2.7	4.6	3.2	5.6	3.5	1.7	2.1	3.5	1.3	20.3	7.6	2.4

Table A5: Job influence scores for graduates and non-graduates in selected occupations

Occupation	SOC2000 (3 digit)	SOC2000 (3 digit) description	Grad, 2004	Non-grad 2004	Difference 2004	Grad increase	Non-grad increase	Difference 2011
Production, works and maintenance managers Managers in building and contracting	112	Production managers	0.474	0.537	-0.063	0.081	0.088	-0.071
Financial managers and chartered secretaries Marketing and sales managers	113	Functional managers	0.529	0.527	0.003	0.099	0.039	0.063
Retail and wholesale managers	116	Managers in distribution, storage and retailing	0.562	0.526	0.036	-0.036	-0.058	0.058
Property, housing and land managers	123	Managers and proprietors in other service industries	0.587	0.482	0.105	-0.002	0.168	-0.064
Nurses	321	Health associate professionals	0.186	0.059	0.126	-0.174	-0.015	-0.032
Primary and nursery education teaching professionals	231	Teaching professionals	-0.011	-0.027	0.016	0.176	0.312	-0.121
Software professionals	213	Information and communication technology professionals	0.061	-0.082	0.143	0.156	0.295	0.004
Chartered and certified accountants	242	Business and statistical professionals	0.177	0.354	-0.177	0.160	0.043	-0.061
Police officers (sergeant and below)	331	Protective service occupations	-0.658	-0.440	-0.218	0.311	0.059	0.034
Finance and investment analysts/advisers	353	Business and finance associate professionals	0.124	0.105	0.019	0.071	0.046	0.044
Marketing associate professionals	354	Sales and related associate professionals	0.222	0.217	0.005	-0.129	0.116	-0.240
Personnel and industrial relations officers Vocational and industrial trainers and instructors	356	Public service and other associate professionals	0.184	0.267	-0.083	0.152	-0.062	0.130
Civil Service administrative officers and assistants	411	Administrative occupations: government and related organisations	-0.108	-0.171	0.062	-0.343	-0.271	-0.010
Accounts and wages clerks, book-keepers, other financial clerks Counter clerks	412	Administrative occupations: finance	-0.154	-0.071	-0.083	0.162	0.184	-0.105
Office managers	115	Financial institution and office managers	0.355	0.361	-0.006	0.056	0.131	-0.082
Personal assistants and other secretaries	421	Secretarial and related occupations	0.097	-0.031	0.128	-0.055	0.164	-0.091
Nursery nurses Childminders and related occupations	612	Childcare and related personal services	-0.425	-0.320	-0.105	0.047	0.161	-0.220
Educational assistants Nursing auxiliaries and assistants	611	Healthcare and related personal services	-0.102	-0.171	0.068	-0.114	0.078	-0.124
Care assistants and home carers Sales and retail assistants	711	Sales assistants and retail cashiers	-0.423	-0.241	-0.182	0.761	0.010	0.568

Table A6: Undergraduate costs

HESA Cost Centre	Cost per undergrad student FTE (£)
Clinical dentistry	13,965
Clinical medicine	12,573
Earth, marine and environmental sciences	11,104
Mineral, metallurgy & mineral engineering	11,078
Chemistry	10,487
General engineering	10,040
Electrical, electronic & computer engineering	9,861
Physics	9,823
Chemical engineering	9,249
Mechanical, aero & production engineering	8,899
Civil engineering	8,852
Biosciences	8,301
Music, dance, drama, performing arts	7,525
Health and community studies	7,486
IT, systems sciences and software engineering	7,282
Education	7,234
Archaeology	7,192
Media studies	7,056
Modern languages	7,022
Geography & environmental studies	7,010
Art & design	6,962
Social work and social policy	6,776
Psychology and behavioural sciences	6,769
Architecture, built environment & planning	6,760
Theology & religious studies	6,697
Philosophy	6,619
Classics	6,584
Nursing and allied health professionals	6,479
Economics & econometrics	6,247
Business & management studies	6,232
Maths	6,153
English language and literature	6,001
Politics and international studies	5,924
History	5,865
Sociology	5,581
Law	5,539

Source: KPMG

Table A7: Qualification levels

Level	RQF examples	FHEQ examples
Entry	<ul style="list-style-type: none"> - Entry-level certificate - Entry-level Skills for Life - Entry-level award, certificate and diploma - Entry-level Functional Skills - Entry-level Foundation Learning 	
1	<ul style="list-style-type: none"> - GCSE (grades D-G) - Key Skills level 1 - NVQ level 1 - Skills for Life level 1 - Foundation diploma - BTEC award, certificate and diploma level 1 - Foundation Learning level 1 - Functional Skills level 1 - Cambridge National level 1 	
2	<ul style="list-style-type: none"> - GCSE (grades A*-C) - Key Skills level 2 - NVQ level 2 - Skills for Life level 2 - Higher diploma - BTEC award, certificate and diploma level 2 - Functional Skills level 2 - Cambridge National level 2 - Cambridge Technical level 2 	
3	<ul style="list-style-type: none"> - AS and A level - Advanced Extension Award - Cambridge International award - International Baccalaureate - Key Skills level 3 - NVQ level 3 - Advanced diploma - Progression diploma - BTEC award, certificate and diploma level 3 - BTEC National - Cambridge Technical level 3 	
4	<ul style="list-style-type: none"> - HNC - Certificate of higher education - Key Skills level 4 - NVQ level 4 - BTEC Professional award, certificate and diploma level 4 	<ul style="list-style-type: none"> - Certificate of higher education - HNC
5	<ul style="list-style-type: none"> - HND - NVQ level 4 - Higher diploma - BTEC Professional award, certificate and diploma level 5 	<ul style="list-style-type: none"> - Diploma of higher education - Diploma of further education - Foundation degree - HND
6	<ul style="list-style-type: none"> - NVQ level 4 - BTEC Advanced Professional award, certificate and diploma level 6 	<ul style="list-style-type: none"> - Bachelor's degree - Graduate certificate - Graduate diploma
7	<ul style="list-style-type: none"> - BTEC Advanced Professional award, certificate and diploma level 7 - Fellowship and fellowship diploma - Postgraduate certificate - Postgraduate diploma - NVQ level 5 - BTEC Advanced Professional award, certificate and diploma level 7 	<ul style="list-style-type: none"> - Master's degree - Postgraduate certificate - Postgraduate diploma
8	<ul style="list-style-type: none"> - NVQs level 5 - Vocational qualifications level 8 	<ul style="list-style-type: none"> - Doctorate

Source: www.gov.uk/what-different-qualification-levels-mean/compare-different-qualification-levels

Note: RQF = Regulated Qualifications Framework; FHEQ = Framework for Higher Education Qualifications



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