UK COMMISSION FOR EMPLOYMENT AND SKILLS

UK Skill Levels and International Competitiveness 2014

Evidence Report 96
October 2015

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Derek L. Bosworth

Associate Fellow, Warwick Institute for Employment Research

Adam Leach

UK Commission for Employment and Skills

October 2015

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Foreword

The UK Commission for Employment and Skills (UKCES) is a publicly funded, industry-led organisation providing leadership on skills and employment issues across the UK. Together, our Commissioners comprise a social partnership of senior leaders of large and small employers from across industry, trade unions, the third sector, further and higher education and all four UK nations.

Our vision is to create, with industry, the best opportunities for the talents and skills of people to drive competitiveness, enterprise and growth in a global economy.

Our ambition is to see industry in the UK create “ladders of opportunity” for everyone to get in and on in work. This means employers improving entry routes into the labour market for young people, ensuring the existing workforce has the skills businesses need to compete and individuals need to progress, and deploying those skills in a way that drives productivity and growth. This is a collective agenda for employers working in partnership with government, trade unions, education providers, industry bodies and local organisations.

Our Research

Our research mobilises impartial and robust national and international business and labour market research to inform choice, practice and policy. We aim to lead the debate with industry to drive better outcomes for skills, jobs and growth.

Our ambition is to cement the UK Commission’s reputation as the ‘go-to’ organisation for distinct high quality business intelligence, and communicate compelling research insights that shape policy development and influence behaviour change.

In order to achieve this, we produce and promote robust business intelligence and insights to ensure that skills development supports choice, competitiveness and growth for local and industrial strategies.

Our programme of research includes:

- producing and updating robust **labour market intelligence**, including though our core products (the Employer Skills Survey (ESS), Employer Perspectives Survey (EPS) and Working Futures Series)
- developing an understanding of what works in policy and practice through **evaluative research**

- providing research **insight** by undertaking targeted thematic reviews which pool and synthesise a range of existing intelligence.

Our research programme is underpinned by a number of core principles, including:

- providing business intelligence: through our employer surveys and Commissioner leadership we provide insight on employers' most pressing priorities
- using evaluative insights to identify what works to improve policy and practice, which ensures that our advice and investments are evidence based.
- adopting a longer term, UK-wide, holistic perspective, which allows us focus on big issues and cross cutting policy areas, as well as assessing the relative merits of differing approaches to employer engagement in skills
- providing high quality, authoritative and robust data, and developing a consistent core baseline which allows comparison over time and between countries and sectors.
- being objective, impartial, transparent and user-friendly. We are free of any vested interest, and make our LMI as accessible as possible.

We work in strategic partnership with national and international bodies to ensure a co-ordinated approach to research, and combine robust business intelligence with Commissioner leadership and insight.

This report assesses the UK's progress and projected future performance with regard to skills held by the adult population. Building on previous publications, this report uses formal qualification attainment as a proxy for skill levels. Based on the analysis, the UK is making significant progress in reducing the proportion of its workforce who hold no qualifications, and greatly improving its proportion of highly skilled workers. However, other nations are making similar rapid advances, and at current rates of progress, relative weaknesses in the UK's skills base will not be rectified. Given the ever growing importance of international markets, this is a real concern for the UK's future competitiveness.

Sharing the findings of our research and engaging with our audience is important to further develop the evidence on which we base our work. Evidence Reports are our chief means of reporting our detailed analytical work. All of our outputs can be accessed at www.gov.uk/government/organisations/uk-commission-for-employment-and-skills

We hope you find this report useful and informative. If you would like to provide any feedback or comments, or have any queries please e-mail info@ukces.org.uk, quoting the report title or series number. We also welcome feedback on Twitter.

Lesley Giles

Deputy Director

UK Commission for Employment and Skills

Table of Contents

Tables and figures

Executive Summary

Introduction

Skills are a fundamental determinant of individual employability and earnings potential. Furthermore, productivity and business profitability are influenced by skills, ultimately affecting the UK's economic performance. In a globalised world the goal of achieving world class skills has never been more critical to jobs and growth in the UK. Understanding how we stand in the global skills race and assessing our direction of travel in skills performance are essential to informing the actions we take now.

Building on previous analyses of skill levels in the Ambition 2020 reports of 2009[1] and 2010[2], Bosworth (2012)[3] and Bosworth (2014)[4], this report assesses skills supply by analysing the attainment of formal qualifications, recognising that qualifications are only one, imperfect, measure of skills. Nonetheless, analysis of the level of formal qualifications held by the adult population provides valuable insight into the UK's skills performance.

This analysis uses past patterns of behaviour and performance to provide projections through to 2020. Since these projections indicate what would happen in the future if recent trends continue, the reader should treat them with caution, as indicative of future trends, rather than as precise forecasts of the future.

UK results

Over the period 2003-2013, the UK has seen a marked shift towards attainment at the highest qualification levels[5] (Level 4 and above) and away from those without formal qualifications or qualifications at the lowest levels (less than Level 2). The proportion of the adult population[6] qualified at a high level increased from 26.8 per cent to 37.5 per cent, whilst the proportion with no qualifications or low level qualifications as their highest qualification fell from more than one third (34.1 per cent) to less than a quarter (23.4 per cent).

[1] UKCES (UK Commission for Employment and Skills) (2009) Ambition 2020: World Class Skills and Jobs for the UK. The 2009 Report, UKCES, Wath upon Dearne.
[2] UKCES (UK Commission for Employment and Skills) (2010) Ambition 2020: World Class Skills and Jobs for the UK. The 2010 Report, UKCES, Wath upon Dearne.
[3] Bosworth, D. (2012) UK Skill Levels and International Competitiveness. UKCES, Wath upon Dearne
[4] Bosworth, D. (2014) UK Skill Levels and International Competitiveness 2013. UKCES, Wath upon Dearne
5 An explanation of the levels used in the report is provided at Annex A. Qualifications are defined here with reference to the Regulated Qualifications Framework (RQF). This is the national qualification framework for vocational qualifications in England, Wales and Northern Ireland. This framework defines formal qualifications by their level (i.e. level of difficulty), but the size and content of the qualifications can vary within each level. . Scotland has its own qualification framework, the Scottish Credit and Qualifications Framework (SCQF), and its own system of levels.
[6] The results outlined here are for 19-64 year olds unless otherwise stated.

These historical trends are largely carried forward in the projections to 2020. The rate of improvement is lower for the below Level 2 category and slightly higher at Level 4+. Over the period 2013 to 2020, the proportion qualified to Level 4+ is projected to rise to 46.9 per cent (an increase of 9.4 percentage points or 4 million individuals), while the proportion below Level 2 is projected to fall to barely one-sixth (16.9 per cent) of the population (a fall of 6.4 percentage points or 2.3 million fewer people at this level).

There are important gender differences in projected qualification performance, with current trends suggesting that women can be expected to perform more strongly at both ends of the skills spectrum. There is very little difference between females and males currently qualified below Level 2 (23.5 per cent versus 23.2 per cent respectively) but females are projected to see a much more pronounced fall in the low skilled in the period to 2020 of nine percentage points, compared with a fall of only four points for males. By 2020 only 14.9 per cent of females are expected to be qualified below Level 2, compared with 19.0 per cent of males.

With regard to higher level qualifications, females already perform better than males, with 39.1 per cent qualified at Level 4 and above compared with 35.8 per cent of males. The projections indicate that this gap will widen slightly in the period to 2020 as female attainment at this level increases to 49.1 per cent compared with 44.6 per cent for males.

International comparative qualification performance

Compared against 32[7] other member states of the OECD (Organisation for Economic Co-operation and Development)[8], the UK's current skills position and the latest projections to 2020 paint a mixed picture for 25-64 year olds. Skills attainment is classified according to three levels: *Low skills* (Below Upper Secondary), *Intermediate skills* (Upper Secondary), and *Higher skills* (Tertiary)[9].

For ***Low skills*** the UK is currently ranked 20th (i.e. there are 19 out of the 32 other countries with lower proportions); this places it in the third quartile of nations and just behind the averages of both the OECD and EU. The UK is not expected to see an improvement in its poor relative performance in the period to 2020, based on current trends. Although the proportion qualified below upper secondary level is projected to fall from 25 per cent to 17 per cent the UK's ranking is not predicted to change because of similar projected improvements for other nations.

[7] The results exclude Chile.
[8] Note that the current OECD data are for 2012 and are compared with the LFS data for 2012. This and the difference in the age group means that the results discussed here are not directly comparable with the earlier tables.
[9] These levels correspond broadly with below RQF level 2 (*Low)*, RQF levels 2-3 (*Intermediate*) and RQF level 4 and above (*High*)[9].

36 per cent of the UK's adult population are currently qualified at ***Intermediate* level** (Upper Secondary), giving a ranking of 25th out of 32 OECD nations. The proportion qualified at this level is projected to decline slightly (to 34 per cent) in the period to 2020, resulting in a fall in the UK's ranking to 28th.

Conversely, the proportion of the UK's adult population qualified at a ***Higher*** (Tertiary) level is projected to increase significantly, from 39 per cent to 49 per cent in the period to 2020, elevating the UK's international ranking slightly, from 11th to 7th. This points towards a consolidation of the UK's position on high level skills.

It is, however, important to bear in mind that the projected position of the UK in 2020 is based on a continuation of existing trends. It seems highly likely that at least some nations will see an improvement in the "trajectory" of their performance as a result of policy intervention and / or other factors, such as increased demand for higher level skills within their national labour markets.

From this analysis it could be argued that the most pressing priority is to accelerate the rate of reduction in the size of the long "tail" of the low skilled in the UK population; both by supporting the progression of those already in the labour force and helping them to move up into the intermediate band, as well as by minimising the proportion of new entrants to the labour market who lack attainment at upper secondary level.

Although there is a fairly clear imperative to minimise the proportion of the labour force who are skilled to a low level it is less clear what the optimal split between intermediate and high level skills should be. Different countries have different strategies for growth. The UK's key strength lies in the size of its pool of high skilled labour. In contrast, countries like Germany have founded a successful economic strategy on a skills base that is weighted towards *Intermediate skills*, with a relatively small proportion qualified at a *Higher* level (but also only a small proportion of the population holding no qualifications or low level qualifications).

Clearly, the level of skills and qualifications available in the economy is only one consideration; the relevance of those skills to business and the ability of organisations to utilise them effectively are also key.

1 Introduction

The UK is experiencing signs of a continuing recovery, but achieving sustainable, long-term growth and prosperity may require a deeper structural rebalancing of its economy. Since the onset of the 2008 financial crisis, labour productivity has been exceptionally weak, with whole-economy output per hour around 16 per cent below the level implied by the pre-crisis trend[10].

The availability of people with the skills businesses need to enable them to compete in international markets is critical to productivity and business profitability, and therefore a crucial condition of sustainable growth. Whilst qualifications are only one, imperfect, measure of skills, educational attainment is seen increasingly as a determinant of economic outcomes for individuals and economies.

In a global marketplace characterised by ever more sophisticated products, services and value chains, having a workforce with world class skills is increasingly critical whilst simultaneously more difficult to achieve. As competitor nations in the developing world increasingly invest in their skills base, they are able to exploit markets that have traditionally been dominated by developed nations like the UK. In light of increasing skill development in other nations, the UK must "run to stand still" to maintain its relative performance on skills.

The future skills mix of the UK adult population is of critical importance. The increased pace of globalisation and technological change, the changing nature of work and the labour market, and the ageing of populations are among the forces driving demand for skills. For the economy, there is a positive relationship between attainment and economic growth[11].

The present report deals with the issue of the profile of skills, as proxied by formal qualifications, in the UK. It presents historical changes and trends, as well as projections through to 2020. The approach used to assess likely future performance is set out in Appendix A.

This report updates and builds on previous work by the UK Commission to assess the international skills challenge, as presented in its *Ambition 2020* reports for 2009 and 2010 and in Bosworth (2012 and 2013), using an approach designed to provide results that are consistent with this prior analysis.

[10] Barnet, A., Batten, S., Chiu, A., Franklin, J. and Sebastia-Barriel, M. (2014) The UK productivity puzzle. Bank of England, London.
[11] See, for example, Organisation for Economic Co-operation and Development (OECD) (2004) *Lifelong Learning: Policy Brief*. OECD, Paris.

Some care is needed when talking about the supply of qualifications. In the present report "supply" relates to the qualifications held by the UK population at different points in time. Changes to supply are shaped by individual perceptions at each point in time about what the demand for qualifications and skills will look like in the future (e.g. how many jobs will there be requiring the associated higher qualifications and skills, and what wage premia will be attached to such jobs?)

As with all projections and forecasts, the forward-looking results presented in this report should be regarded as indicative of likely trends, given a continuation of past patterns of behaviour and performance, rather than precise forecasts of the future.

In addition, the chief source upon which the projections are based is the Labour Force Survey (LFS). Like all surveys, the LFS is subject to sampling error: a degree of inaccuracy caused by observing a sample instead of the whole population. The impact of this issue on the projections is considered in more detail in the technical appendix to this report and in the accompanying technical reports.

This report assesses skills supply using possession of qualifications as the key measure and skills and qualifications are often treated as being synonymous. This approach has the advantage that qualifications are easy to count, and data are readily available. However, it is recognised that qualifications are only one, imperfect, measure of skills. There are many individuals who possess skills that are highly valued by employers but who hold no formal qualifications. On the other hand employers may be sceptical of the value of some qualifications. Moreover, a general improvement in qualification levels is of limited benefit if it is not accompanied by the development of the 'right', economically valuable skills, which employers demand and which can be effectively deployed in the workplace. Nonetheless, this analysis of the level of formal qualifications held by individuals is felt to provide a valuable insight into relative performance of the UK's skills base.

2 UK historical trends and projections to 2020

The main UK qualifications modelling draws on a linear time series model. This model uses historical Labour Force Survey (LFS) data, broken down by gender and year of age (for those of working age) for six qualification levels (see Annex A for further information on levels). Individuals are allocated to a particular qualification level mainly according to the highest qualification they hold, but some individuals who hold two or more qualifications are moved into a higher qualification threshold.

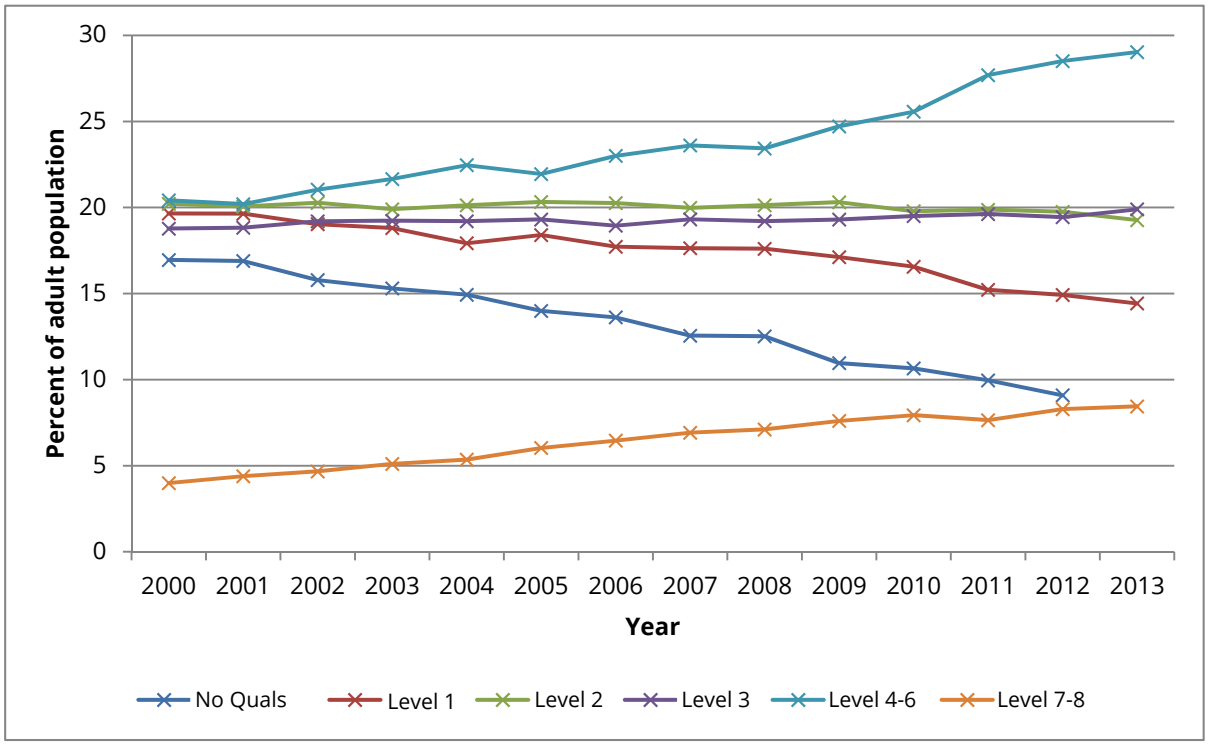
2.1 Recent historical trends

Figure 1 and Table 1 set out the main historical trends over the last decade or so. Figure 1 indicates the considerable improvement that has occurred at Levels 4-6 and 7-8. The number of people qualified at Level 7-8 almost doubled in absolute size over the period, although Levels 4-6 saw the greater increase in share.

The proportion of the adult population qualified at intermediate levels remained largely constant over the period. There were increases in the numbers of people qualified at Level 2 and particularly at Level 3 but, in terms of share, this was offset by increases in total population size.

Declines took place at Level 1 and amongst those with no qualifications (4 and 6 percentage points respectively).

Figure 1: Historical trends in qualification mix (19-64 year olds, %)



Source: Time series model

Table 1 highlights the size of these changes in terms of the numbers of individuals involved. Over the 10 year period, the number of individuals with Level 4+ rose by almost 5 million (a 10.7 percentage point rise), while those below Level 2 fell by more than 3 million (a 10.7 percentage point fall). These changes took place against a population increase amongst 19-64 year olds of nearly 2.8 million.

Table 1: Changing distribution of qualifications in the UK (19-64 year olds)

	2003		2013		2003-2013 Change	
	%	Nos ('000s)	%	Nos ('000s)	Percentage point	Nos ('000s)
Level 7-8	5.1	1,827	8.4	3,260	3.3	1,432
Level 4-6	21.7	7,754	29.0	11,207	7.4	3,453
Level 4+	26.8	9,582	37.5	14,467	10.7	4,885
Level 3	19.2	6,886	19.9	7,681	0.7	794
Level 2	19.9	7,126	19.3	7,437	-0.6	311
Level <2	34.1	12,213	23.4	9,019	-10.7	-3,194
Level 1	18.8	6,734	14.4	5,570	-4.4	-1,165
No Qualifications	15.3	5,479	8.9	3,450	-6.4	-2,029
All qualifications	100	35,807	100	38,604	0.0	2,797

Source: Time series model.
Note: "No qualifications" are all individuals below Level 1 and, therefore, include some individuals with Entry Level qualifications.

2.2 Projections to 2020

The projections of future qualification levels are undertaken separately for males and females, by year of age (16 to 69), using either the last 10 years of historical data or the last five years. These projections simply indicate what would happen in the future if recent trends continue, and many things might impact on their path through to 2020 and beyond, so considerable caution is needed in using these results.

The results based upon the trends over the 10 years, 2004 to 2013, are set out in Table 2. It can be seen that the proportion qualified to Level 4+ is projected to rise from 37.5 to 46.9 per cent over this period (a 9.4 percentage point increase).

The largest fall is in those with no qualifications (a reduction in share of 3.5 percentage points, or a fall of 38 per cent compared with its 2013 value), which comprises the majority of the 6.4 percentage point fall in the below Level 2 group. In fact all levels of qualification other than the highest two show falls, although some of these are quite modest.

The projections suggest that there will be a fall of around 850 thousand people at the intermediate levels (Levels 2 and 3), however, the recent focus on apprenticeships may bolster these levels in coming years.

Table 2: Projected distribution of qualifications in the UK, 2020 (19-64 year olds)

	2013		2020		2013-2020 Change	
	%	Nos ('000s)	%	Nos ('000s)	Percentage point	Nos ('000s)
Level 7-8	8.4	3,260	10.5	4,148	2.1	888
Level 4-6	29.0	11,207	36.3	14,321	7.3	3,115
Level 4+	37.5	14,467	46.9	18,470	9.4	4,003
Level 3	19.9	7,681	18.2	7,188	-1.7	-493
Level 2	19.3	7,437	18.0	7,075	-1.3	-362
Level <2	23.4	9,019	16.9	6,674	-6.4	-2,346
Level 1	14.4	5,570	11.5	4,540	-2.9	-1,029
No Qualifications	8.9	3,450	5.4	2,133	-3.5	-1,316
All qualifications	100	38,604	100	39,406	0	802

Source: Time series model.
Note: "No qualifications" are all individuals below Level 1 and, therefore, include some individuals with Entry Level qualifications.

Comparing the results in Table 1 and Table 2, it can be seen that the rise in the number of individuals holding Level 4+ is projected to be smaller in absolute terms over the period 2013 to 2020 than over 2004 to 2013 (4 compared with 4.9 million)..

The fall in below Level 2 is only two-thirds of that seen in the decade to 2013 (2.3 compared with 3.2 million). This increase in the absolute number of those at Level 4 or above takes place over the shorter projection period is roughly in line with the increase from 2003 to 2013 and takes place against a background in which the ONS projected increase in the UK population of age 19-64 over the period to 2020 is much less than in the previous 10 years (800 thousand compared with 2.8 million).

2.3 The rate of improvement

It is difficult to say anything about private or public policies and their effects on qualification mix *per se*, but it is possible to say whether the historical trends at different points in time suggest that more recent projections are in some sense "more favourable" than earlier projections. The time series modelling has been carried out over a number of years and, while a number of changes have been made to the model, these will not have affected the overall results dramatically, allowing comparisons between them. As the model is estimated on the most recent 10 years of data, each subsequent year of modelling differs by two years of data (the latest year is added into the historical data and, what was the tenth year, drops out). The first column of Table 3 shows the data periods.

Table 3: Consecutive projections, 2020

Data period	Level <2		Level 4+	
	%	000's	%	000's
2004-2013a	16.9	6,674	46.9	18,470
2003-2012b	17.4	6,857	47.6	18,761
2003-2012c	19.1	7,525	44.3	17,457
2001-2010c	19.9	7,858	44.4	17,496
2000-2009c	19.7	7,776	43.8	17,289
1999-2008d	19.3	7,601	41.7	16,462

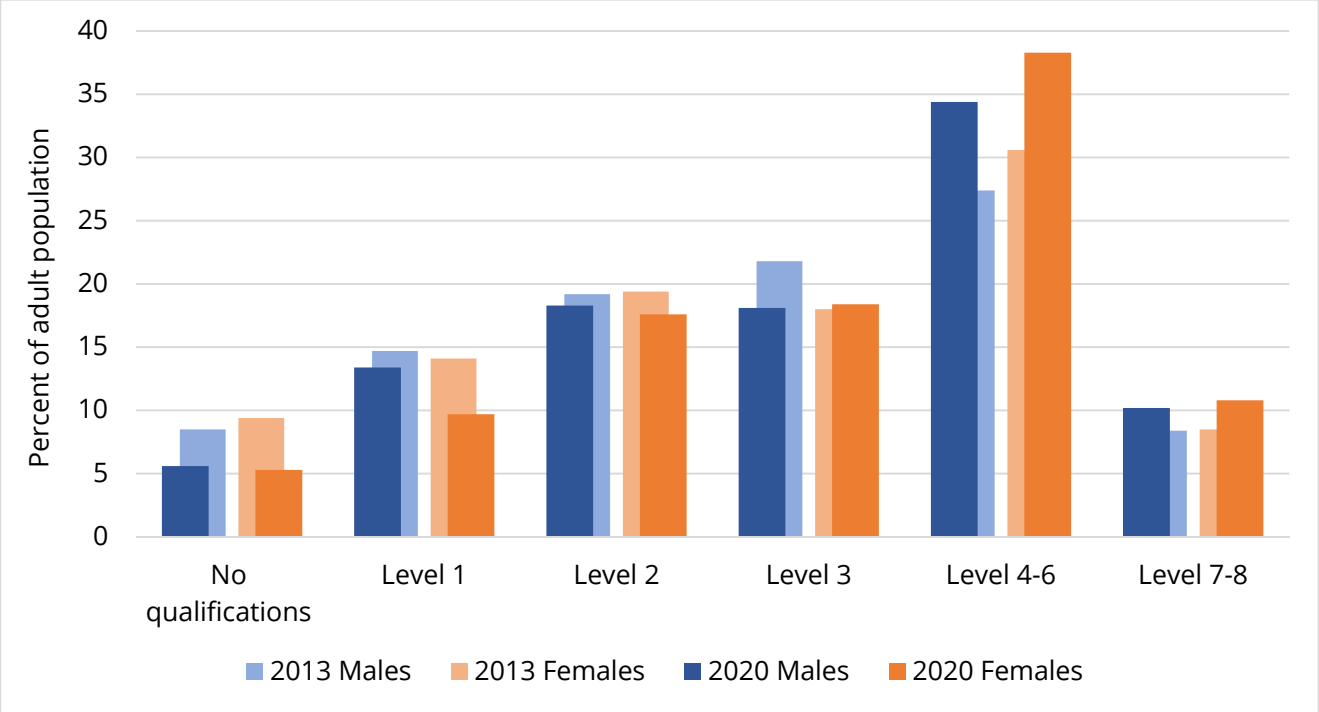
Notes: a) current report; b) 2013 Model corrected; c) unpublished reports; d) Ambition 2020, 2010 Report

Table 3 shows whether there have been any systematic changes to the forecasts over time as new data have emerged. The results in Table 3 show a great deal of stability, as would be expected, as each model shares eight years of data with its immediate predecessor. Over time, projections of the proportion of individuals below Level 2 in 2020 have decreased from 19.3 to 16.9 per cent and Level 4 and above has risen from 41.7 to 46.9, although neither indicator has seen an unbroken trend over the period. This implies that the trend towards higher level qualifications (Level 4 and above) has been accelerating whilst the proportion of individuals with lower level (less than Level 2) or no qualifications has been declining at an increasing rate. Previous projections suggested slight increases in lower level qualifications (less than Level 2). However, the most recent sets of results indicate that the proportion of unqualified and low qualified individuals is projected to fall to the lowest level since forecasting work began. This could suggest that public and private efforts to reduce the UK's "tail" of poorly qualified individuals are meeting with some success.

2.4 Gender differences

Figure 2 reports the main differences in the current mix and changes in the mix of qualifications over the projection period for those aged 19-64. Females start in 2013 with a higher proportion of individuals at level 4 and above than is the case of males. At Level 4-6, the proportion of women is 30.6 per cent compared with 27.4 per cent of males. The gap narrows at the very top, with similar proportions of females and males qualified to Level 7-8 (8.5 and 8.4 per cent respectively). Overall, the proportion of females and males with Level 4 and above qualifications is 39.1 and 35.8 per cent respectively. Looking to 2020, females are projected to see a considerably greater improvement at level 4-6 than males, with this improvement narrowing but still present at Level 7-8. This means the gap between the genders is expected to widen, with 49.1 per cent of females at Level 4 or above, compared with 44.6 per cent of males.

Figure 2: Gender differences, 2013 and 2020, 19-64 year olds



Source: Time series model.
Note: "No qualifications" are all individuals below Level 1 and, therefore, include some individuals with Entry Level qualifications.

In 2013, there were slightly more females with no qualifications than males: 9.4 compared with 8.5 per cent. Both genders are expected to see falls in this proportion, with only 5.3 per cent of females and 5.6 per cent of males with no qualifications expected in 2020. The proportion of females at Level 1 is expected to decline significantly from 14.1 per cent in 2013 to 9.7 per cent in 2020. Males at Level 1 are also expected to decline but to a lesser extent than females, with 14.7 per cent in 2013 declining to 13.4 per cent in 2020. Overall, by 2020, it is expected that women will see substantial improvement in the low qualifications group, with only 14.9 per cent qualified at this level. This represents an improvement of 8.6 percentage points over the decade (23.5 per cent in 2013). There is expected to be a less marked improvement for men, with 19 per cent qualified at this level by 2020. This represents an improvement of 4.2 percentage points over the decade (23.2 per cent in 2013).

The UK's international comparative qualification performance

2.5 Introduction

There is clear evidence that the skills available in the labour force help to determine how countries fare in the global marketplace. As products and processes become more complex, the requirement for workers with a higher level of knowledge and skills grows. Increasing attainment levels in the population lead to increased earnings for individuals, contributing to national growth and prosperity. For example, analysis conducted by the OECD[12] suggests that more than one half of the GDP growth in OECD countries over the past decade is related to earnings growth among individuals educated to a tertiary level. The contribution of high skilled individuals in the UK is estimated to be significantly higher than the OECD average. From this point of view it is valuable not only to assess current performance but also to understand what future performance may look like, based on an extrapolation of recent trends. The picture is not static: we know that competitor economies, including emerging nations, are making rapid progress in developing the skills of their people.

The following analysis is based on an International Skills Model, which projects the educational attainment of the adult working-age population (aged 25-64) in OECD countries, distinguishing between: *Low skills* (Below Upper Secondary), *Intermediate skills* (Upper Secondary), and *Higher skills* (Tertiary). In a UK context these levels correspond broadly with below Level 2 (*Low)*, Level 2-3 (*Intermediate*), and Level 4 and above (*High*)[13].

The model uses OECD data for the 10 years from 2003 to 2012, to identify trends in changes in educational attainment for the countries for which data are available[14]. The model uses historical trends to generate stylised international education level projections to 2020[15].

[12] OECD (2013), *Education at a Glance 2013: Highlights*, OECD Publishing. DOI :10.1787/eag_highlights-2013-en

[13] It should be noted that while there is likely to be considerable overlap, at least for the UK, the match is still unlikely to be perfect and, in addition, there are numerous problems with regard to consistency in such international comparisons. See the technical report for further details.

[14] Further details are provided in Appendix A.

[15] The methodology is set out in Bosworth, D.L. (2015). *International Skills Model: Technical Report*, 2015. IER. University of Warwick.

To provide consistency with the approach used in the *Ambition 2020* analyses of 2009 and 2010 and with Bosworth (2012 and 2014) we have included data from the main time series model for the UK and nations outlined in Section 2 above, rather than the simple time series for the UK based upon the OECD results[16].

The projections provide a starting point for assessing whether the likely trajectories indicate that the UK's comparative international adult skills position will improve or deteriorate over the projection period.

Countries are ranked according to their most recent position[17] and in 2020 in terms of:

- The proportion of *Low skills* (lowest to highest)
- The proportion of *Intermediate skills* (highest to lowest); and
- The proportion of *High skills* (highest to lowest).

In general, given that productivity and earnings are positively linked to educational attainment, there is a general tendency to think in terms of a small proportion of *Low skills* (relative to *Intermediate* and *High skills*) and large proportion of *High skills* (relative to *Low* and *Intermediate skills*) as being "good". For simplicity, this is the interpretation adopted below. In practice, whether changes in the three proportions should be said to be "good" or "bad" may depend on the different countries' strategies for growth and other dimensions of well-being, which may require a more complex outcome in terms of the proportions of individuals at different education levels.

As is clear from the following analysis, relatively small differences in proportions (per cent qualified) can have a major impact on a country's ranking against any of the three indicators.

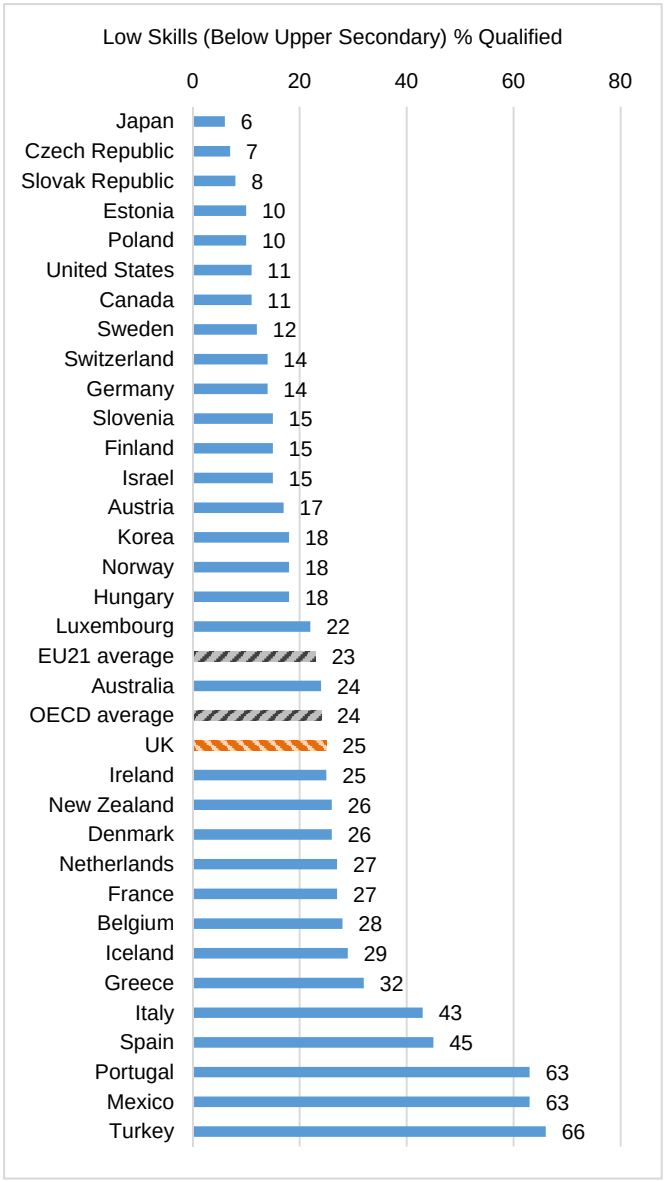
2.6 Current levels of qualifications and recent progress

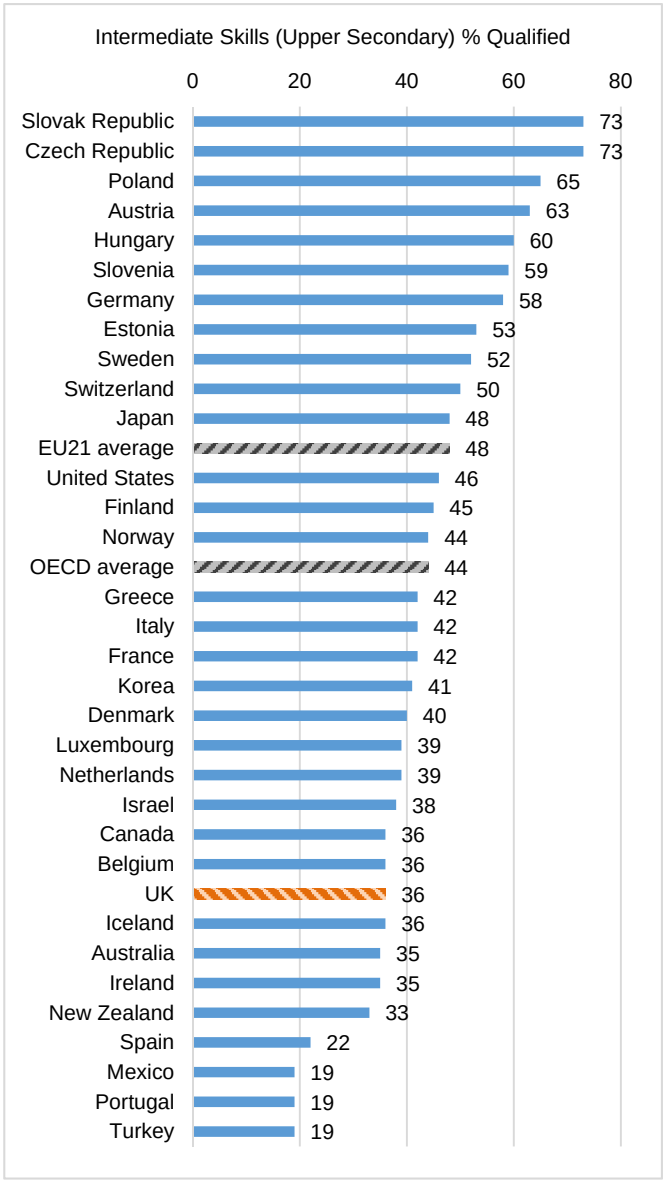
This section discusses the UK's current position, based upon the most recent data – see Figure 3– and discusses how this differs from the then current position reported in Bosworth (2014).

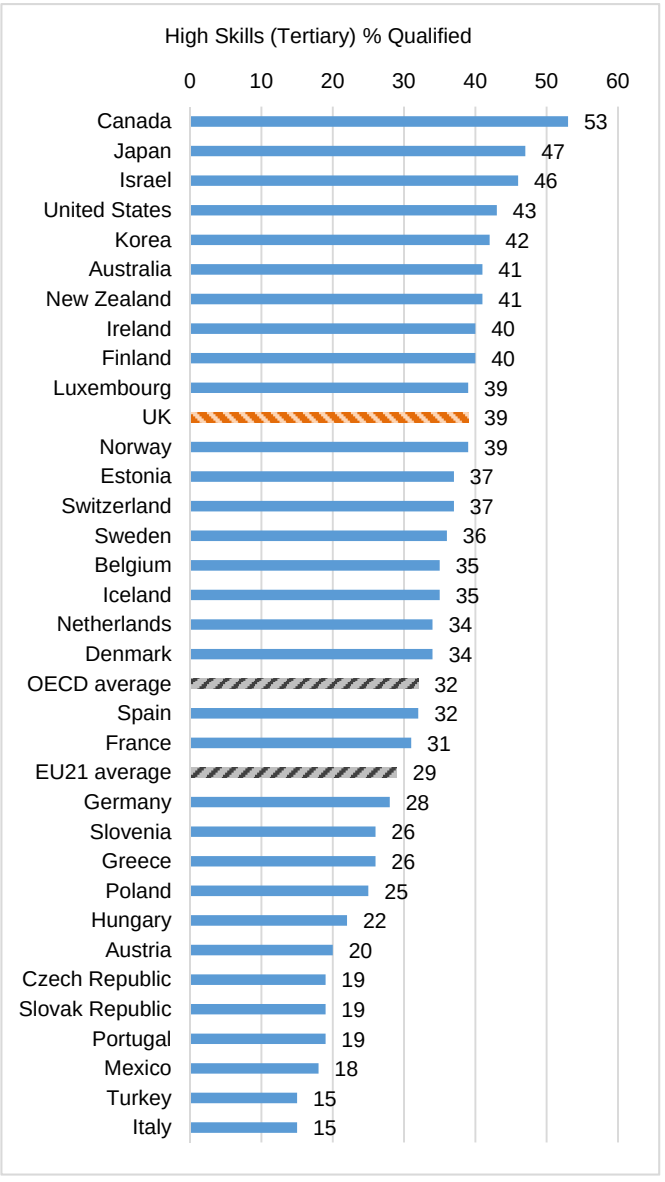
[16] Note, however, that the results discussed here differ from those in Section 2 insofar as they relate to individuals aged 25-64, rather than 19-64 as previously, in order to correspond with the age coverage of the OECD data.

[17] Data for the UK are taken from the main time series model which draw on Labour Force Survey data for 2013 for the projections; data for 2012 are used for comparative purposes in the current international skills position table (Table 5). Data for the other 32 countries is taken from OECD data for the period up to and including 2012. The data are for 25-64 year olds and, hence, are not directly comparable with the earlier tables.

Figure 3: Current international skills position

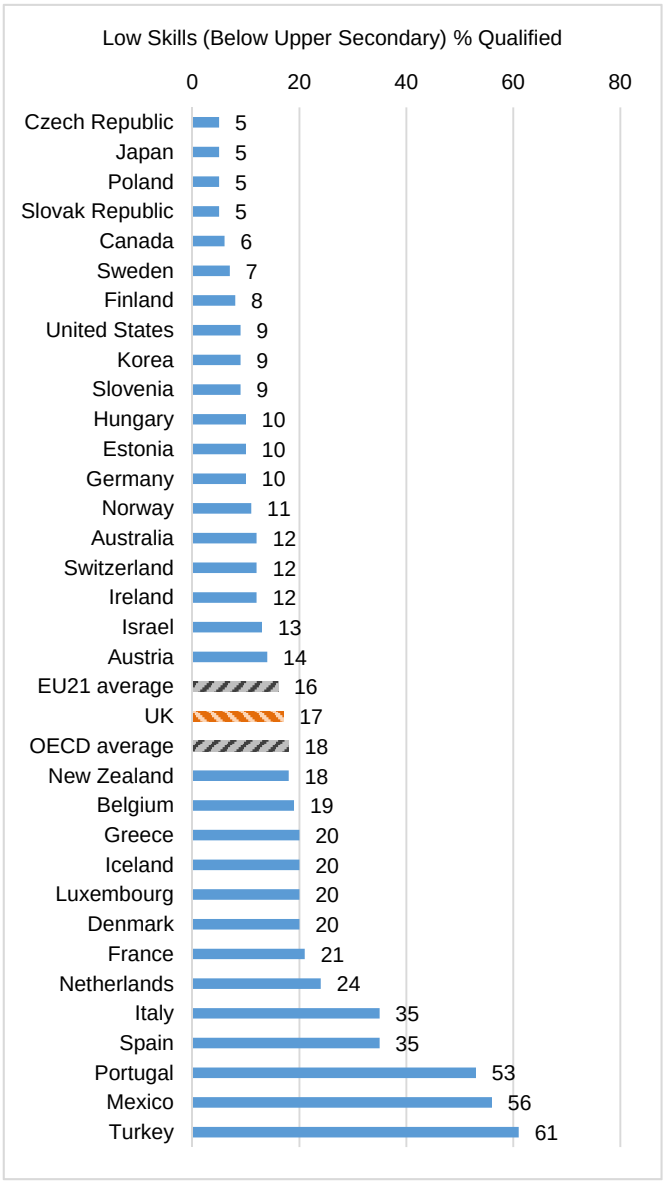


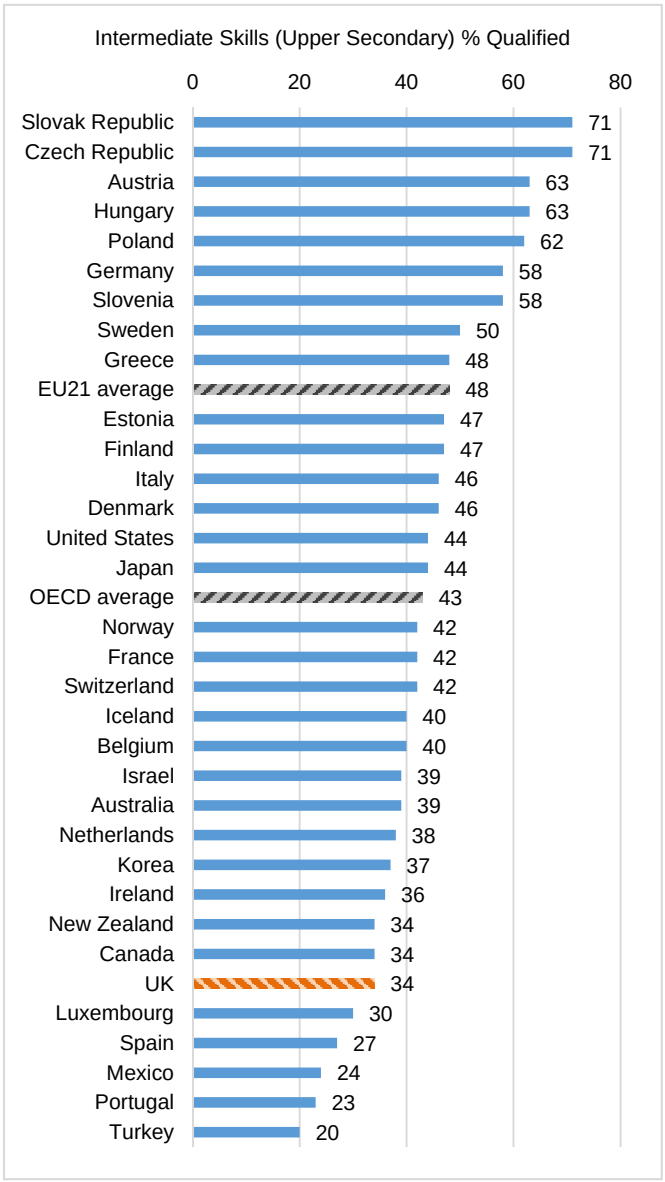


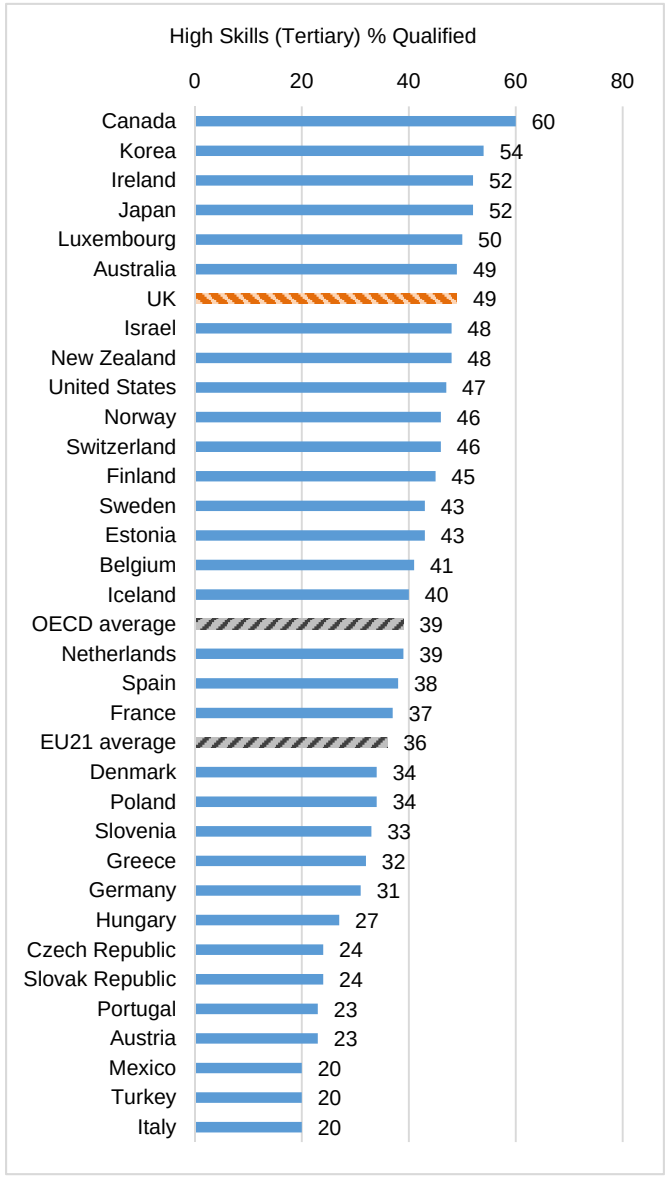


Source: OECD Education Database and Labour Force Survey, ONS. Distribution of the 25–64 year old population by highest level of education attained. Excludes Chile.

Figure 4: International skills projections 2020







Source: UKCES projections based on OECD Education Database and Labour Force Survey, ONS Distribution of the 25–64 year old population by highest level of education attained. Excludes Chile.

For *Low skills* (Below Upper Secondary level) the UK is currently ranked 20th (i.e. there are 19 out of the 32 other countries with lower proportions qualified at this level). 25 per cent of the adult population are qualified at this level. This places the UK in the third quartile of nations and underperforming relative to the averages for both the OECD and EU. This ranking of 20th is one place lower than the 2014 report, with Australia and Luxembourg overtaking the UK, and Denmark slipping behind.

36 per cent of the UK's adult population are currently qualified at *Intermediate* level (Upper Secondary), giving a ranking of 25th out of 32 OECD nations. This represents a decline of one place over the position in the 2014 report, leaving the UK well below both the OECD and EU averages. The proportion qualified at this level in the UK also fell by one percentage point. Over this period Belgium and Israel have overtaken the UK (moving from 25th to 24th and 26th to 22nd respectively), whilst Iceland has fallen below the UK in the ranking (moving from 23rd to 26th place).

Finally, in terms of the change in ranking for *High skills*, the UK has maintained its position of 11th, with Luxembourg overtaking the UK whilst Norway has slipped behind. The UK is placed well ahead of the averages for the OECD and EU in respect of this indicator.

2.7 Projections of attainment in 2020 (and beyond)

The UK is not expected to see an improvement in its poor relative performance on *Low skills* in the period to 2020, based on current trends. Although the proportion qualified below upper secondary level is projected to fall from 25 per cent to 17 per cent (compare Figure 3 and Figure 4) this would have no impact on the ranking of 20th because of projected improvements by other nations. The projections indicate that Ireland will overtake the UK in the period to 2020, whilst Luxembourg will be overtaken by the UK.

More positively, this still represents an improvement compared with the results of the 2014 report (Bosworth, 2014), which indicated that the UK could expect to be ranked in 22nd place. The projected estimate that 17 per cent of the adult population will be qualified at this level by 2020 is a slight improvement on the 18 per cent estimate in the previous report.

The proportion qualified at *Intermediate* level (Upper Secondary) is projected to decline slightly (from 36 per cent to 34 per cent) in the period to 2020, resulting in a decline in the UK's ranking from 25th to 28th out of 32 OECD nations. The UK is projected to be overtaken by Ireland, Australia, Iceland and New Zealand, whilst Luxembourg is expected to slip behind the UK in the period to 2020. For the projections of *Intermediate* attainment, there is no change in the proportion or ranking from the 2014 results.

Conversely, the proportion of the UK's adult population qualified at the *Higher* (Tertiary) level is the only one of the three levels that is projected to see an increase in its share of the adult population between 2013 and 2020, with a significant increase from 39 per cent to 49 per cent. This improves the UK's international ranking by four places, from 11th to 7th, as it overtakes Finland, New Zealand, the United States and Israel.

Compared to the 2014 report, there is no change in the projected ranking for *Higher* (Tertiary) level, despite a slight increase in the proportion of the adult population qualified at this level, (49 per cent by 2020 compared with 48 per cent predicted by the prior projections).

3 Conclusions

Principal projections

The focus of the present report has been on the levels of skills as proxied by formal qualifications, both historically and in terms of projections to 2020.

The trends in qualifications over the 10 years to 2013 have been strongly in favour of the higher qualification levels (Level 4 and above) and away from the lowest qualification levels (less than Level 2). The number of individuals with Level 4+ rose by nearly 4.9 million (a 10.7 percentage point rise) while those below Level 2 fell by over 3 million (a 10.7 percentage point reduction).

For the period to 2020 this broad pattern is projected to continue but with a slowing in the rate of change for the below Level 2. Over the period 2013 to 2020, the proportion of the adult population qualified to Level 4+ is projected to rise from 37.5 to 46.9 per cent (a nine percentage point increase over an eight year period, associated with an additional four million individuals). Over the same period, the proportion below Level 2 is projected to fall from 23.4 to 16.9 per cent (a six percentage point fall, associated with about 2.3 million fewer people at this level).

It should be borne in mind that these are linear projections which indicate what is likely to happen if recent trends continue into the future. Previous reports have shown that, as the 10 year historical period has been moved over the sequence of projections made for the UK Commission, the positive effect on the highly qualified has increased over time, with the proportion at this level expected to increase to nearly half of the population. For the least skilled, more recent projections indicate that the proportion of individuals at this level will fall to the lowest level since the forecasting work began.

Gender

With regard to gender, there are important gender differences both in the projected changes and in the levels, both in 2013 and 2022. Females start with a higher proportion of Level 4+ in 2013 than males (39.1 per cent compared with 35.8 per cent) and are projected to have a larger increase at this level (10 percentage points compared with 8.8 points). While females start from a slightly higher percentage of below Level 2 (23.5 per cent in 2013) compared with males (23.2 per cent), they have a much larger projected decline (8.6 points compared with 4.2 percentage points), which results in a much lower proportion of women at this level than men by 2020 (14.9 per cent compared with 19 per cent).

The UK's international comparative qualification performance

The UK displays a mixed picture in terms of its current international performance on qualification attainment. Its strongest relative performance is in respect of *High skills* but it sits well down the rankings for *Low skills* and *Intermediate skills* attainment.

In terms of *Low skills*, the UK is currently ranked 20th (i.e. there were 19 other countries in the OECD with a smaller proportion of people qualified at this level), but is projected to remain 20th by 2020, in spite of a reduction in the proportion of the population qualified at this level.

With respect to *Intermediate skills,* attainment the UK is ranked 25th currently and is projected to fall to 28th place by 2020.

Finally, the UK's ranking in terms of the proportion of individuals with *High level* qualifications improves in the period to 2020, moving from 11th to 7th. This results from a substantial increase in the proportion of the population qualified at this level of 10 percentage points.

What the present analysis cannot show is where each country actually will be by 2020 or 2025. The changes in rank are relatively small for the UK, unlike those of a number of other countries. It seems unlikely that a number of the countries showing deteriorations in their rankings will not react to address the adverse movements, although the costs involved in reducing the proportion of low skilled adults in the population, for example, can prove considerable.

There are also significant challenges involved in ensuring that increases in the aggregate supply of skills reflect the needs of national economies i.e. that the qualifications and skills acquired by individuals are economically valuable and are used in the workplace. The concerns that this issue raises are reflected in a series of current debates around the under-utilisation of graduates in the workplace, trends in the earnings of the higher qualified and the emergence of skills shortages for high skilled roles.

Appendix A: The models used to project the profile of qualifications

A.1 Introduction

The present Report mainly draws upon two models of qualifications supply:

- the main UK "time series" qualifications model[18];

and

- The international time series education model[19].

The present discussion provides a brief introduction to the two models used directly in the present Report.

A.2 Main "time series" qualifications model

This model focuses on **projecting the qualification distribution across all adults in the UK population through to the year 2020** (and to 2025). It is a linear time series model, which was developed by HM Treasury for the Leitch Review of long term skills needs[20]. This model uses historical Labour Force Survey (LFS) data, broken down by gender and year of age (currently for those aged 16 to 69) for six qualification levels[21]. Individuals are allocated to a particular qualification level mainly according to the highest qualification they hold (but, in some cases, individuals with more than one qualification are allocated to a higher group). The detailed procedures used to estimate the proportion of the population qualified at different levels using LFS data are set out in the technical report for the main time series model.

Thus, as an example, the model projects the proportion of males aged 16 that have no qualifications, using the trends in such males over the period 2004 to 2013. It repeats this exercise for males of each age, from 16 to 69, and for each qualification level (no qualifications, RQF1, RQF2, RQF3, RQF4-6 and RQF7-8). It then repeats this exercise for females and for males and females combined. The expectation is that the weighted sum of

[18] Bosworth, D.L. (2012). *UK Qualifications Projections – "Time Series" Model.* Technical Report. (draft available from the author).

[19] Bosworth, D.L. (2012). *International Education Model, 2012. Technical Report.* January. (draft available from the author).

[20] *Prosperity for all in the Global Economy - World Class Skills*. (see fn. 1).

[21] Qualification and Credit Framework levels RQF1, RQF2, RQF3, RQF4-6 and RQF7-8, plus those with no qualifications. See Annex A.

the projections for males and females should take a similar value to the projections for all individuals combined.

Various constraints are placed on the projections, for example, that:

- qualification proportions always sum to 100;
- qualification numbers always sum to the ONS 2012-based population projections across the different levels of the RQF.
- each qualification proportion always lies between 0 and 100;
- the proportion of those with no qualifications and RQF1 each have a lower limit of five per cent.

There are several "special groups" that form a focus within the modelling process, in particular:

- those retiring and moving outside the labour force;
- migrants and, in particular, the net difference in qualifications between immigrants and emigrants.

The retirement group is both interesting and challenging in terms of the modelling process. Prior to 2008, the LFS did not collect qualifications data from individuals over "retirement age" if they are not in employment and an attempt was made to model the 60 to 69 year old qualifications using patterns derived from 50 to 59 year olds (females) or 55 to 64 year olds (males). However, a sufficient time series is now beginning to emerge to carry out time series modelling of the 60-69 year olds, but is should be borne in mind that only six years of data were available at the time of making the present estimates. Hence, some degree of caution is required when interpreting the results for this group.

The effects of migration became a major issue over the last 20 years or so and even more so in the last year. The work attempts to model immigrant and emigrant groups separately from the main, non-migratory population of the UK. Immigrants are proxied by the group of individuals in the LFS who were not resident in the UK one year earlier. There are at least two major problems with this group: first, while immigrant numbers can be quite large (e.g. circa 600,000), sample sizes in the LFS are quite small when broken down by gender, year of age and qualification level; second, foreign qualifications are allocated to qualification levels using a "rule-of-thumb", based upon some fairly old General Household Survey data[22]. Similarly, there is no direct survey information for the emigrant group in the LFS, so the

[22] Foreign qualifications questions are reported to have been introduced in the LFS, 2011 (LFS Guide Book, 2011). However, only one of these appears in the LFS data set, and is inadequate for the purposes of modelling.

assumption is made that this group has the same qualifications mix as the population as a whole.

Thus, the main time series qualification model proceeds by subtracting out cumulative net migration from the UK population as a whole, before dealing separately with the qualifications of all immigrants, all emigrants and the non-migratory population. The historical trends in qualification mix for those not resident in the UK one year ago and for the UK population as a whole (proxying both the emigrant and non-migratory groups) are separately projected forward to 2020 (and 2025). These are translated into numbers of immigrants, emigrants and non-migrants, by level of qualification, from which the net migration numbers can be isolated by level of qualification. Net migration by qualification (year of age and gender) are then cumulated and added back to the projections of the non-migrant population. All figures are constrained to sum to the ONS 2012-based projections.

A.3 International time series educational model

The international time series model takes the data from the OECD Education Database (formerly Education at a Glance)[23] as the principal input. These data are the proportions of the population aged 25 to 64 with educational attainments at *Low* (Below Upper Secondary), *Intermediate* (Upper Secondary) and *High (*Tertiary) levels.[24] The data were revised to give a much more consistent historical series a couple of years ago; since then, however, a small number of problems appear to have crept back in.

The modelling simply takes the most recent 10 years of data (at the time the modelling was carried out, this was 2003 to 2012) and fits linear trends which are then used to project forward the proportions of individuals at the three education levels through to 2020 and beyond. All projections are constrained so they sum to 100 for each country. The UK projections, however, are from the model described in A.2 above, reporting only the 25-64 year old results.

[23] http://www.oecd.org/document/2/0,3746,en_2649_39263238_48634114_1_1_1_1,00.html
[24] These levels correspond broadly with below RQF2, RQF2-3 and RQF4 and above respectively. However, while there is likely to be considerable overlap, at least for the UK, the match is still unlikely to be perfect and, in addition, there are numerous problems with regard to consistency in such international comparisons.

A number of countries pose particular problems; for example, Japan does not distinguish the separate results for *Low* and *Intermediate* levels (i.e. they only report the combined *results for Below Upper Secondary / Upper Secondary* alongside the *Tertiary* group). The combined groups are separated using increasingly out-of-date information – so Japan's results, other than the Tertiary group should be treated with caution. A number of countries do not have complete time series data for the historic period. For example, an extreme case is Chile, which first participated in the Education Database in 2009 and only provided three years of data. Chile will be included in the analysis once sufficient observations are available to make sensible projections. Other decisions on inclusion and exclusion are more difficult. As a rule of thumb, as many countries as possible have been included, even if this means adjustments to the historical data have to be made or somewhat shorter historical periods of data have to be utilised.

Annex A: Qualification levels

Level	Regulated Qualifications Framework (RQF) Examples	Framework for Higher Education Qualifications (FHEQ) Examples
Entry	• Entry level certificate • Entry level Skills for Life • Entry level award, certificate and diploma • Entry level Functional Skills • Entry level Foundation Learning	
1	• 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 • OCR National	
2	• 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	

3	• 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 • OCR National • Cambridge National	
4	• Certificate of higher education • Key Skills level 4 • NVQ level 4 • BTEC Professional award, certificate and diploma level 4	• Certificate of higher education • HNC
5	• HND • NVQ level 4 • Higher diploma • BTEC Professional award, certificate and diploma level 5 • HNC • HND	• Diploma of higher education • Diploma of further education • Foundation degree • HND
6	• NVQ level 4	• Bachelor's degree

	• BTEC Advanced Professional award, certificate and diploma level 6	• Graduate certificate • Graduate diploma
7	• 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	• Master's degree • Postgraduate certificate • Postgraduate diploma
8	• NVQs level 5 • Vocational qualifications level 8	• Doctorate

A separate qualification framework applies to Scotland. Details of the Scottish Credit and Qualifications Framework (SCQF) can be found at: http://www.scqf.org.uk/

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UKCES
Renaissance House
Adwick Park
Wath-upon-Dearne
Rotherham
S63 5NB
T +44 (0)1709 774 800
F +44 (0)1709 774 801

UKCES
Sanctuary Buildings
Great Smith St.
Westminster
London
SW1P 3BT
T +44 (0)20 7227 7800

This document is available at
www.gov.uk/ukces

ISBN 978-1-908418-71-5