Making Business Sense

PRODUCTIVITY MATTERS:

THE IMPACT OF APPRENTICESHIPS ON THE UK ECONOMY

March 2013

Contents

Foreword from David Way, Chief Executive, National Apprenticeship Service.....3

1. Executive summary.....4
2. Introduction.....6
3. Current Apprenticeship impacts on wages and productivity.....8
3.1 Apprenticeship completions and wages.....8
3.2 Apprenticeship completions and productivity.....10
4. Forecast Apprenticeship impacts on wages and productivity.....14
4.1 Forecast Apprenticeship completions.....14
4.2 Forecast Apprenticeship completions and wages.....17
4.3 Forecast Apprenticeship completions and productivity.....18
5. Scenario analysis: Apprenticeship provision by businesses.....21
5.1 Main findings.....21
5.2 Estimation procedure.....22
6. Scenario analysis: Apprenticeships desired by young people.....24
6.1 Main findings.....24
6.2 Estimation procedure.....25
7. English Apprenticeships in an international context.....26
7.1 The prevalence of Apprenticeships in England and abroad.....26
7.2 The gender distribution of Apprenticeships in England and abroad.....28
7.3 Apprenticeship completion rates in England and abroad.....29
7.4 Success in international WorldSkills competitions and its relation to Apprenticeships.....30
8. Authorship, acknowledgements and disclaimer.....32
Authorship and acknowledgements.....32
Disclaimer.....32
9. Bibliography.....33

Foreword

Apprenticeships are thriving and already making a huge impact on the productivity of businesses around the country, improving business efficiency, boosting the UK economy and supporting young people's employment prospects. In 2011-12, over 500,000 people started an Apprenticeship. No longer the preserve of only skilled manual trades, Apprenticeships cover more than 280 industry occupations and 1,500 job roles, from advertising to youth work via environmental engineering and nuclear decommissioning. Increasingly, Apprenticeships are becoming available which will take apprentices up to degree level.

The 100,000 businesses which already employ apprentices are well aware of the benefits that Apprenticeships bring, enabling them to grow their own talent and develop a motivated, skilled and qualified workforce.

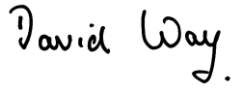
In *Productivity Matters: The impact of Apprenticeships on the UK economy*, the Centre for Economics and Businesses Research (Cebr) confirm and quantify these benefits, setting out in monetary terms the valuable productivity gains which businesses and the wider economy receive due to Apprenticeships, as well as the benefits to apprentices themselves.

Apprenticeships will contribute much more to the economy over the next decade. Between 2012-13 and 2021-22, the Cebr predicts that 3.8 million people will have completed an Apprenticeship, contributing £3.4 billion to the UK economy in net productivity gains by 2022. This is equivalent to 0.2 per cent of the forecast Gross Domestic Product (GDP) for that year.

This report shows that Apprenticeships are boosting productivity by enabling businesses to grow their skills base. The average person completing an Apprenticeship increases business productivity by £214 per week, with these gains translating to increased profits, lower prices, better products and higher wages.

This report also underlines the fact that Apprenticeships are a vital and increasingly popular way for young people to earn while they learn in a job, gaining the skills that employers value. They help to create a strong and growing economy, while improving the prospects and earning potential of millions of employees.

In short, this report confirms what employers and apprentices tell us. Apprenticeships are great for business and a brilliant choice for young people as they begin their working lives.



David Way

Chief Executive, National Apprenticeship Service

1. Executive summary

This report presents Cebr's analysis of the contribution of English Apprenticeships to the UK economy, examining current trends and future developments.[1] The report draws on official data in addition to Cebr's economic models and forecasts.

Our main focus is on estimating the productivity impact of Apprenticeships. Productivity is a measure of output per worker, capturing the value which the average worker adds to the output of goods and services through their labour.

Productivity is defined as the difference between the pound value of the good or service produced per worker and the cost of the inputs which go into producing that good or service. Consequently, this report's productivity impacts reflect the increase in output per worker, measured in pound terms, arising from a worker completing an Apprenticeship.[2]

The key findings are:

- In 2021/22, forecast English Apprenticeship completions between 2012/13 and 2021/22 are expected to contribute £3.4 billion of net productivity gains to the UK economy, in real terms. In 2021/22, this net productivity gain will occur due to the cumulative increase in Apprenticeship-related skills up to and including this point. This is measured in 2012 prices and takes into account the cost of training Apprentices.
- In 2012/13, gaining an Apprenticeship raised an employee's gross productivity by £214 per week on average. This varies by sector e.g. it raises worker productivity by £414 in engineering & manufacturing and £114 in healthcare, public services & care.

A portion of the productivity gains from Apprenticeships is passed on to workers as higher wages. The remainder will go to employers as increased profits or will be passed on to customers as lower prices or better products:

- In 2012/13, a worker who had completed an Apprenticeship received a gross weekly wage of £523 compared to £476 for a worker without an Apprenticeship. Hence, Apprenticeship completers' wages are on average 10% higher than non-completers'.[3]

[1] The Department for Education and the Department for Business, Innovation and Skills (BIS) share joint responsibility for the Apprenticeship programme in England.

[2] See Freeman, 2008, *Labour productivity indicators*, OECD. This paper, which provides Cebr's definition of productivity used in this report, also provides the definition used by the Organisation for Economic Cooperation and Development (OECD).

[3] This estimate measures the wage difference between Apprenticeship completers and non-completers across the entire economy. It does not capture the impact of Apprenticeship completion on wages, otherwise known as the wage *premium*, because it does not control for other variables (such as age, gender or industry) and does not account for how people self-select into Apprenticeships.

The potential for Apprenticeships to contribute more to the economy are significant:

- If the recent rate of increase in Apprenticeships continues, between 2012/13 and 2021/22, 3.8 million Apprenticeship completions could take place in England, rising from an annual 260,000 in 2012/13 to 480,000 by 2021/22.[4]
- If the UK's 36,200 businesses with 50 or more employees each provided an Apprenticeship to a young person, aged 18-24, commencing in 2013, this would:
    1. create up to 11,800 new jobs for young people;[5]
    2. lower the youth unemployment rate from 19.2% to 18.9%; and
    3. raise total weekly youth wages from £744 million to £748 million.
- Based on survey data, Cebr estimates that 714,000 young people across the UK would like an Apprenticeship if one were available. Cebr estimates that if 714,000 young people were to each commence an Apprenticeship in 2013, this would:
    1. bring about up to 233,000 additional jobs for young people;
    2. lower the youth unemployment rate from 19.2% to 13.6%; and
    3. raise total weekly youth wages from £744 million to £795 million.

The above job creation estimates (11,800 and 233,000 jobs respectively) do not account for labour market displacement effects. The analysis does factor in the possibility that the provision of an extra Apprenticeship could drive any employed person who has not received an Apprenticeship out of employment or into another job.

This report also seeks to set Apprenticeship prevalence in England into an international context:

- Secondary school and pre-university level Apprenticeships are held by 21% of English adults as their highest qualification.
- As a highest qualification, these Apprenticeships are less prevalent in England than in comparable developed countries. Similar qualifications are held by 30% of adults in comparable advanced economies.
- In England, 50% of Apprenticeships at this level are held by men. In the typical comparable country, 55% are held by men.

[4] Uncertainty surrounds our Apprenticeship completions forecasts over a 10-year horizon. They rely on the assumptions regarding: the future development of the economy; the Apprenticeship programme funding structure; and employer behaviour. These assumptions inform our best estimate of how the number of annual Apprenticeship completions will develop. These Cebr forecasts do not entail any commitment on the part of public and/or private sector bodies regarding future Apprenticeship completion numbers.

[5] The 36,200 Apprenticeships generate fewer jobs, only 11,800. This is because most of the Apprenticeships will go to people who are already employed. In some cases where an Apprenticeship has been given to an employed person, the labour market effects this brings about will pull an unemployed person into employment. This is fully explained in subsection 5.2.

2. Introduction

The number of people completing Apprenticeship programmes in England each year has risen sharply since the financial crisis, from approximately 110,000 in 2007/08 to over 260,000 in 2012/13.[6] The UK economic climate is challenging, with an unemployment rate of 7.8% over the three months to December 2012 and growth of just 0.7% expected over 2013 as a whole.[7] Previous research has found that Apprenticeships can support the economy by increasing productivity and concomitantly employee wages.[8] Given the difficult economic environment, this Cebr report examines the current and future potential contributions of English Apprenticeships to the UK economy, using the latest available Office for National Statistics (ONS) *Labour Force Survey* (Q3 2012) data to build on previous research. Overall, we found that Apprenticeships have the potential to (i) contribute productivity gains across the economy and (ii) support wages and living standards.

The UK Government has administered an Apprenticeship programme in England, available to those aged 16 or older, since 1994. The Department for Education and the Department for Business, Innovation and Skills (BIS) share joint responsibility for the programme.[9] Separate programmes operate in Scotland and Wales, operated by the devolved administrations. We do not focus on these in this report.

Under the programme in England, an individual's Apprenticeship is defined as a period of paid work, usually lasting at least one year, in a given occupation while training toward a package of related vocational qualifications and job-specific skills. Apprenticeships are geared toward providing participants with employment and congruent skills development; participants may stay on with their employer after the programme is completed.

Apprenticeships are divided into different frameworks; each framework relates to a particular economic sector and has been developed in conjunction with business leaders. There are 250 different Apprenticeship frameworks available. Currently, Apprenticeships relate to over 1,400 specific job-roles in sectors as diverse as engineering, retail and business administration.[10] Each Apprenticeship is tailored to a specific occupation and contains three core components:

- Competency: this assesses how well the Apprentice performs in a specific occupation, leading to a vocational qualification (such as an NVQ);
- Knowledge: this covers the theoretical knowledge required in the apprentice's occupation, leading to a knowledge-based qualification such as a foundation degree;

[6] This is a Cebr estimate.
[7] Cebr forecast for the UK economy, January 2013; the Office for Budget Responsibility expects 1.2% growth
[8] BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships;* BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper*; and City and Guilds, 2012, *The economic value of Apprenticeships.*
[9] BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships* and http://www.Apprenticeships.org.uk/Be-An-Apprentice/Other-Questions/FAQDetails1.aspx
[10] *Ibid*

- Key skills: training in core functional skills such as mathematics and English.[11]

Training toward Apprenticeship qualifications is: (i) mainly provided by private businesses and further education colleges; and (ii) supported by government funding. Government funding for the Apprenticeship programme rose from about £800 million in 2006/07 to £1.2 billion in 2010/11.[12] The Government plans to increase Apprenticeship funding in England to £1.5 billion in 2012/13.[13]

Apprenticeships are available at different levels which become steadily more advanced in terms of their work-based learning and academic components. Apprenticeships tend to last between one and four years, usually of longer duration the higher the level. [14]

- Intermediate (Level 2) Apprenticeships cover work-based learning qualifications, such as Functional Skills and a Level 2 Competence Qualification. They also include paid work and a sectoral knowledge-based qualification. In certain sectors (for example, in retail), the knowledge-based and competency qualifications may be gained as a single, integrated qualification.
- Advanced (Level 3) Apprenticeships include paid employment, more advanced work-based learning qualifications and a sectoral knowledge-based qualification. English and mathematics Level 2 qualifications are also covered for those who have not already achieved them.
- Higher (Level 4) Apprenticeships include paid work, even more advanced work-based qualifications, such as a Level 4 Competence Qualification, and a sector-specific knowledge-based qualification. In some cases, the knowledge-based qualification of a Level 4 Apprenticeship is a foundation degree.
- New Level 6 and 7 professional Apprenticeships were announced in late 2012. These Apprenticeships will be equivalent to bachelors and masters degrees respectively and will be offered in subjects such as law, accountancy and advanced engineering as of 2013.[15]

Overall, this report finds that completing an Apprenticeship raises productivity in different sectors and across the entire economy.[16] As such, Apprenticeships are associated with increased wages across sectors, age groups and at different levels of education. The productivity benefits are forecast to become more pronounced in the future, assuming the Apprenticeship programme continues to grow. Our findings suggest that the Apprenticeship programme is achieving its ambition of "improving business performance and hence economic growth by increasing the skills of the workforce". [17]

---

[11] *Ibid*

[12] BIS, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships*, Figure 2

[13] David Way, Chief Executive, National Apprenticeship Service, April 2012, "Business Plan 2012-13"

[14] http://www.Apprenticeships.org.uk/Parents/Levels-of-Apprenticeships.aspx

[15] BIS, Dec 2012, Press Release: "Graduate Apprenticeships for the professions introduced

[16] Productivity is defined as a measure of output per worker, capturing the value which workers add to goods and services through their labour. This report's gross productivity impacts capture the increase in output per worker arising from a worker completing an Apprenticeship. See Freeman, 2008, *Labour productivity indicators*, OECD. Freeman's definition of productivity is used by Cebr in this report and by the Organisation for Economic Cooperation and Development,

[17] BIS, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships*

3. Current Apprenticeship impacts on wages and productivity

This section estimates the current 2012/13 wage differentials associated with Apprenticeship completion versus non-completion split by age, gender and educational attainment. It also estimates the current impact of Apprenticeship completions on productivity in different sectors of the economy. Ultimately, through their labour productivity impacts, Apprenticeship completions in England support the UK economy.

3.1 Apprenticeship completions and wages

A portion of the productivity gains from Apprenticeships is passed on to workers as higher wages. The remainder will go to employers as increased profits or will be passed on to customers as lower prices or better products. There may also be productivity enhancements captured by other workers (e.g. due to the sharing of knowledge) and by other employers (e.g. due to the mobility of labour).

This section compares the gross weekly wages of Apprenticeship completers (by age, gender and education level) to comparable workers who have not completed an Apprenticeship. This is an estimate of the wage *differential* between completers and non-completers. When contrasting, say, the wage of a female Apprenticeship completer to that of a "comparable" or "typical" worker without an Apprenticeship, this section would compare: (i) the average wage of people who are employed, female, and have completed an Apprenticeship (discounting any other factors) to (ii) the average wage of people who are employed, female, but have not completed an Apprenticeship (discounting any other factors).[18] So these "comparable" or "typical" workers are representative of all female workers without an Apprenticeship, but do not take into account any other characteristics, such as university-level qualifications held or other personal characteristics which may impact on earnings. This broad comparison would allow Cebr to identify the wage differential between Apprenticeship completers and non-completers across the entire female population.

We estimate wage differentials between Apprenticeship completers and non-completers, segmented by age, gender and education. Our model does not estimate the impact of completion of Apprenticeships on wages, otherwise known as the wage premium of an Apprenticeship, because it does not control fully for employees' education, ability, age or other characteristics. Consequently, self-selection by individuals into Apprenticeships is not controlled for. Overall, our analysis estimates the wage differential between completers of Apprenticeship completers and non-completers, not the causal impact, or premium, of Apprenticeship completion on wages. The wage differential estimates do not feed into the productivity analyses in the following sections.[19]

For the UK as a whole, the most recent ONS *Labour Force Survey* (Q3 2012) data show that young employees who have completed an Apprenticeship but have fewer than five good GCSEs (grades A* to C) have wages which are 19.1% higher than comparable workers without an Apprenticeship. A young female employee who has completed an Apprenticeship receives a wage which is 21.6% higher than a comparable worker who

[18] All results were drawn from the Office for National Statistics (ONS) – *Labour Force Survey (Q3 2012)*

[19] Productivity estimates are given in sub-sections 3.2 and 4.3.

has not completed an Apprenticeship. Finally, the ONS data show that the typical employee who has completed an Apprenticeship has a gross weekly wage which is 9.9% higher than one who has not. The last of these three wage differential estimates is quite similar to the wage premium implied by National Audit Office (NAO) research. A recent NAO paper implies that completing an Apprenticeship causally increases the wage of the average employee by 13.2%.[20] The NAO's wage *premia* estimates found that Advanced and Intermediate Apprenticeships were causally associated with 17.9% and 10.6% wage increases respectively across all Apprenticeship completers. For males the wage premia were 23.9% and 13.0% for Advanced and Intermediate Apprenticeships respectively.[21]

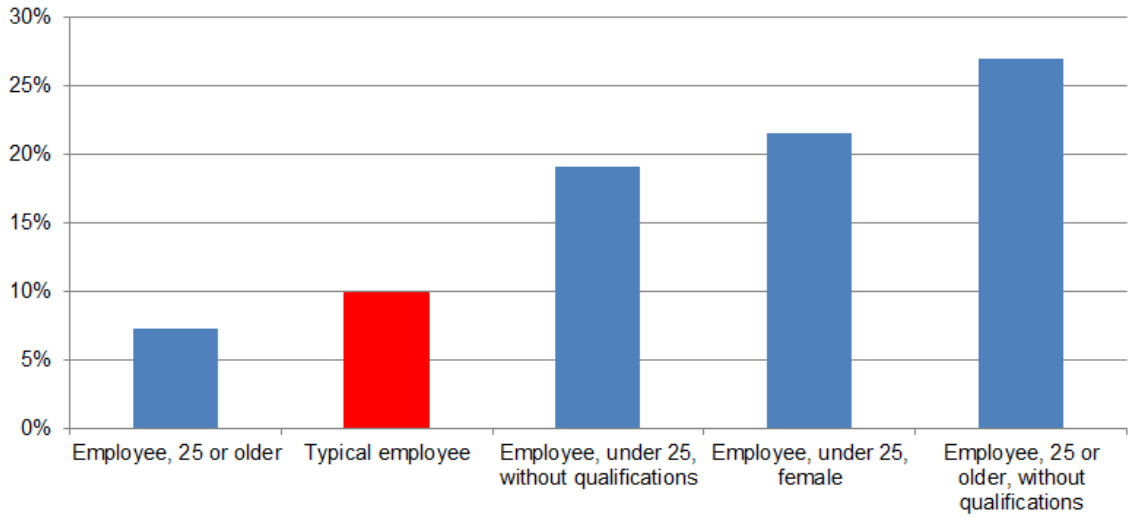
The differences between Cebr's Apprenticeship-related wage differential estimates and the NAO's wage premia estimates arise because of the different estimation procedures used. The NAO used regression analysis, which enabled it to identify the wage premium associated with Apprenticeship completion, having taken into account personal characteristic such as age, sector, workplace size and region. The analysis here estimates the differences between wages for employees with and without Apprenticeships. Unlike the NAO, we do not seek to quantify the causal impact of Apprenticeship completion on wages. As such, our wage differential estimates are built based on the simplifying assumption that wage differentials between workers with an Apprenticeship and workers without one result from the Apprenticeship alone, without fully accounting for other factors such as region, age or university education.

Cebr's findings for the wage differentials associated with Apprenticeship completions are presented in Figure 1. For different age, gender and educational attainment groups, Figure 1 compares the average pay of those with Apprenticeships to the average pay of those without Apprenticeships.

[20] BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships.* The paper showed that Advanced Apprenticeships were associated with an 18% wage premium over 2004-10; Intermediate Apprenticeships were associated with an 11% wage premium. January 2013 Statistical First Release data gave the proportion of Apprentices of these two types over 2004-10, enabling us to derive the implied overall NAO wage premium.

[21] BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper.* See Figures 1 and 2, pages 11 and 12. The paper's estimates are averages for the period 2004-2010. The paper's findings for all Apprenticeship completers and male completers were significant at the 1% level. Findings for female completers were not significant at the 10% level, so they have not been reported.

Figure 1: Difference between wages for those with and without Apprenticeship, by demographic and educational groups (percentage)



- "Without qualifications" means with fewer than 5 GCSEs (grades A to C) or O-Level equivalent.*
- Source: Office for National Statistics (ONS) – Labour Force Survey (Q3 2012), Cebr analysis
- Figure 1 shows the wage differential between Apprenticeship completers and non-completers, not the causal impact, or premium, of Apprenticeship completion on wages.

Figure 1 shows that the wage differential associated with Apprenticeship completion for younger employees is greater than for older employees. This is because older employees will typically have more job experience and may have more qualifications than younger employees, meaning that the wage of an older employee without an Apprenticeship is higher than the wage of a younger employee without an Apprenticeship. Therefore, the percentage wage differential is greater for younger employees.[22]

3.2 Apprenticeship completions and productivity

Different productivity increases are associated with Apprenticeships in different sectors. Taken together, these sectoral productivity gains have a small but appreciable impact on the economy as a whole.

Cebr quantified sector-specific productivity impacts using existing percentage estimates of how an Apprenticeship affects worker productivity in each sector given by Hasluck *et al* (2008).[23] This paper quantified productivity increases from Apprenticeships as percentages of the average wage of an "experienced" employee in each sector. Emulating the methodology of City & Guilds (Feb 2012), we then combined these two elements. Specifically, in any given sector, we multiplied (i) the percentage productivity

[22] *The ONS – Labour Force Survey (Q3 2012)* shows the gross weekly wage for a young worker without an Apprenticeship is £220; it is £506 for older workers without an Apprenticeship.
[23] Hasluck *et al*, 2008, *The net benefit to employer investment in Apprenticeship training,* Apprenticeship Ambassadors Network. Quoted in City & Guilds, Feb 2012, *The economic value of Apprenticeships.*

estimates arising from Apprenticeship completion[24] by (ii) the average wage of an "experienced" employee.[25] For any given sector this resulted in estimates of the impact which Apprenticeship completion has on worker productivity.[26]

The productivity gains, resulting from Apprenticeship completion, are stated in terms of experienced workers' wages. Note that these gains capture not only increases in Apprentices' *wages*, but they quantify the total *productivity* gain each Apprentice acquires. Some of these productivity gains are likely to result in higher wages for Apprenticeship completers, although estimating this is beyond the purview of our productivity model.

Once the sectoral productivity impacts were estimated, we then aggregated across sectors to derive the total gross productivity impacts. Net impacts (given in subsection 4.2) were derived by subtracting the direct and indirect costs of Apprenticeship provision.[27] All estimates are given in real 2012 prices. This method of estimating productivity impacts applies in subsections 3.2 and 4.3.

While Cebr's analysis employs the City & Guilds (Feb 2012) methodology, it is important to note that other papers employ different methods when estimating the productivity impacts of Apprenticeships. For example, BIS Research Paper Number 67 measures the productivity changes associated with Apprenticeships as "the capability to carry out a given proportion of the fully experienced worker's job at each point in their (the Apprentices') training".[28] It then assumes that the total increase in productivity resulting from an Apprenticeship is equal to twice the Apprentice's wage gain: the Apprentice receives half the productivity increase as higher wages and the employer receives half as increased profits.

In 2012/13, Cebr estimates that an Apprenticeship raises the productivity of a typical completer by:

(i) £83 per week in the retail sector;
(ii) £114 in the healthcare, public services and care sector;
(iii) £268 in the business, administration & legal sector;
(iv) £401 in the construction and planning sector; and
(v) £414 in the engineering and manufacturing sectors.

These sectors cover over four fifths of the UK economy and are expected to account for 86.9% of English Apprenticeship completers in 2012/13.

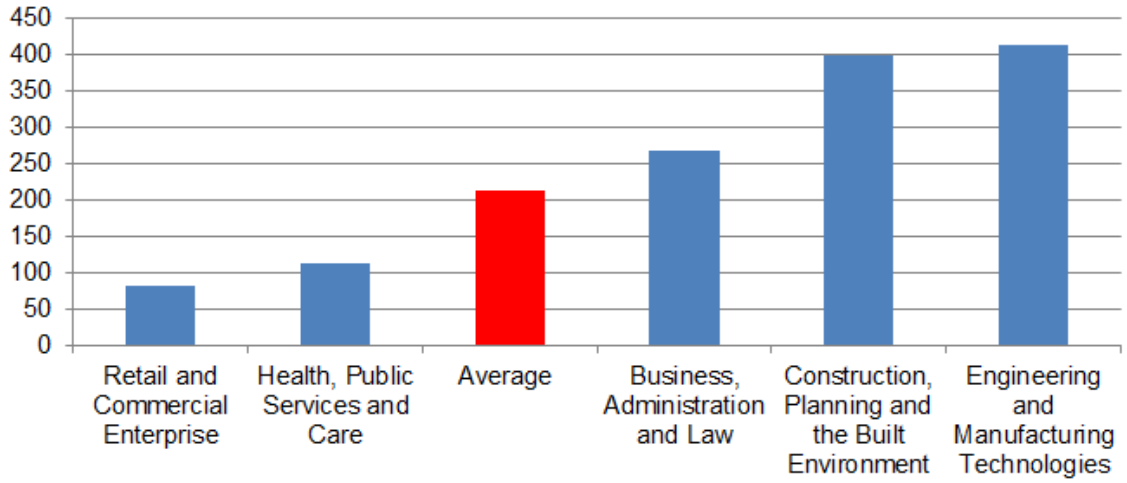
Across all sectors of the economy we calculate that, on average, an Apprenticeship raises the productivity of a typical completer by £214 per week in 2012/13.

---

[24] In City and Guilds (2012) drawing on Hasluck *et al* (2008).
[25] "Experienced" employee wage data were drawn from the *ONS – Labour Force Survey (Q3 2012).*
[26] Cebr defined an employee as being "experienced" if they had been continually employed for 10 years or more and earned over the mean wage in their sector. Wage data were drawn from the *ONS – Labour Force Survey (Q3 2012).*
[27] The direct and indirect costs of Apprenticeships are explained in subsections 4.1 and 4.3.
[28] Hogarth *et al*, 2012, *Employer Investment in Apprenticeships and Workplace Learning: The Fifth Net Benefits of Training to Employers Study*, BIS Research Paper 67

These productivity gains will be divided between: (i) employers, as higher profits; (ii) Apprenticeship completers, as higher wages; and (iii) customers as lower prices or improved goods and services.

Figure 2: Apprenticeship productivity gains in different sectors (£ per week)



- Average: Cebr's estimate of how far an Apprenticeship raises weekly productivity for an Apprenticeship completer across the economy as a whole in 2012/13.
- Estimates are given in real 2012 pounds.
- Source: Office for National Statistics (ONS) – Labour Force Survey (Q3 2012), Hasluck et al (2008), Cebr analysis.

Note that gains are comparatively modest in the retail & commercial enterprise sector because Apprenticeships there have historically been comparatively short spells of on-the-job training which yielded only small sustained productivity increases. New quality measures, including minimum Apprenticeship durations of 12 months except in certain limited circumstances, are likely to mean greater productivity gains in this sector in the future. In the engineering & manufacturing sector a tradition of Apprenticeships is more established - they tend to be of longer duration with more intensive training. This results in larger sustained productivity gains. [29]

In the 2012/13 financial year Cebr estimates that roughly 260,000 people will complete Apprenticeships in England. These completers are expected to be distributed as shown in Figure 3. In 2012/13 the sector with the highest number of Apprenticeship completions – some 74,000 – will be the business, administration and law sector. This will account for 28% of all completers. We forecast 56,000 and 38,000 completers in the retail and engineering & manufacturing sectors respectively. The remaining 97,000 completers will be in other sectors, accounting for 37% of all completed Apprenticeships in 2012/13.

In this report Cebr assumes that all present and forecast Apprenticeship completions are 86% "additional". This is to say that some 86% of the training they bring about would not

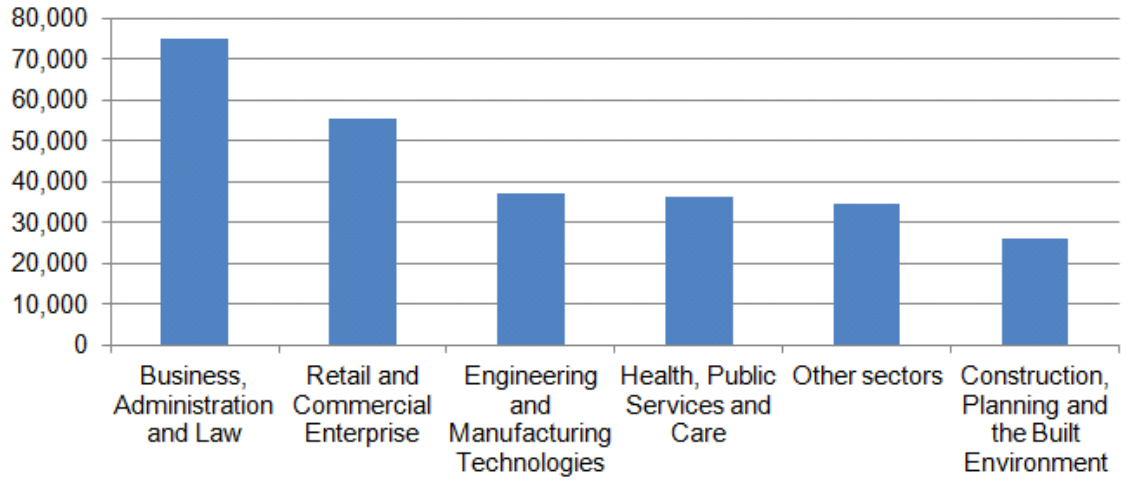
[29] Hasluck *et al*, 2008, *The net benefit to employer investment in Apprenticeship training,* Apprenticeship Ambassadors Network. Quoted in City & Guilds, Feb 2012, *The economic value of Apprenticeships.* While our productivity estimates are based on research by Hasluck *et al*, 2008, more resent research is available on both the productivity gains arising from Apprenticeships and their costs. For example, see Hogarth *et al*, 2012, *Employer Investment in Apprenticeships and Workplace Learning: The Fifth Net Benefits of Training to Employers Study*, BIS Research Paper 67.

have occurred otherwise, whereas 14% of Apprentices would have received comparable training even in the absence of a formal Apprenticeship. This assumption is based on econometric analysis of the 2009 National Employer Skills Survey which found that without the Apprenticeships programme 72% of Apprentices would have received no training at all (excluding induction and health & safety training). We then assumed that the remaining Apprenticeships have 50% additionality, so half of the training provided in those remaining Apprenticeships would not have occurred otherwise. This yields our assumption that 86% of Apprenticeship learning is additional. [30]

It is worth noting that other research attains broadly similar (although often not directly comparable) additionality findings. BIS Research Paper 77 (2012) found that the number of adult Apprentices could have been 85% lower in the absence of public funding. Therefore, this paper suggested that 85% of Apprenticeships are additional and 15% are deadweight – i.e. result in training which would have occurred in the absence of state support. Across Apprenticeships for all age groups, the paper found that 61% of Apprenticeships are additional (but assuming that 16-19 Apprenticeships continue to be fully-funded).[31]

Figure 3 now shows the expected distribution of Apprenticeship completers by sector in the 2012/13 financial year.

Figure 3: Number of Apprenticeship completions by sector, 2012/13 financial year estimate, England



- *This applies to England.*
- *Source: Apprenticeships.org.uk SFR data, Cebr analysis*

Under the assumption that Apprenticeships are 86% additional, then in the 2012/13 financial year, we estimate that £2.4 billion worth of *gross* productivity gains will be contributed to the UK economy by the 2012/13 cohort of English Apprenticeship completers.

[30] See the survey results quoted in BIS, May 2012, BIS Research Paper Number 71, "Assessing the Deadweight Loss Associated with Public Investment in Further Education and Skills".
[31] BIS, May 2012, BIS Research Paper Number 77 , "Evaluation of Apprenticeships: Employers"

4. Forecast Apprenticeship impacts on wages and productivity

This section forecasts growth in English Apprenticeship completion numbers until 2021/22 and then estimates the productivity impact of those completions on the UK economy.

4.1 Forecast Apprenticeship completions

Cebr has forecast the number of Apprenticeship completions in England until 2021/22 in different sectors of the economy. After a drop-off in 2008 at the height of the financial crisis the number of Apprenticeship completions has risen steadily each year. Assuming the current (post-2008 financial crisis) trend in Apprenticeship completions continues we expect 260,000 English completions in 2012/13, rising to 480,000 by 2021/22.

Challenging economic conditions are forecast over the coming years. In 2013, we predict UK economic growth of just 0.7% and that the economy will only reach its 2007 pre-crisis peak in real terms in 2015. We forecast a modest acceleration in economic growth after 2016/17.

Against this background, businesses confidence is low; the January 2013, the BDO Business Trends Optimism Index recorded a reading of 88.9. This was down on a reading of 94.1 in January 2012 and is the lowest level since the index started in 1992. This reading shows business confidence is weak and suggests the economy will struggle to grow in the first half of 2013.

Given the challenging economic environment, businesses have been wary of investing over the past year. Data from the latest ICAEW/Grant Thornton UK Business Confidence Monitor (a survey of 1000 businesses in the different regions) show that in England, capital investment only rose by 1.9% over the year to Q1 2013. Businesses in England expect to increase investment by just 1.6% over the year to Q1 2014. In London these historic figures and forward-looking estimates were both 2.3%. In Scotland capital investment growth of only 1.0% is expected over the year to Q1 2014. In these three regions increases in capital investment over the year to Q1 2013 and expected investment growth over the following year are lower than during the pre-crisis period. Weak capital investment growth highlights that businesses are nervous about investing in an economic environment.

The cost of Apprenticeships in England is heavily subsidised by the Government which pays half the direct costs of training for adult Apprenticeships. This includes the cost of buying teaching materials and employing Apprentices' trainers. There is an expectation that employers pay the other half and the entirety of Apprenticeships' indirect costs; this is the loss of economic output which occurs during the Apprenticeship learner's guided learning hours.[32] Cebr estimates that over 80% of the costs associated with Apprenticeships are direct, meaning that the Government bears over 40% of each Apprenticeship's total cost. Given this Government support, Apprenticeships are a cost-effective way for businesses to expand their productive potential as the economic

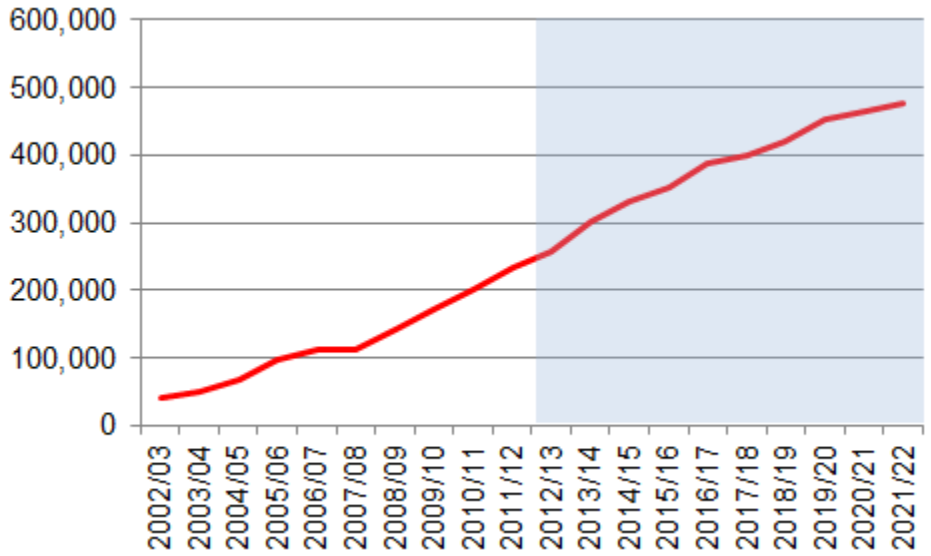
[32] BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper,* Part 3.17, pp. 32.

environment remains challenging and the appetite for making capital investments remains weak.

We think that the anticipated acceleration in economic growth post-2016/17 could serve as an incentive for employers to take on Apprenticeships in the preceding years – a second factor driving up Apprenticeship numbers before 2016/17. Expecting economic conditions to stabilise, we expect that employers will take on apprentices before 2016/17 to build up the human capital stock of their workforce. This means that when the economy returns to solid growth, they will be able to capitalise on the improved business environment with their highly trained Apprentice workforce. Consequently, employer demand will act as a key driver of the programme's expansion until 2016/17.

We forecast that a modest acceleration in economic growth after 2016/17 will decrease employers' incentives to take on Apprentices after that date, leading to a slight slowdown in annual Apprenticeship completions until 2021/22. This reasoning follows from employers' own testimony about why they hire Apprentices.[33] Employers reported that challenging economic conditions increased their incentive to hire Apprentices; as economic conditions become less challenging, we expect this to lessen slightly. This shows that employer demand could act as a break on the programme's continued expansion as the economy recovers after 2016/17.

Figure 4: Number of Apprenticeship completions per year, England



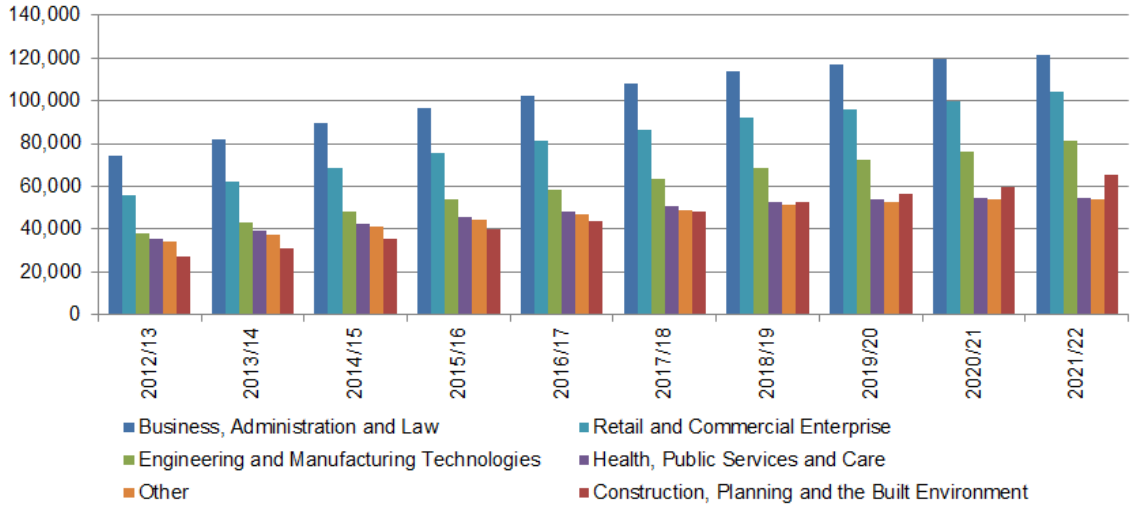
- This applies to England.
- Source: Apprenticeships.org.uk SFR data, Office for National Statistics (ONS), Cebr analysis

Cebr forecasts that the number of annual Apprenticeship completions will continue to rise across all sectors of the economy over the coming decade. We expect that the annual number of Apprenticeship completions in the business, administration & law sector will rise from 74,000 in 2012/13 to 121,000 by 2021/22. By 2021/22 we expect 65,000 completions in the construction & planning sector, compared to 27,000 in

[33] *Ibid*

2012/13. We forecast 81,000 completions in the engineering & manufacturing sector by 2021/22, compared to 38,000 in 2012/13. Our forecasts for the economy's main sectors are given in Figure 5.

Figure 5: Forecast Apprenticeship completions per year by sector England



- This applies to England.
- Source: Apprenticeships.org.uk SFR data, Office for National Statistics (ONS), Cebr analysis

Like all long-term predictions, a good deal of uncertainty surrounds our English Apprenticeship completions forecasts over a 10-year horizon. Our forecasts are based on the assumptions: (i) the economy develops as Cebr predicts; (ii) the relationship between employers' demand for Apprentices and macroeconomic developments remains broadly stable; and (iii) the programme's funding structure does not change, with public funding continuing to support the expansion of the programme. We make this final assumption because previous National Audit Office research indicates that "public spending on Apprenticeships is producing a good economic return".[34] In order to continue exploiting these gains, we assume state funding will continue to grow. These assumptions underlie Cebr's best estimate of how the number of annual Apprenticeship completions will develop. However, there is no guarantee these assumptions will hold going forward and hence this scenario comes with these caveats.

These Apprenticeship completion forecasts are Cebr's own estimates and do not entail any commitment on the part of public and/or private sector bodies regarding future Apprenticeship completion numbers.

[34] BIS, Mar 2011, "Measuring the economic impact of further education"*;* City and Guilds, 2012, *The economic value of Apprenticeships;* and BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships.*

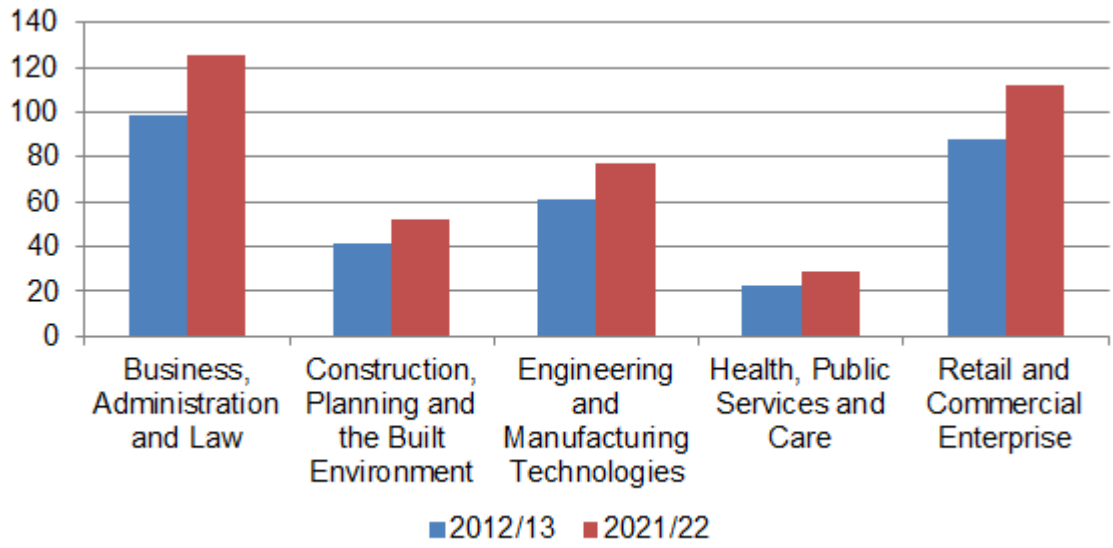
4.2 Forecast Apprenticeship completions and wages

Apprenticeship completion is expected to be associated with an uplift in wages for completers across different sectors, illustrated in Figure 6. It is estimated that in the 2012/13 financial year:

- Apprenticeship completers in the construction, planning and built environment sector can each expect a gross weekly wage which is £41 higher than those without an Apprenticeship, an 8% difference.
- Those with Apprenticeships in the engineering and manufacturing sector are estimated to receive a wage £61 higher than those without, a 12% difference.
- Completers in the health, public services & care sector can each expect an uplift of £23, a 10% rise.

Assuming these differentials grow in line with average earnings growth of 2.6% per year, Cebr forecasts they will have grown to £52, £78 and £29 respectively by the 2021/22 financial year.

Figure 6: Gross weekly wage differentials for Apprenticeship completers and non-completers, by sector in 2012/13 and 2021/22 (£ per week)



- These sectors account for over four fifths of the UK economy and over 85% of English Apprenticeships.
- The 2012/13 differential is given in terms of real 2012 pounds; the 2021/22 differential is given in terms of real 2022 pounds.
- Source: Office for National Statistics (ONS) – Labour Force Survey (Q3 2012), Cebr analysis.

Our model formulated estimates of the wage *differentials* between Apprenticeship completers and non-completers in different sectors. It did not quantify the impact of Apprenticeship completion on wages, because it did not control for employees' education, intelligence, age or other variables. Consequently, the model did not control for how individuals self-select into Apprenticeships. Note that our wage differential

estimates do not feed into our productivity analyses; other papers have estimated the wage premia associated with Apprenticeships, estimating their causal impact on wages.[35]

4.3 Forecast Apprenticeship completions and productivity

Cebr has analysed how Apprenticeship completion raises worker productivity in different sectors of the economy. Between 2012/13 and 2021/22, Cebr forecasts 3.8 million Apprenticeship completions in England which will have an appreciable effect on the UK economy as a whole.

It is important to note that the economic benefits of Apprenticeship completions in any one year persist over time. In any given year over the forecast horizon the economy's overall performance will be supported by productivity gains arising from Apprenticeship completions that year *and arising from Apprenticeship completions in previous years.* That is to say that when a worker completes an Apprenticeship, he or she becomes more productive, not just in the completion year, but also in all subsequent years of his or her employment. So, for the purposes of this analysis, the productivity gains in any given year will be derived from Apprenticeship completions between 2012/13 and that year – which explains why the impact is growing over time.

Because the productivity impact of an Apprenticeship completion is sustained over time, Apprenticeship completions can provide a significant boost to the UK economy. Figure 7 shows how the 3.8 million Apprenticeship completions in England, forecast between 2012/13 and 2021/22, are likely to impact the UK economy in net productivity terms – i.e. accounting for the direct and indirect costs of Apprenticeships. Results are given in real terms.

The direct costs of providing Apprenticeships are met by the Government and employers. The indirect cost of Apprenticeships is the loss of economic output which occurs during the Apprenticeship learner's guided learning hours.[36] Cebr factored in these costs, when estimating the net productivity impact of Apprenticeships. While these net productivity estimates are not quite comparable to GDP, they give an accurate reflection of Apprenticeships' overall impact on the economy.[37]

In 2018/19 Cebr forecast that the net productivity impact of English Apprenticeship completions (over 2012/13 to 2018/19) will be approximately £1.3 billion in constant 2012 prices. The productivity impacts of Apprenticeship completions in each year persist over time, so the cohorts completing in 2012/13, 2013/14 and subsequent years will impact productivity in 2018/19. While not directly comparable to GDP, it is worth noting

---

[35] See BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships.*

[36] Our methodology for estimating these direct and indirect costs was analogous to that used in BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper,* Part 3.17, pp. 32. Of course, that paper applied exclusively to adult apprenticeships. We have found no evidence suggesting that cost structures are different in the case of young peoples' Apprenticeships. As such, we have applied this methodology to all Apprenticeships.

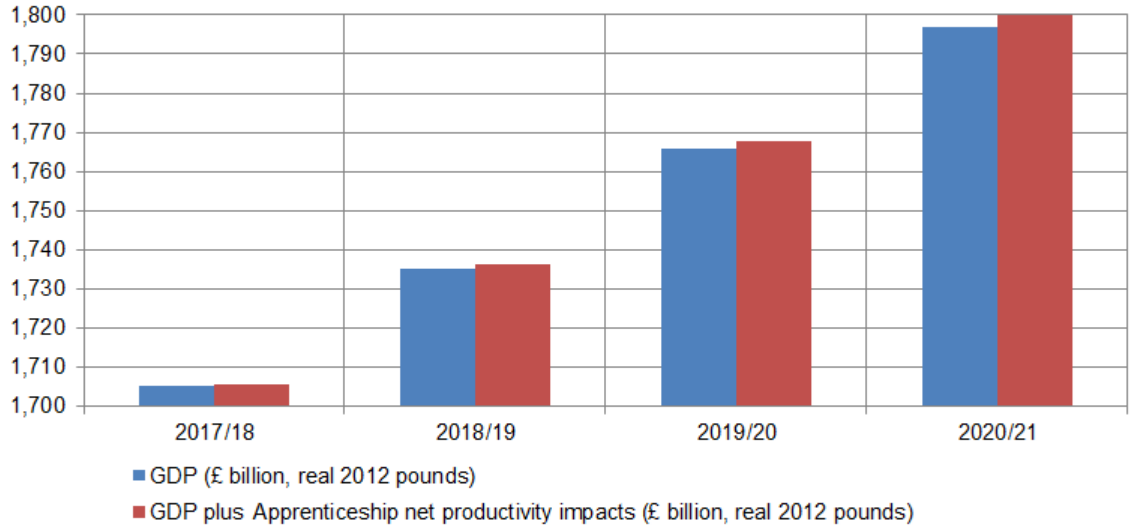
[37] The estimates are not directly comparable to GDP because they do not factor in the indirect and induced benefits to the economy which occur because of Apprenticeship completion as: (i) workers are paid more, and so consume more, and (ii) firms become more productive, and so expand their supply-chain requirements.

that this net productivity contribution is roughly equivalent to 0.1% of forecast 2019 real UK GDP.

In 2021/22, the net productivity impact (arising from English Apprenticeships completed over 2012/13 to 2021/22) is projected to be £3.4 billion in terms of real 2012 pounds. In 2021/22 the net productivity gains will occur due to the cumulative increase in Apprenticeship-related skills up to and including this point. Again, while this not directly comparable to GDP, this net productivity contribution is equivalent to 0.2% of forecast 2022 real UK GDP.

Figure 7 focuses on the latter half of the forecast period, when the net productivity impacts are the most easily observable.

Figure 7: Forecast UK GDP and forecast GDP plus net Apprenticeship productivity impacts (£ billion, real 2012 pounds)



- *"*GDP plus Apprenticeship net productivity impacts (£ billion, real 2012 pounds)*" accounts for the direct, net productivity impacts of Apprenticeships on the UK economy in 2012/13 and beyond. Indirect effects are omitted, but the costs of the Apprenticeship programmes have been deducted.*
- *Source: Hasluck et al (2008), Office for National Statistics (ONS) – Labour Force Survey (Q3 2012)*, BIS , National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper,* Part 3.17, pp. 32, BIS, May 2012, "Evaluation of Apprenticeships: Learners", Research Paper 76, *Cebr analysis* [38]
- *The productivity, employment and additionality assumptions underlying these estimates are given below.*

The productivity estimates presented in Figure 7 assume that: (i) Apprentices' productivity gains come on-stream the same year they complete; (ii) productivity gains are permanent, i.e. once an Apprentice has completed an Apprenticeship the productivity gains they achieve do not dissipate over time; and (iii) some 85% of

[38] Our productivity estimates build on Hasluck *et al*'s, 2008, research. More resent research is available on this topic. See Hogarth *et al*, 2012, *Employer Investment in Apprenticeships and Workplace Learning: The Fifth Net Benefits of Training to Employers Study*, BIS Research Paper 67.

Apprenticeship completers remain in employment in all years following completion. This final assumption is based on BIS Research Paper 76. It may be the case that a different percentage of a given completing Apprenticeship cohort would be employed in any year following completion. Based on the BIS research, the final assumption simply captures the likelihood that a typical Apprentice will remain employed in the years following his or her completion of an Apprenticeship course. When calculating productivity impacts, our model incorporates no further estimates of how Apprenticeship completion affects an individual's likelihood of having a job.

The productivity estimates presented in Figure 7 assume that 86% of what is learnt during any given Apprenticeship constitutes "additional" training, i.e. training which would not have occurred in the absence of the Apprenticeship. We make this assumption based on econometric analysis of the 2009 National Employer Skills Survey.[39] The survey found that 72% of Apprenticeships were completely additional – i.e. without Apprenticeships, 72% of Apprentices would not have received any training. We assume that in the remaining 28% of Apprenticeships half of the training undertaken would not have occurred without the Apprenticeship. Consequently, we assume 86% of Apprenticeship learning is additional.

[39] See the survey results quoted in BIS, May 2012, BIS RESEARCH PAPER NUMBER 71, "Assessing the Deadweight Loss Associated with Public Investment in Further Education and Skills".

5. Scenario analysis: Apprenticeship provision by businesses

This section examines what would happen to UK youth unemployment and wages if each business with more than 50 employees offered a young person an Apprenticeship commencing in 2013.

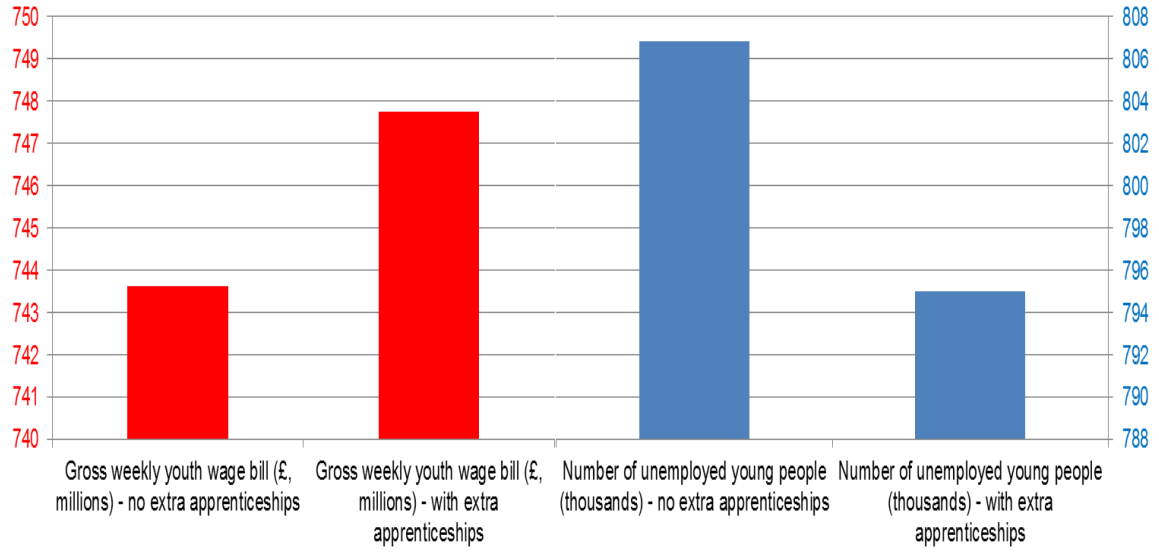
Cebr has analysed the scenario in which all UK businesses with 50 or more employees (medium-sized or large businesses) each offer one Apprenticeship to a young person (aged 18-24).[40] There are about 36,200 such businesses in the UK.[41] We estimated the impact of this scenario on youth unemployment and young persons' wages.

5.1 Main findings

In 2013, we estimate that such a provision of Apprenticeships would:

(i) provide jobs for 11,800 young people;
(ii) lower the youth unemployment rate by 0.3 percentage points from 19.2% to 18.9%;
(iii) and raise total gross weekly youth wages by £4 million.

Figure 8: Impact of one additional Apprenticeship per UK medium-sized and large business on youth unemployment and wages, 2013



- Source: Apprenticeships.org.uk SFR data, Office for National Statistics (ONS) – Labour Force Survey (Q3 2012), Cebr analysis

These estimates indicate that there would be an uplift in youth employment and the total young persons' wage bill if all firms with 50 or more employees each offered one young person an Apprenticeship. It is important to recall that these findings result from a hypothetical and illustrative "what-if" scenario. While businesses with 50 or more

[40] This Apprenticeship is assumed to be "additional"; it brings about training which would not have occurred otherwise.
[41] Source: Federation of Small Businesses data. Also, see House of Commons, Standard Note: SN/EP/6078.

employees regularly offer Apprenticeships, Cebr has no evidence suggesting this wholesale provision of Apprenticeships by all such firms will actually occur.

It is important to note that the aim of the Apprenticeship programme is to "improve business performance and hence economic growth by increasing the skills of the workforce", not to reduce youth unemployment.[42] Indeed, Parliament noted that "Apprenticeships may not be the most appropriate route into employment for young people at the highest risk of long-term unemployment".[43] Our findings simply show that Apprenticeships have the capacity to reduce youth unemployment under this scenario.

5.2 Estimation procedure

When estimating impacts on youth unemployment, Cebr assumed 80.8% of the 36,200 Apprenticeships offered would go to young people (aged 18-24) who were already employed. The remaining 19.2% would go to unemployed young people, directly lifting 7,000 out of unemployment. This assumption implies that Apprenticeships would be proportionally distributed between employed and unemployed young people. This proportional distribution assumption captures the Access to Apprenticeships Pathway's aspiration that unemployed young people with few qualifications are able to benefit from the Apprenticeship programme. Incorporating this aspiration into our modelling, we assume that, in proportional terms, unemployed young people would get the same access to Apprenticeships as their employed counterparts.[44]

This implied that 29,300 Apprenticeships were given to young people who were already employed. Cebr then assumed that gaining an Apprenticeship caused employed young people to change their job in one third of cases. In such cases, businesses were assumed to replace them with an unemployed young person half of the time. Consequently, the provision of these 29,300 Apprenticeships to employed young people would, indirectly, provide jobs for 4,900 unemployed young people. The aggregate effect is that 11,800 young people would enter employment.[45]

Using data from the ONS *Labour Force Survey* (Q3 2012), Cebr identified that an employed young person with an Apprenticeship earns a gross weekly wage of £316. This compares to £220 if the person had not completed an Apprenticeship and £0 if they were unemployed. These wage data were applied to the above estimates on employee numbers, resulting in Cebr's overall wage impact estimates.

---

[42] BIS , National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships*

[43] UK Parliament, 2012, "The Youth Contract: Apprenticeship Grant for Employers", http://www.publications.parliament.uk/pa/cm201213/cmselect/cmworpen/151/15109.htm

[44] See Apprenticeships.org.uk, 2012, 'Access to Apprenticeships', http://www.apprenticeships.org.uk/Partners/Policy/AccesstoApprenticeships.aspx and Association of Learning Providers, May 2011, Press release, Subject: Downing Street announcement on youth employment, 'New pre-apprenticeship programme will make a difference for young people'.

[45] The simplifying employment assumptions used in this section can be compared to the findings of BIS Research Paper Number 64, 2012, *Apprenticeship Pay Survey 2011*. The study found that roughly 70% of Apprentices worked for their present employer prior to their Apprenticeship.

For this scenario analysis, Cebr made the simplifying assumption that the employment impacts would be immediate, i.e. occur as soon as the extra Apprenticeships were offered in 2013. However, we assumed that the Apprenticeship wage impacts would not occur in 2013. Hence, we assumed that all young people undertaking an Apprenticeship in 2013 would receive the wage of a young person who had not yet completed an Apprenticeship, precisely because their Apprenticeship had not yet been completed.

Note that the model does not account for labour market displacement effects, so the provision of an extra Apprenticeship is assumed not to drive any employed person (who has not received an Apprenticeship) out of employment or into another job.

6. Scenario analysis: Apprenticeships desired by young people

This section analyses what would happen to UK youth unemployment and wages if all young people who wanted an Apprenticeship were able to start one in 2013.

Cebr has examined the scenario in which all young people wanting an Apprenticeship, some 17% of young people aged 18-24 in the labour force, were able to commence one in 2013. This 17% figure comes from ICM survey data.[46] The survey questionnaire asked 192 people, aged 18-24, whether they would like to do an Apprenticeship if one were available; 17% responded that they would. Cebr applied this percentage result to the population of young people who were either employed or looking for work, some 4.2 million people. Consequently, we estimate that 714,000 young people would like an Apprenticeship if one were available. We assumed all such young people were either employed or unemployed but looking for work.

The finding that 714,000 young people desire Apprenticeships clearly demonstrates the wide-spread desire to get involved in the Apprenticeships programme amongst the young. This section's results highlight the transformative power which Apprenticeships can exert on young people's employment and wage prospects in the best case scenario, the scenario where all young people who would like to can complete an Apprenticeship.

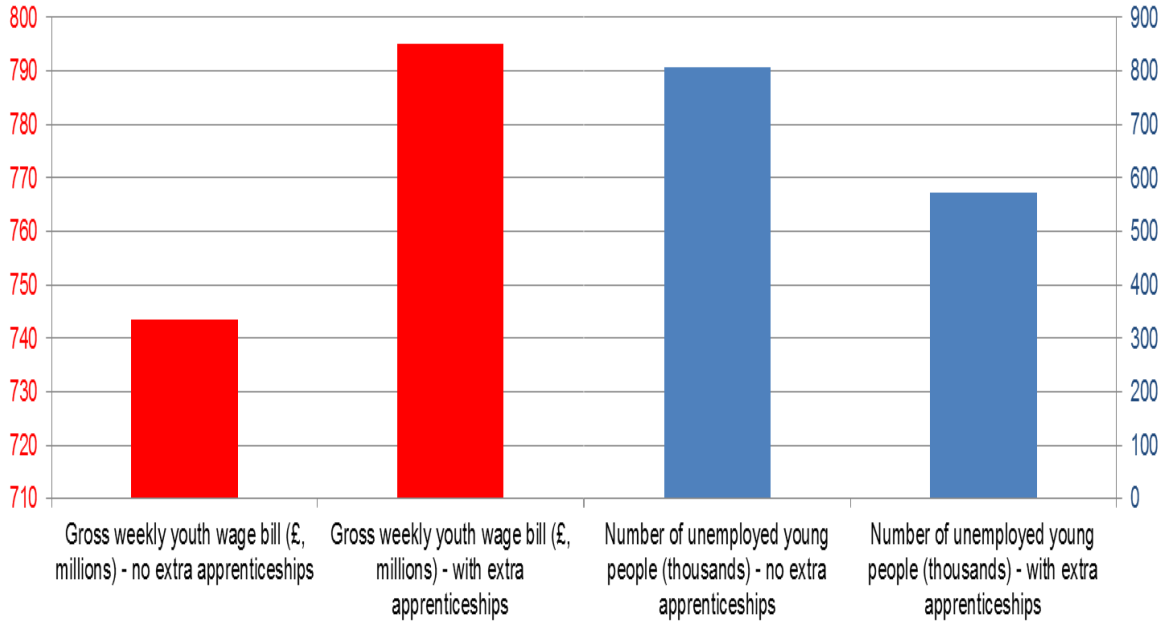
6.1 Main findings

In 2013, we estimate that such a provision of Apprenticeships would:

(i) provide jobs for 233,000 young people;
(ii) lower the youth unemployment rate by 5.6 percentage points from 19.2% to 13.6%;
(iii) and raise total gross weekly youth wages from £744 million to £795 million.

[46] Data was prepared on behalf of the National Apprenticeship Service by ICM Research. The field research was conducted on 9-10th January 2013.

Figure 9: Impact of Apprenticeship provision which meets stated youth demand for Apprenticeships on youth unemployment and wages, 2013



- Source: Apprenticeships.org.uk SFR data, Office for National Statistics (ONS) – Labour Force Survey (Q3 2012), ICM data, Cebr analysis

These estimates indicate there would be a significant uplift in youth employment and the total young persons' wage bill if all the young people who wanted an Apprenticeship were able to get one. It is important to recall that these findings result from a hypothetical illustrative "what-if" scenario. In any case, the Apprenticeship programme does not have the explicit aim of reducing youth unemployment. However, the findings here suggest that Apprenticeships could reduce youth unemployment under this scenario.

6.2 Estimation procedure

Cebr's estimation procedure was analogous to the one described in sub-section 5.2. Following the procedure presented in section 5.2, the model presented here does not account for labour market displacement effects.

7. English Apprenticeships in an international context

This section examines how prevalent Apprenticeships are in England relative to comparable developed economies. It also contrasts the gender distribution and typical completion rates of Apprenticeships in England with other developed countries. Finally, this section finds that countries' success in international World Skills competitions is to some extent related to how prevalent Apprenticeships are in each country.

7.1 The prevalence of Apprenticeships in England and abroad

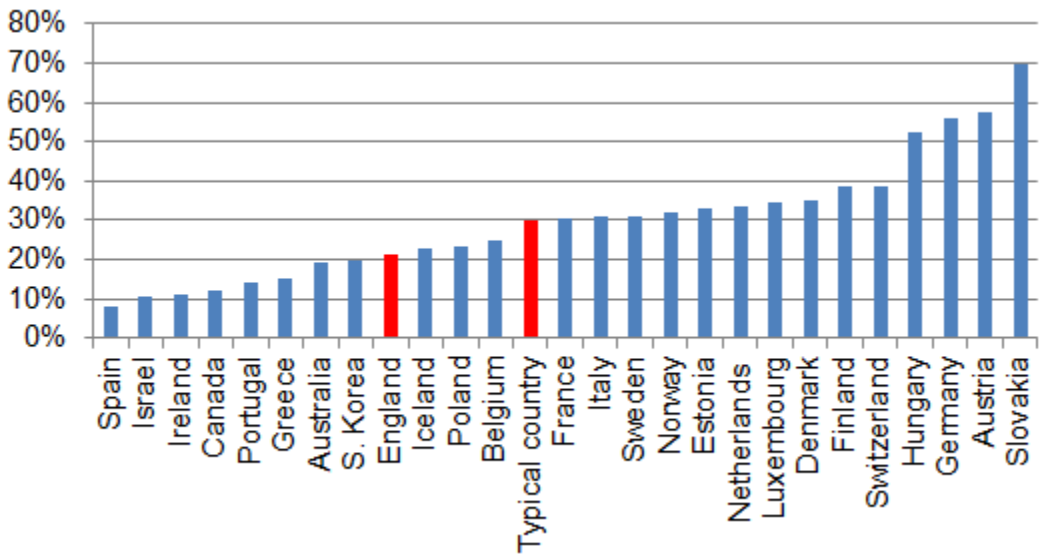
Cebr compared the prevalence of Advanced (Level 3) Apprenticeships in England to the prevalence of equivalent vocational qualifications in foreign countries.

The percentage of the 19-64 year-old English population whose highest qualification was a Level 3 Apprenticeship was 21.1% in 2010. By this measure, out of 25 comparable developed countries, there was a higher prevalence of comparable qualifications in 17 countries and a lower prevalence in eight countries.

The country with the highest prevalence was Slovakia, where 69.5% of the working age population has a highest qualification equivalent to an English Level 3 Apprenticeship. Spain had the lowest prevalence, at 8.0%.[47] Notably, England's prevalence was higher than South Korea's, 19.7%, the country which performed best in the 2011 World Skills international competition.[48]

[47] For foreign countries, the Organisation for Economic Co-operation and Development (OECD) provided data relating to 25-64 year olds. The English data were for 19-64 year olds: males aged 19 - 64 and females aged 19 – 59.
[48] S. Korea was ranked first in the competition by average score per competitor.

Figure 10: Proportion of population whose highest qualification is upper secondary/pre-tertiary vocational or Apprenticeship, 2010



- Typical country: This country is an average of all the sampled countries.
- Source: Apprenticeships.org.uk SFR data, Education at a Glance 2012: OECD INDICATORS Table A1.5, Cebr analysis

Cebr compared prevalence in England against foreign countries using the procedure laid out below. The Organisation for Economic Co-operation and Development (OECD) provided data on the prevalence of vocational qualifications in foreign countries. Specifically, it provided data on the prevalence of vocational upper secondary, non-tertiary, International Standard Classification of Education (ISCED) Level 3/4 qualifications. These data pertained to 25-64 year olds in 2010, the latest year for which data are available.

Cebr reasoned that English Level 3 Apprenticeships were broadly comparable to vocational ISCED Level 3/4 qualifications because both sets of qualifications are: (i) upper secondary, pre-tertiary qualifications and (ii) vocational, i.e. they focus on providing skills which are directly relevant to employment. Therefore, we matched the prevalence of English Level 3 vocational qualifications with vocational ISCED Level 3/4 qualifications in other countries.[49] Different countries have their own specific vocational education programmes in the ISCED Level 3/4 category. For example, in Denmark, these vocational programmes are open to those who have completed a lower secondary education. The Danish programmes, in areas such as mercantile studies and agricultural studies, last for 1.5 to 5 years. Upon completion students are qualified to work in their field of study.[50]

[49] Importantly, this analysis focusses on cases where English Level 3 Apprenticeships or ISCED Level 3/4 vocational qualifications are individuals' highest qualifications. If say, in England, the proportion of people whose highest qualification was a Level 3 Apprenticeship declined, because some people had gone on to attain Level 4 Apprenticeships, this could benefit the economy – even though the measure of Apprenticeship prevalence given in Figure 11 would have declined.

[50] www.workindenmark.dk/en/Find_information/Information_for_job_seekers/Life_in_Denmark/Upper_secondary_education/Vocational_education_programmes

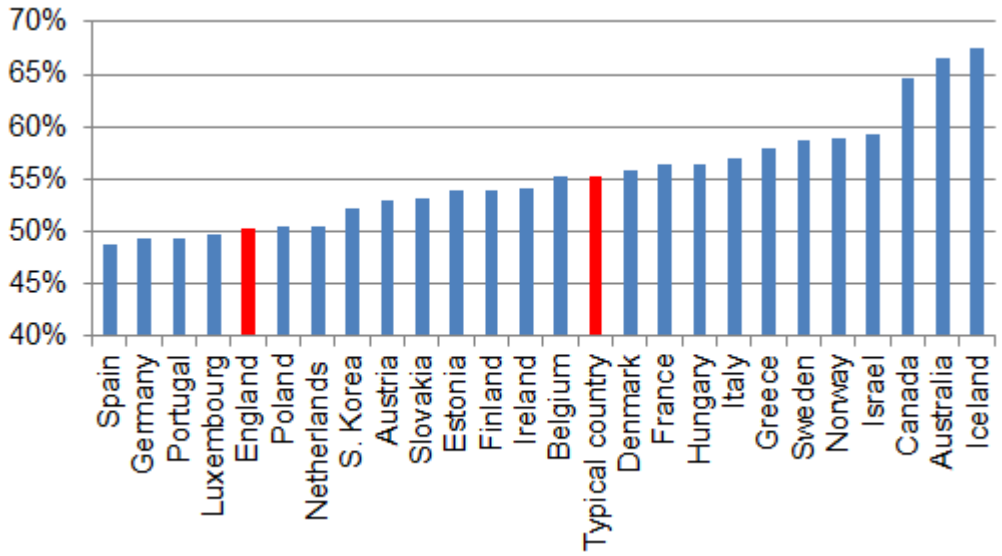
7.2 The gender distribution of Apprenticeships in England and abroad

Cebr compared the gender balance of Advanced (Level 3) Apprenticeships in England to the gender balance of equivalent vocational qualifications in foreign countries.

Out of the English population (19-64 years-old) whose highest qualification was a Level 3 Apprenticeship in 2010, Cebr estimates that 50.3% of those Level 3 Apprenticeships had been achieved by men. [51] Out of the 24 comparable developed countries for which data were available, this proportion was lower in four countries and higher in 20 countries. It was highest in Iceland, where 65.7% of people whose highest qualification is equivalent to a Level 3 Apprenticeship were men. It was lowest in Spain, where 48.8% were men. [52]

Notice that the proportions are quite tightly clustered. In 17 of the 25 countries (including England) the proportion stands between 50% and 60%.

Figure 11: Male proportion of population whose highest qualification is upper secondary/pre-tertiary vocational or Apprenticeship, 2010



- Typical country: This country is an average of all the sampled countries.
- Source: Apprenticeships.org.uk SFR data, Education at a Glance 2012: OECD INDICATORS Table A1.5, Cebr analysis

[51] The gender balance in England was inferred from Apprenticeships.org data on the gender breakdown of Advanced (Level 3) Apprenticeship learners in the 2010/11 financial year. The year 2010 was used because that was the latest year for which the data on foreign countries were available.
[52] Again, for foreign countries, the OECD provided data on 25-64 year olds whose highest qualification was a vocational ISCED Level 3/4 qualification. The matched English data were for 19-64 year olds holding Level 3 Apprenticeships as their highest qualification.

7.3 Apprenticeship completion rates in England and abroad

Cebr compared successful completion rates of upper secondary, pre-tertiary Apprenticeship programmes in England to completion rates for equivalent programmes in other countries.[53]

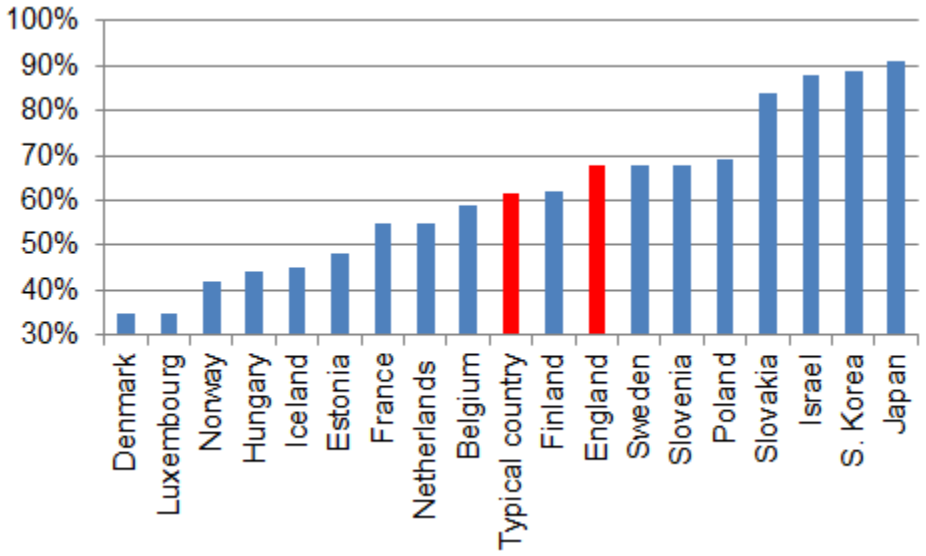
England is very much in the middle of the international field when it comes to successful Apprenticeship completion. In England, 68% of Apprentices successfully complete their programme. Out of the sample of comparable developed countries, seven perform better than England; Japan comes top with a 91% completion rate. There are 10 countries which fare less well than England; the worst performer is Denmark with a 35% completion rate.

There is large difference in completion rates in upper secondary vocational programmes between countries. This occurs because in some countries, a relatively high proportion of students may begin a purely vocational programme, but then switch to a more general programme. For example, in Norway, amongst successful completers who began a purely vocational programme, 47% completed a purely vocational programme, but the remainder completed a more general programme. The likelihood of switching (or dropping out) varies with countries' Apprenticeship-related institutions and culture, accounting for the disparity in completion rates.[54]

[53] Intermediate and Advanced (Level 2 and 3) Apprenticeships were used for England; ISCED Level 3/4 vocational qualifications were used for other countries and the data were provided by the OECD. The English completion rate estimates were inferred from enrolment data, for intermediate and advanced level Apprenticeships, compared to completion data one and two years in the future, for each type of Apprenticeship respectively. These respective timeframes were based on discussion in City & Guilds, Feb 2012, *The economic value of Apprenticeships* and Organisation for Economic Co-operation and Development, 2012, *Education at a Glance 2012: OECD INDICATORS.*

[54] See Organisation for Economic Co-operation and Development, 2012, *Education at a Glance 2012: OECD INDICATORS* for more discussion.

Figure 12: Completion rates of upper secondary, pre-tertiary level Apprenticeships and vocational programmes, 2007-11 average



- Typical country: This country is an average of all the sampled countries.

- Source: Apprenticeships.org.uk SFR data, Education at a Glance 2012: OECD INDICATORS - Table A2.5, Cebr analysis

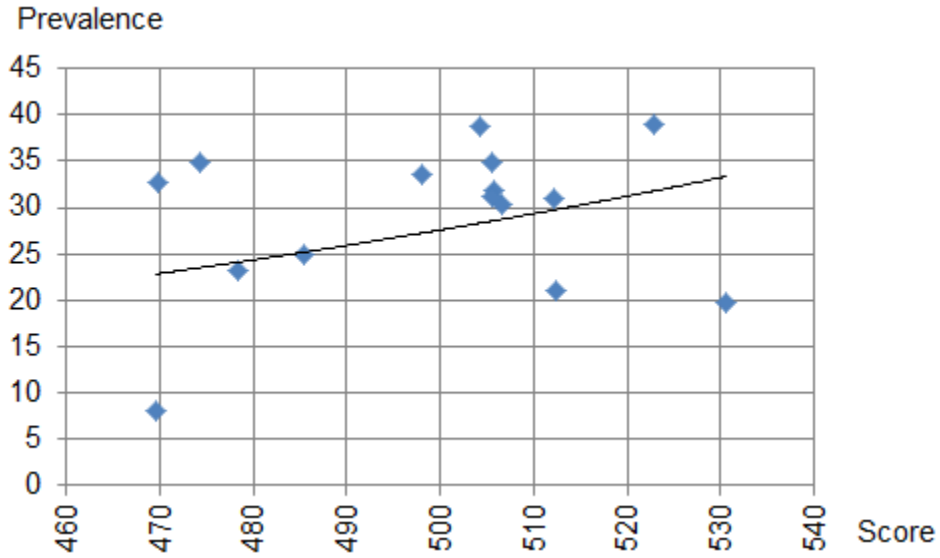
7.4 Success in international WorldSkills competitions and its relation to Apprenticeships

International WorldSkills competitions have been held for 60 years and test the trade-based vocational skills of young people from country teams around the world. In the most recent London 2011 competition, 48 country teams were tested in specific vocational skills ranging from landscape gardening to web design, restaurant service to autobody repair against international standards set by WorldSkills International.[55]

Cebr found that success in international World Skills competitions is weakly related to the prevalence of Apprenticeships in competing countries. The more prevalent Apprenticeships are in a competitor country, the higher the score (in terms of points per participant) of a competing country's team.

[55] http://www.worldskills.org/index.php?option=com_content&task=view&id=22&Itemid=413

Figure 13: Apprenticeship/vocational qualification prevalence in competitor countries versus score in World Skills London 2011 competition



- Prevalence: proportion of population whose highest qualification is upper secondary/pre-tertiary vocational or Apprenticeship, 2010.
- Score: average score per member of competitor country team.
- Note that this graph compares countries' "scores" to their "prevalence". However, in the case of the UK, the UK's score is compared to England's prevalence. The 2011 Census shows that England contains roughly 85% of the UK population, so England's prevalence should be indicative of prevalence throughout the UK.
- Source: Competition Results for World Skills London 2011, Education at a Glance 2012: OECD INDICATORS, Cebr analysis

8. Authorship, acknowledgements and disclaimer

Authorship and acknowledgements

This report has been produced by Cebr, an independent economics and business research consultancy established in 1993, providing forecasts and advice to City institutions, government departments, local authorities and numerous blue chip companies throughout Europe.

This report was written and researched by Daniel Solomon, a Cebr Economist. Supervision was provided by Tim Ohlenburg, a Cebr Senior Economist, and Charles Davis, Cebr's Head of Macroeconomics.

Disclaimer

London, March 2013

9. Bibliography

Apprenticeships.org.uk, 2012, 'Access to Apprenticeships'

Association of Learning Providers, May 2011, Press release, Subject: Downing Street announcement on youth employment, 'New pre-apprenticeship programme will make a difference for young people'.

BIS, Apprenticeships.org.uk, Jan 2013, January Statistical First Release Files (on Apprenticeships)

BIS, May 2012, BIS RESEARCH PAPER NUMBER 77, "Evaluation of Apprenticeships: Employers"

BIS, May 2012, "Evaluation of Apprenticeships: Learners", Research Paper 76

BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships*

BIS, National Audit Office, Skills Funding Agency, National Apprenticeship Service, Feb 2012, *Adult Apprenticeships – Estimating economic benefits from Apprenticeships – technical paper*

BIS, Dec 2012, "Press Release: Graduate Apprenticeships for the professions introduced"

BIS, Mar 2012, *Apprenticeship Pay Survey 2011*, Research Paper Number 64

BIS, Mar 2011, "Measuring the economic impact of further education"

City and Guilds, 2012, *The economic value of Apprenticeships.*

David Way, Chief Executive, National Apprenticeship Service, April 2012, "Business Plan 2012-13"

Freeman, 2008, *Labour productivity indicators*, OECD

Hasluck *et al*, 2008, *The net benefit to employer investment in Apprenticeship training,* Apprenticeship Ambassadors Network

Hasluck *et al*, 2009, *The net benefit to employer investment in Apprenticeship training: IT Apprenticeships,* Apprenticeship Ambassadors Network

Hogarth *et al*, 2012, *Employer Investment in Apprenticeships and Workplace Learning: The Fifth Net Benefits of Training to Employers Study*, BIS Research Paper 67

National Apprenticeships Service, Nov 2012, *Higher Apprenticeships in Accountancy, Audit and Tax Level 7*

National Apprenticeships Service, Apprenticeships.org.uk

National Apprenticeships Service, 2009, "Policy Statement: Part-time working in Apprenticeships"

National Employer Skills Survey, 2009, cited in BIS, May 2012, BIS RESEARCH PAPER NUMBER 71, "Assessing the Deadweight Loss Associated with Public Investment in Further Education and Skills"

Office for National Statistics (ONS) – *Labour Force Survey (Q3 2012)*

Organisation for Economic Co-operation and Development, 2012, *Education at a Glance 2012: OECD INDICATORS.*

UK Parliament, 2012, "The Youth Contract: Apprenticeship Grant for Employers"

Workindenmark.dk/en/

Worldskills.org