



# Trends in job-related training and policies for building future skills into the recovery

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# Trends in job-related training and policies for building future skills into the recovery<sup>1</sup>

Jiaqi Li, Anna Valero, Guglielmo Ventura  
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## Summary

- Job-related training is an important route for addressing skills gaps, improving UK productivity performance and transitioning to a zero-carbon economy. In light of the economic shock caused by Covid-19, the need to re- or up-skill the workforce is now even more acute due to rising unemployment – felt particularly for younger workers, or those with lower levels of educational attainment.
- In an international comparison, participation in job-related training in the UK is relatively high, however, there appear to be issues with respect to the quality of training. A higher share of the UK workforce is underqualified for their occupation compared to other advanced economies, and there is significant room for improvement in training and re-skilling activity.
- Despite the observations, the last two decades have seen a general decline in the participation in job-related training, as reported by workers. This decline applies most to the young, high skilled, and highly educated workforce who historically received more training compared to the rest of workforce. Lower skilled workers have consistently received very low levels of training. There has also been a decline in the amount of training received by those who are trained.
- While data on publicly funded training, in particular apprenticeships, shows that the number of participants has expanded in recent years, the share of older apprentices has increased and there are concerns around the decline in the duration of apprenticeships.
- Similarly, the investment made by firms on training has fallen in recent years, and firms prefer to address skills shortages with recruitment rather than on the job training.
- Since the Covid-19 crisis, there has been a sharp decline in job related training for those in employment, and this has been higher for younger, less educated individuals.
- The trends outlined in this paper and the broader evidence suggest that new or enhanced policies to increase the quantity and quality of job-related training are required, particularly for younger workers or those with lower levels of educational attainment. Increased support for adult education and training announced since the onset of Covid-19, including the National Skills Fund, and short-term incentives for apprentices are welcome. The evidence suggests that further action across the following four areas could be effective in terms of increasing employer provision of job-related training:
  - **Human capital tax credits:** These can help incentivise businesses to invest in training their workforce. Such a mechanism could be piloted in specific areas where displacement has been particularly acute, or where significant change is anticipated in the future (e.g. greening the car industry).
  - **A more broadly defined Apprenticeship Levy:** Reforms could be considered to more effectively target younger workers and to broaden training investments covered by the scheme.
  - **Further devolution of skills policy:** Increased devolution of apprenticeship and training policy should be considered where local knowledge of skills gaps and opportunities can increase its effectiveness.
  - **Job creation and retraining schemes:** Embedding re-skilling or up-skilling in new programmes of job creation, including those associated with net-zero-aligned investments - with stronger incentives for businesses and support for individuals.

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## Introduction

Human capital is a key input for economic growth (see, for example, Hanushek and Woessman, 2015). Beyond the crucial role of formal schooling in building human capital, a substantial fraction of investment takes place through job-related training, and this has been shown to be an important contributor to wage and productivity growth (see for example Dearden et al., 2006 and Konings and Vanormelingen, 2015). Moreover, job-related training is a key mechanism for improving labour market resilience to changing skill demands in response to economic shocks and broader trends such as technological change, globalisation and the transition to net-zero carbon emissions.

Given the risks that trained workers can be ‘poached’, and the presence of human capital externalities which mean that firms cannot internalise all of the benefits of their investments in training, firms tend to underinvest in training their workforce.<sup>2</sup> Improving the UK’s skills base was urgently needed even before the Covid-19 crisis hit. Skill shortages have been consistently reported by businesses and contribute to the UK’s ongoing poor productivity performance compared to its main international peers (Valero and Van Reenen, 2019; LSE Growth Commission, 2013, 2017). And the spatial distribution of skilled workers explains the large part of the largescale disparities in wages across the UK (Gibbons et al., 2013), suggesting that improvements in training are likely to be central to the ‘levelling-up’ agenda. However, the data show that recent years have seen a general decline in job-related training in the UK, in terms of participation (Amin-Smith et al., 2017) and volumes (Green et al., 2016), with further falls in participation in recent years documented by Mountford and Wadsworth (2019). In addition, there are also long-standing concerns about the quality of vocational education in the UK (Wolf, 2011; Musset and Field, 2013; Hupkau et al., 2017), especially in light of recent budgetary pressures. According to official figures, government expenditure on job-related training experienced a 18% fall in real terms compared to 2010 level (Britton et al., 2020).

Addressing these issues has become ever more urgent as part of the policy response to the Covid-19 crisis: the pandemic has prompted changes in consumer spending patterns, business practices and working arrangements (Barrero et al., 2020), many of which are likely to persist beyond the crisis with implications for the demand for certain occupations or skills. In terms of the immediate impacts of the crisis, less-skilled workers and those working in low-wage, in-person service sectors are less able to work from home (ONS, 2020). As a result, workers in low-paid sectors and occupations have experienced the largest losses in employment and earnings (Adams-Prassl et al., 2020) with the self-employed being hit particularly hard (Blundell and Machin, 2020). Young adults have also suffered disproportionately in terms of labour market impacts of Covid-19 (Elliot Major et al., 2020). To the extent that labour market displacements create longer term scarring, these patterns are likely to exacerbate pre-existing labour market inequalities and damage social mobility (Elliot Major and Machin, 2020). Going forwards, targeted workforce training programmes can help to facilitate the adoption of new working practices, and transition displaced workers into new occupations or sectors where demand is growing.

The training needs of the workforce need to be considered in the context of broader trends which may be accelerated in the current context. Lifelong learning, reskilling and upskilling are emphasised as important mechanisms to ensure that workers are able to adapt to technological change including the rise of AI and robotics. In a report for the Industrial Strategy Council, McKinsey (2019) highlighted the largescale expected skills gaps over the next decade, with estimates that 9 out of 10 workers will need some form of re-skilling. Across industries, the deployment of automation has been accelerated since the

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<sup>2</sup> This concept was formalised by Becker (1964): in a perfectly competitive labour market, workers who have received training can leave to work for another firm to benefit from higher wages to match their increased productivity, before the training firm has the chance to recoup its investment. In reality, firms do invest in general training due to market imperfections (Acemoglu and Pischke, 1998). However, firms tend to underinvest relative to what is socially optimal, given the positive externalities that are generated for the whole economy (Lucas, 1988), that the training firm is unable to fully capture.

Covid-19 pandemic, to facilitate contactless interactions at a time of social distancing and heightened awareness of hygiene (McKinsey, 2020). Alongside these changes, the transition to net-zero greenhouse gas emissions by 2050 creates further need to enhance skills to ensure that the UK leads in the innovation and diffusion of zero-carbon technologies, and to ensure a ‘just transition’ for those displaced (Rydge et al., 2018). Into recovery, where government ties its economic plans to sustainable investments in order to meet its net-zero commitments, policies to expand training are urgently required (Stern et al., 2020; Unsworth et al., 2020b), and the establishment of the new ‘Green Jobs Taskforce’ is a welcome step in this regard.

Against this background, this paper examines a variety of datasets to shed light on trends in job-related training in the years before the Covid-19 crisis, and in the quarters since. We begin by comparing the training received by UK employees to that in other European countries using data from the European Working Conditions Survey in Section 1. We find that, while participation rates in the UK are relatively high, there appear to be issues with respect to the quality of training. In Section 2, we examine trends in UK training using up-to-date Labour Force Survey data across different segments of the workforce. We find that the decline in training participation rates applies mostly to young, and more educated workers who historically received most training compared to the rest of workforce, whereas lower skilled individuals have consistently received lower rates of training. The general decline cannot be explained by composition shifts towards sectors and occupations with lower training rates or into more part-time or self-employment. We also find that there has been a shift towards less costly training. In Section 3, we focus on apprenticeships, a specific type of publicly funded on-the-job training that has received a lot of policy attention in recent years. Analysis using administrative data from the Individualised Learner Record shows that while the number of participants has expanded, a higher share of apprentices tends to be older and there are concerns around declining quality. In Section 4, we turn our attention to the employers’ point of view and present some evidence on issues such as skills shortages and barriers to training provision based on the firm-level Employers Skills Survey. This reveals that most skill shortages among applicants and existing staff appear to relate to transferable skills, that improving recruitment tends to be the preferred method of addressing this amongst firms (rather than providing training). Section 5, we review the literature on potential explanations for the trends we have documented and in Section 6 we consider the latest data on training since the onset of the Covid-19 crisis, and the implications for training policies that can help to achieve a more inclusive, resilient and sustainable recovery.

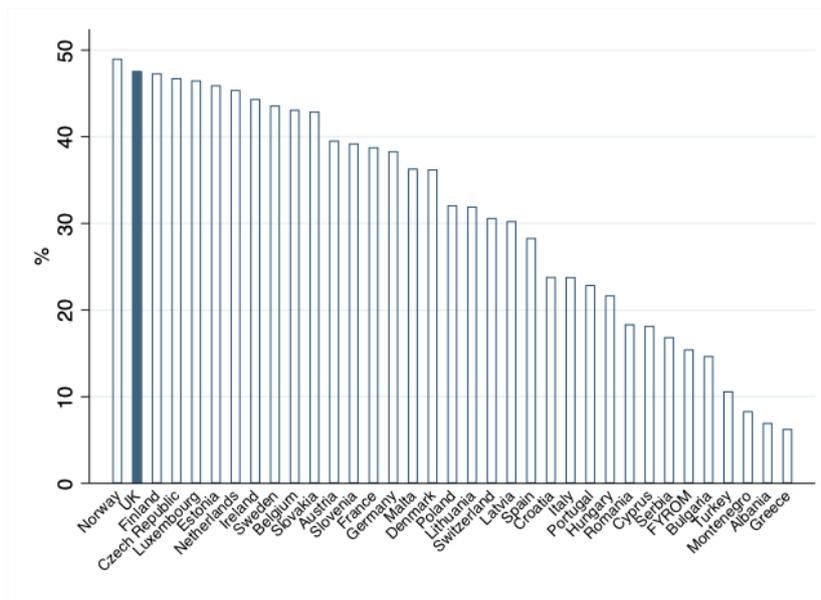
## **1. Job-related training, an international comparison**

We begin by benchmarking some key metrics on training in the UK against its international peers using the European Working Conditions Survey (EWCS) which surveys employed and self-employed workers across 35 countries.<sup>3</sup> As shown in Figure 1, the UK ranked second in terms of participation in employer-sponsored training among 35 countries in 2015 (latest wave available). However, of those who have received training, the duration of training in the UK seems to be below average (Figure 2): the UK ranks 21<sup>nd</sup> in terms of the share of trainees that receive training that lasts at least 6 days.

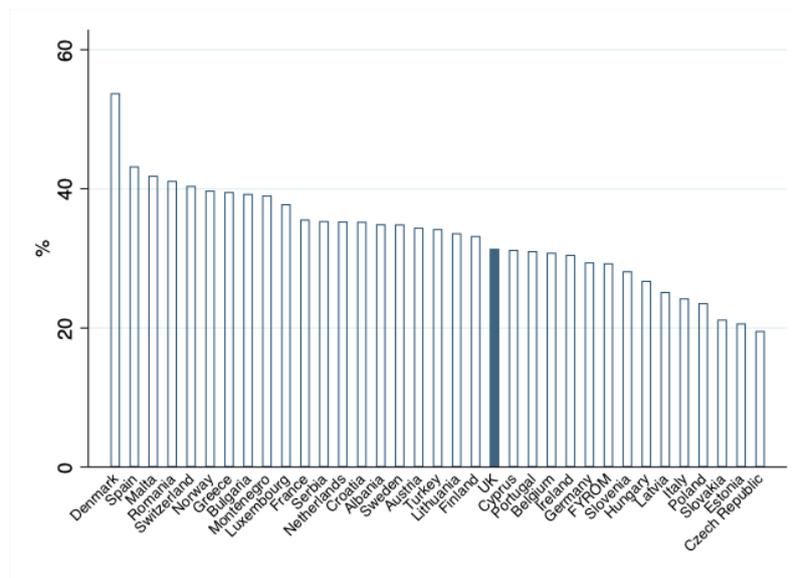
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<sup>3</sup> Other international surveys that can be used as a source of information on workers’ training participation are the Eurostat Vocational Training Survey, the EU Labour Force Survey or, at least until 2010, the European Social Survey. The most comprehensive of these is naturally the Eurostat Vocational Training Survey which is an enterprise-based survey. However, it only surveys enterprises with at least 10 employees and is therefore not as representative as the British LFS used in the rest of the analysis. The EU LFS is also not comparable as it only generally asks workers whether they have been in any form of education.

**Figure 1: Training participation rate**



**Figure 2: Share of training of at least 6 days duration**



Notes: Aged 16-65 employed, including self-employed. Final individual country weights (w4) are used. The participation rate here is defined as the weighted share of correspondents who responded ‘Yes’ to the question asking whether he/she has undergone any training, paid for or provided by employer to improve skills over the past 12 months. Source: European Working Conditions Survey, 2015.

Similarly, the UK ranks only 27<sup>th</sup> in terms of the share of trainees who strongly agree that their training has helped to improve the way they work (chart not reported here). This point is consistent with previous findings that UK training expenditure per employee is much lower than the EU-28 average (Social Mobility Commission, 2019).

Other data suggest that the shorter training duration observed in the UK cannot be explained by the UK workforce being in less need of training. According to the OECD Skills for Jobs database<sup>4</sup>, over 27% of the UK workforce are underqualified for their occupations, compared with an OECD average below 19%. While shortages in STEM are often cited, there are critical shortages across a range of skills, knowledge

<sup>4</sup> OECD Skills for Jobs database [2016 data] uses EU labour force survey, covering the whole of the UK. <https://stats.oecd.org/Index.aspx?DataSetCode=MISMATCH>

and abilities (OECD, 2017), and there are particular issues with respect to mid-level technical skills. Among 131 economies, the World Economic Forum's Global Competitiveness Index considers that while the UK 'can rely on a highly educated workforce (81.9, 11th), but there is room for improving the employability of graduates (62.3, 29th), digital skills among the workforce (65.6, 29th), and training and reskilling opportunities (62.7, 29th)' (World Economic Forum, 2019).

These analyses suggest that based on international comparisons, the volume and/or quality of training received by UK employees could be improved.

## **2. Trends in job-related training, as reported by individuals**

A key data source for analysing trends in training, as reported by individuals, is the UK Quarterly Labour Force Survey (LFS).<sup>5</sup> In the following analysis we highlight key trends using the second quarter of the LFS over the period 1995 to 2019 (we examine data in the most recent periods, since the onset of the Covid-19 crisis in section 6).<sup>6</sup> Participation in job-related training is identified where respondents state that they have undertaken job-related training or education in the last 4 or 13 weeks (4 weeks is the most commonly cited measure). There are also a series of questions about whether the training is on or off the job, the site of the training, training fees and time spent training. We summarise how trends in training differ by various characteristics of individuals including gender, age, highest education level achieved, sector, occupation and region of residence.

***There has been a general decline in training participation since the early 2000s which is not explained by shifts in sectoral or occupational composition or changing working arrangements***

We examine the overall trends in the share of LFS respondents who are employed (including the self-employed) that have participated in job-related training in the last 4 weeks (Figure 3). Consistent with previous findings (Green et al., 2016), we find there was a peak in job-related training in the early 2000s and that there has been a general decline since then.<sup>7</sup> The chart shows the trend for the total economy (public and private sector) and private sector separately. In the analysis that follows, we focus on the private sector, as that is where policies to incentivise firm investment in human capital are relevant.

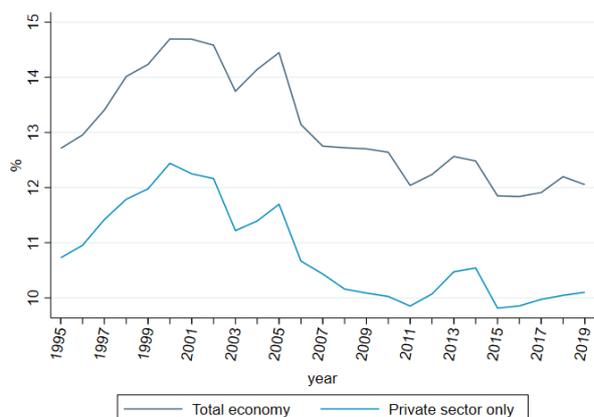
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<sup>5</sup> The LFS has several advantages for our purposes compared with alternative data sources (see Appendix Table A1 for a list of these). In particular, its large sample size allows us to examine how trends vary by personal characteristics of workers (Green et al., 2016). Further, its quarterly frequency allows us to examine training trend in a more continuous way, compared to some other surveys that are conducted much less frequently. The British Household Panel Survey which is available annually no longer asks job-related training questions (since 1998), and other surveys ask whether respondents have done some learning, but this is often too general to pin down employer-sponsored training.

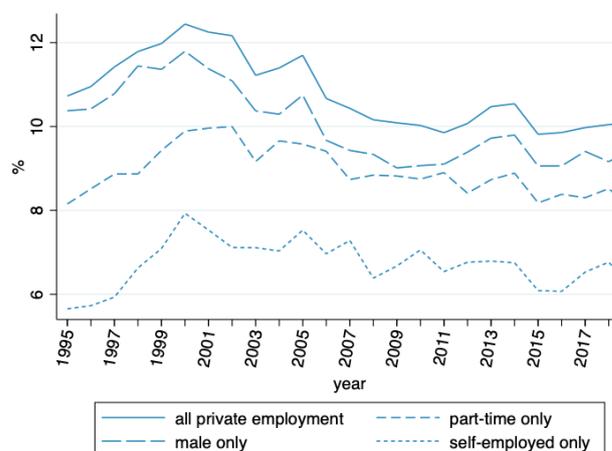
<sup>6</sup> Several follow-up training-related questions are only available for first and second quarter. Furthermore, some demographics, such as social occupation information, is absent in LFS 1<sup>st</sup> quarter in 2001, so we choose the 2<sup>nd</sup> quarter for the entire analysis. Using all 4 quarters yields similar long-term trends while including seasonality.

<sup>7</sup> The trend is similar using the 13-week measure, though the level is higher. These findings are consistent with Green et al. (2016) and Amin-Smith et al. (2017) analysis of the LFS.

**Figure 3: Four-week training participation rate – whole economy and private sector**



**Figure 4: Participation rate composition in private sector**



*Notes:* Sample includes workers (employed and self-employed) aged 16-65 in private sector and total economy respectively, LFS person weights applied. Source: Quarter 2 UK LFS (1995-2019).

We examine whether these trends differ between self-employed and employees, full-time and part-time, and female and male workers (Figure 4). While overall patterns are similar for these subgroups, the share reporting training is lower for part-time workers – which could be mechanical as they may have had fewer working days in the previous four weeks, or reflect lower firm investment in part-time workers. Training rates are also consistently lower for self-employed workers. In addition, the trends for female and male workers are similar, despite a higher training rate in all years for female workers.

In the appendix, we examine whether the overall trend differs across industries. Figure A1 shows that a sharp reduction in job-related training has taken place in several sectors since 2002, including in utilities (Energy and Water), Finance, Business services, and Education and Health. Some sectors appear to have persistently lower training rates: these include sectors such as Wholesale and Retail, and Accommodation and Restaurants, often referred to as ‘low-wage’ or ‘low-productivity’ sectors (Thompson et al., 2016) which are also some of the sectors worst-hit by the Covid-19 crisis due to social distancing requirements (Adams-Prassl et al., 2020).

In order to determine whether the aggregate decline in training observed in the private sector (Figure 3) is driven by compositional shifts towards sectors and occupations with lower training participation, we plot the trend after controlling for industry and occupation in turn (Figure 5, Panel A). We find that, once sectoral or occupational compositional changes are accounted for, the overall decline in training rates becomes steeper, suggesting that had it not been for sectoral and occupational reallocation, there would have been a larger fall in training rates over the period since 1995. We also examine whether compositional shifts into more part-time or self-employed work has contributed to the overall decline in training and find that controlling for part-time or self-employed status also makes little difference (Figure 5, Panel B).

**Figure 5: Training participation rate relative to 1995, with controls**

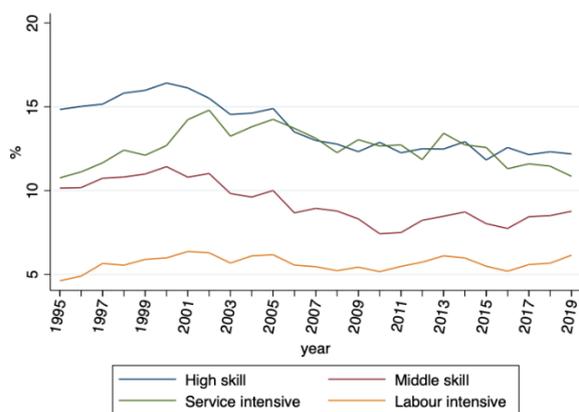


*Notes:* Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. The curves with controls plot the coefficients on year dummies from regressions including the controls specified. Participation rates are relative to the level in 1995. Source: Quarter 2 UK LFS (1995-2019).

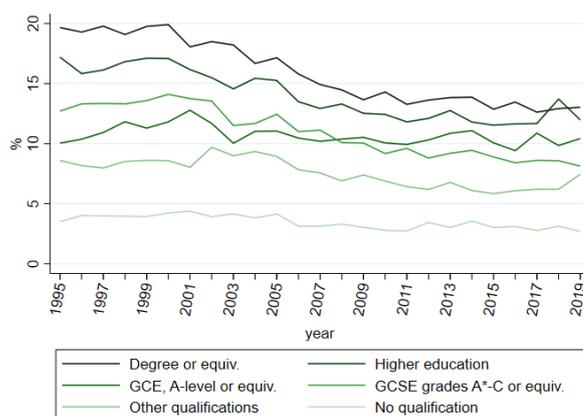
***The decline in training rates has been particularly felt by more educated and younger workers, whereas lower skilled workers have consistently received less training***

In Figure 6 we see that the largest decline in training is amongst high- and middle-skill occupations;<sup>8</sup> while labour-intense occupations consistently had the lowest level of training, (though training participation has actually slightly increased for this group).

**Figure 6: Training participation by occupation**



**Figure 7: Training participation by education**



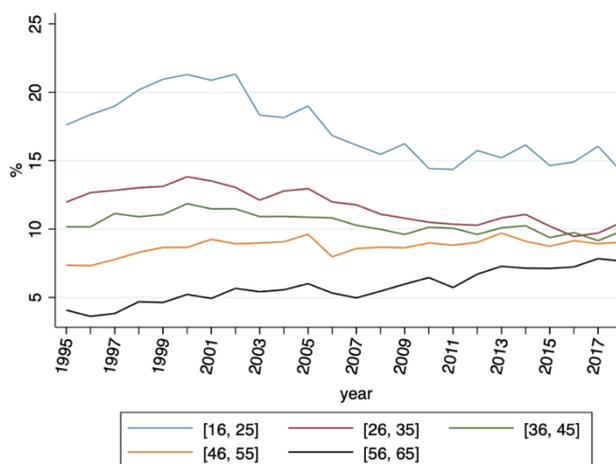
*Notes:* Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Source: Quarter 2 UK LFS (1995-2019).

<sup>8</sup> Groupings consistent with ESS (2018), Table 1.2. High skill occupations consist of 1) managers, directors and senior officials, 2) professionals and 3) associate professional and technical occupations. Middle skill occupations are 4) administrative and secretarial and 5) skilled trades occupations. Service intensive occupations include 6) caring, leisure, and other service and 7) sales and customer service occupations, Labour intensive occupations are 8) process, plant and machine operatives and 9) elementary operations.

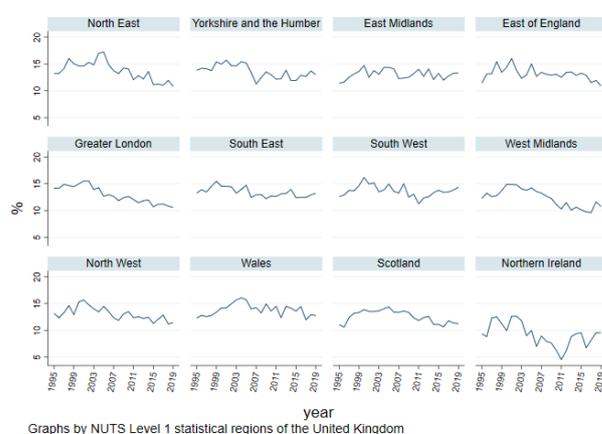
Figure 7 presents a similar picture: we find that the steepest decline in job-related training occurred for those with higher levels of education, though this group still receives the highest level of training. Those with lower levels of education receive less job-related training and this has not changed. Interestingly, in separate analysis not reported here, we find that these patterns across more and less educated groups appear to apply in both the ‘high-tech sectors’<sup>9</sup>, and in the so-called ‘low-productivity sectors’ such as retail and hospitality.

Figure 8 provides a similar analysis segmented by age group: this reveals that the youngest workers, those aged 16 to 25, have seen the largest decline – though again the share of younger workers receiving training is consistently the highest of all age groups. This large decline in training among young people is worrying for a number of reasons. First, business surveys suggest that this is unlikely to be due to improved work readiness amongst graduates and school-leavers compared to earlier cohorts: CBI surveys consistently report that employers are concerned by the skills of people entering the world of work (see for example CBI, 2019<sup>10</sup>). Second, it may imply a considerable loss in potential productivity, as the return to training young people, e.g. in apprenticeships, has been found to be higher than that of older counterparts (McIntosh and Morris, 2018). Third, falling training could imply a more difficult transition of young people into work, as training opportunities, for example via apprenticeships, ease the transition for young people from school to skilled occupations (McNally, 2018), and from the less-skilled to more-skilled jobs. Such issues are heightened in the context of Covid-19, since we have seen that younger groups have suffered most in terms of labour market outcomes (Elliot Major et al., 2020).

**Figure 8: Training participation rate by age group**



**Figure 9: Training participation rate by region**



*Notes:* Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Source: Quarter 2 UK LFS (1995-2019).

Finally, we examine whether the overall trends differ across geography of the UK, and find that the decline in job-related training since the peak in the early 2000s occurs across most regions - with the exception of the East of England and the East Midlands where it has been relatively constant (Figure 9).

<sup>9</sup> High tech sectors are defined by SIC codes based on R&D and STEM intensity of occupations, across manufacturing and services according to Bakhshi et al., (2015).

<sup>10</sup> This report finds that 44% of employers felt that young people leaving school, college or university were not work ready. This is concerning given 45% of survey respondents ranked work readiness as the most important factor they consider when recruiting.

***Overall, less educated, part-time and self-employed workers have been less likely to receive training, controlling for sector or occupation of work.***

Putting these factors together, we investigate how the probability of receiving training is related to individual characteristics, holding other factors constant (Table 1).<sup>11</sup> Column (1) shows that female workers and those with a university degree are more likely to have undertaken job-related training, and the opposite applies for older, more tenured workers. However, the gender effect appears to be driven by women being employed in industries that train more. When controlling for industry fixed effects, as in column (2), the coefficient on the female dummy becomes smaller in magnitude.<sup>12</sup> Column (4) controls for occupation types, and the female coefficient becomes slightly smaller but is still highly significant and therefore suggests that females are more likely to receive training than males even within the same occupations.

Given that more educated workers are likely to be over-represented in more skilled occupations (including professional and technical occupations, which we saw have higher levels of training in general), controlling for occupation reduces the coefficient on the degree dummy. However, the most saturated specifications suggest that having a degree increases probability of receiving training by around 2 percentage points.

All first four columns control for a linear year trend. The fact that it is always significantly negative suggests that over this period there appears to be a secular fall in training rates that is not explained by shifts in industry, occupation or working patterns as suggested by Figure 5. In column (5), we instead use year fixed effects to control for changes over time in a more general way, and we find coefficients on worker characteristics remain stable.<sup>13</sup>

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<sup>11</sup> The coefficients are very similar in magnitude and significance to the marginal effects from logistic regressions.

<sup>12</sup> Controlling for more granular industry fixed effects (2-digit level) makes little difference to the coefficients.

<sup>13</sup> We also investigate whether there are differential trends for different groups, by interacting the linear year variable with several worker characteristics (controlling for other factors). We find that female workers and those with university degrees experience a much steeper reduction, while the opposite applies for more tenured, part-time, or self-employed workers.

**Table 1: Likelihood of having taken part in job-related training in the past 4 weeks**

	(1)	(2)	(3)	(4)	(5)
Female	0.022*** (0.001)	0.003*** (0.001)	0.008*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
Degree	0.047*** (0.001)	0.036*** (0.001)	0.036*** (0.001)	0.020*** (0.001)	0.020*** (0.001)
Age	-0.002*** (0.000)	-0.003*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)
5 years tenure	-0.005*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)
Linear year	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	
Part-time			-0.026*** (0.001)	-0.020*** (0.001)	-0.020*** (0.001)
Self-employed			-0.037*** (0.001)	-0.041*** (0.001)	-0.041*** (0.001)
Observations	941,140	941,140	941,140	941,140	941,140
<i>Fixed effects</i>					
Region	Yes	Yes	Yes	Yes	Yes
Industry		Yes	Yes	Yes	Yes
Occupation				Yes	Yes
Year					Yes

*Notes:* OLS regression with dependent dummy variable valued 1 if have taken part in job-related training in the past 4 weeks. Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Fixed effect terms are at the 1-digit level for 9 occupations and 11 industries. Source: Quarter 2 UK LFS (1995-2019). Standard errors in parentheses. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01.

These findings are concerning where they suggest that certain groups that could particularly benefit from training are less likely to receive it. For example, in a paper that analyses the effects of female training in the UK, Blundell et al. (2019) show that training is found to be particularly important for women who have completed high school, but did not go on to attend university.

***For those trained, there has been a general decline in the duration of training***

The decline in the duration of training received is documented by Green et al. (2016) using data up to 2010. Following the same structure as in Table 1, we examine how the likelihood of having training length at least 1 week is related to worker characteristics, on the sub-sample of respondents who have received job-related training or education in the past 4 weeks. Column (4) controls for region, industry and occupation fixed effects and shows that training courses appear to be significantly shorter for older, more experienced workers and also for those who hold a university degree<sup>14</sup>; while self-employed or part-time workers that do have training seem to take part in longer training courses than their full-time employee counterparts (potentially due to more flexibility to manage their schedule). But as before, we find that even after controlling for the various characteristics, there is a negative and significant downward trend in the duration of training.

<sup>14</sup> The result on education is in contrast with the findings of Green et al., (2016) whose sample size in Table 2 (that considers the effect of personal characteristics on training volume) indicates that full LFS sample is used, rather than only on those who participated in training. On the full sample and on the relevant time periods, we are able to replicate results broadly consistent with Green et al., (2016).

**Table 2: Likelihood that job-related training length is at least 1 week**

	(1)	(2)	(3)	(4)	(5)
Female	0.012** (0.005)	0.016*** (0.006)	0.010* (0.006)	0.002 (0.006)	0.001 (0.006)
Degree	-0.066*** (0.005)	-0.065*** (0.005)	-0.067*** (0.005)	-0.056*** (0.006)	-0.056*** (0.006)
Age	-0.010*** (0.000)	-0.009*** (0.000)	-0.010*** (0.000)	-0.010*** (0.000)	-0.010*** (0.000)
5 years tenure	-0.048*** (0.005)	-0.048*** (0.005)	-0.048*** (0.005)	-0.045*** (0.005)	-0.045*** (0.005)
Linear year	-0.009*** (0.001)	-0.009*** (0.001)	-0.009*** (0.001)	-0.009*** (0.001)	
Part time			0.036*** (0.007)	0.032*** (0.007)	0.032*** (0.007)
Self-employed			0.077*** (0.008)	0.081*** (0.008)	0.082*** (0.008)
Observations	40520	40520	40520	40520	40520
<i>Fixed effects</i>					
Region	Yes	Yes	Yes	Yes	Yes
Industry		Yes	Yes	Yes	Yes
Occupation				Yes	Yes
Year					Yes

*Notes:* OLS regression with dependent dummy variable valued 1 if the length of training program is more than 1 week. The total length of the training programme was recorded (in weeks), not just the part completed. Coverage: all respondents who have taken part in job-related education/training in the last 4 weeks. Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Standard errors in parentheses. \* p<0.1 \*\* p<0.05 \*\*\* p<0.01. Source: Quarter 2 UK LFS (1995-2019)

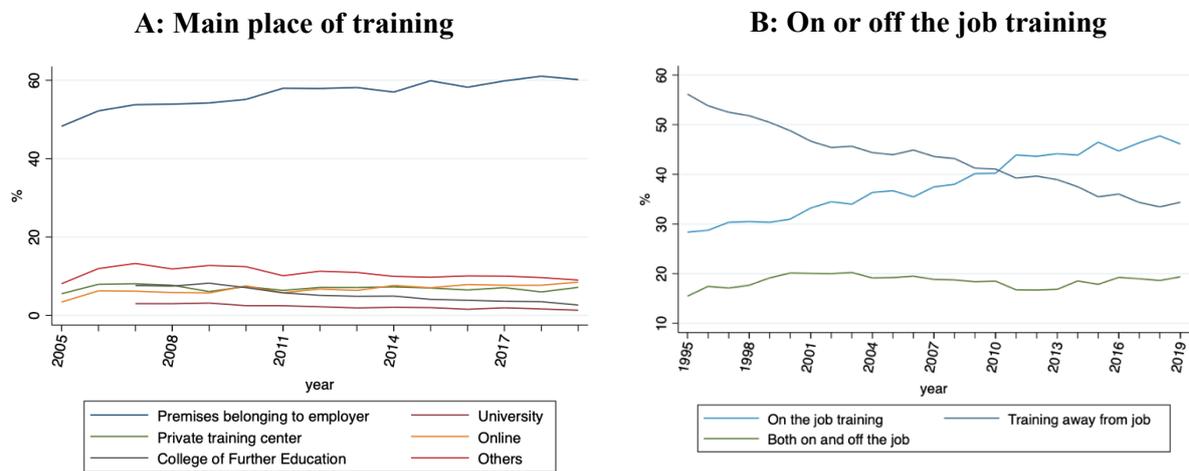
### ***Most training takes place on employer premises and this share has risen over time***

The LFS also contains data on the location of training. Figure 10, panel A shows that there has been a steady increase in training that takes place only at the employer's premises and a small increase in online training. In contrast, training taking place elsewhere, especially in further education colleges, has experienced a slight decline. Similarly, there has been a remarkable continuing shift towards on-the-job training at the expense of off-the-job training (panel B), consistent with findings in Amin-Smith et al. (2017).<sup>15</sup>

These shifts are also consistent with findings from employer surveys that report a continued decline in training expenditure per trainee. Half of UK employers state that insufficient funding and insufficient staff spare time are two main barriers to deliver then desired amount of training (ESS Research report, 2018).

<sup>15</sup> The LFS has another variable over whether job-related training is paid by the government or the employer, but this has varied little over time, with firm sponsorship accounting for around 70% of training.

**Figure 10: Main place of training and training types**



Notes: main place of training variables are absent before 2005; Universities and College of Further Education are not separately asked before 2007. Online training place includes UK On-line Centre, Open University/Open Tech or other correspondence courses. Sample restriction: aged [16-65] in private sector, not full-time students, and employed. LFS person weights used. Source: Quarter 2 UK LFS (1995-2019).

### 3. Trends in publicly funded job-related training, from administrative data

Government funding of workers' training can be an important lever to improve workforce skills. To understand more about trends in publicly funded training, we analyse administrative information from the Individualised Learner Record (ILR), which is available for the period between 2003 and 2017 for England and which records all publicly-funded activities<sup>16</sup> delivered in the Further Education sector.<sup>17</sup> The ILR reports information on training type, duration, level and sector, together with some characteristics of trainees including age. To be consistent with the analysis based on the LFS in Section 2, we focus on activities linked to job-related training and apprenticeships in particular.<sup>18</sup>

Apprenticeships were first introduced in their modern form in 1994 and have since grown to become the main type of publicly-funded job-related training programme in England. Apprentices are employed by a firm which is responsible for delivering the workplace component of training, and in addition, apprentices attend off-the-job courses delivered by a training provider. Training content and assessment are standardised and lead to a qualification that certifies competence in the relevant occupation. At their inception, apprenticeships were exclusively available for young learners (between 16 and 24 years of age) but in 2004, the government extended apprenticeship participation to those aged above 25, and to firms' existing employees. As we will see this led to a great expansion in overall apprenticeship participation, though this has stalled in more recent years.

In an effort to incentivise firms to offer more apprenticeship positions, the government introduced the Apprenticeship Levy in 2017. This is a 0.5% levy on firms' wage bills, applicable for firms with a wage bill in excess of £3 million, which levy-paying firms are then able to spend (topped up with an extra 10%

<sup>16</sup> In the analysis in Section 3, we are generally unable to accurately distinguish between public and privately funded training over time since the LFS only reports information collected from workers who may not have full knowledge of financing arrangements.

<sup>17</sup> In England, Further Education (FE) is a broad definition that covers many different types of learning activities: from recreational community courses, to remedial education for adult learners, from vocational courses for 16-18 year-old learners to re-training for displaced workers. For an overview, see Hupkau and Ventura (2017).

<sup>18</sup> In the LFS, workers are asked whether they are participating in an apprenticeship programme allowing some comparability between the LFS and the ILR. We find that the general proportion of people on apprenticeships is comparable between the two datasets: however in the LFS there seems to be underreporting of apprenticeship participation among individuals aged over 25.

from government) on apprenticeship training of new or existing employees.<sup>19</sup> In its first year the levy raised £2 billion with levy-paying firms accessing about 9% of levied funds (Morse 2019), and the rest being used to fund apprenticeship provision by non-levy paying firms.<sup>20</sup> Some early reports on the levy introduction point to a large decline in number of apprenticeship starts among non-levy-paying firms with a 34% and 42% decline between 2017 and 2018 among small and medium firms respectively (Battiston et al., 2020). Others have raised concerns that the levy may lead firms to privilege training of existing employees, including employees in managerial positions, at the expense of workers at entry level (Learning and Work Institute 2019).

Also observed in the ILR are *National Vocational Qualifications* (NVQ)-based training activities. These are qualifications delivered in the workplace in order to certify competence in a given occupation as required by occupational standards. NVQ courses are typically shorter than apprenticeships (of which they can be a component<sup>21</sup>) and have no associated off-the-job learning.

***Participation in publicly-funded job-related training has increased substantially since 2004 and most of publicly-backed training is now in the form of apprenticeships.***

The overall trends in participation in publicly-funded job-related training over the 2003-2017 period are given in Figure 11, distinguishing between apprenticeships and NVQs. We can see that participation in apprenticeships has increased substantially over this period, in 2006 apprenticeship starts accounted for less than one per cent of workers but the number doubled by 2013 and has fallen slightly since. Before 2006, the incidence of publicly-funded job-related training other than apprenticeships was very limited. This changed drastically after the progressive introduction of ‘Train-to-Gain’<sup>22</sup> which allowed firms to claim back funding from the government for training delivered to their workforce. This led to rapid growth in NVQ courses and by 2009 the participation rate was more than 2.5 percent. However, following the scrapping of this programme and the diversion of funding to apprenticeships (which in 2015 accounted for 90% of the adult job-related training budget), NVQ participation declined back to its pre-2006 levels. These trends are broadly similar across regions of the UK and economic sectors.<sup>23</sup>

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<sup>19</sup> Firms can use these funds to pay for training delivery and assessment but have to pay for apprentices’ wages themselves (including for the 20% of time apprentices spend on off-the-job training).

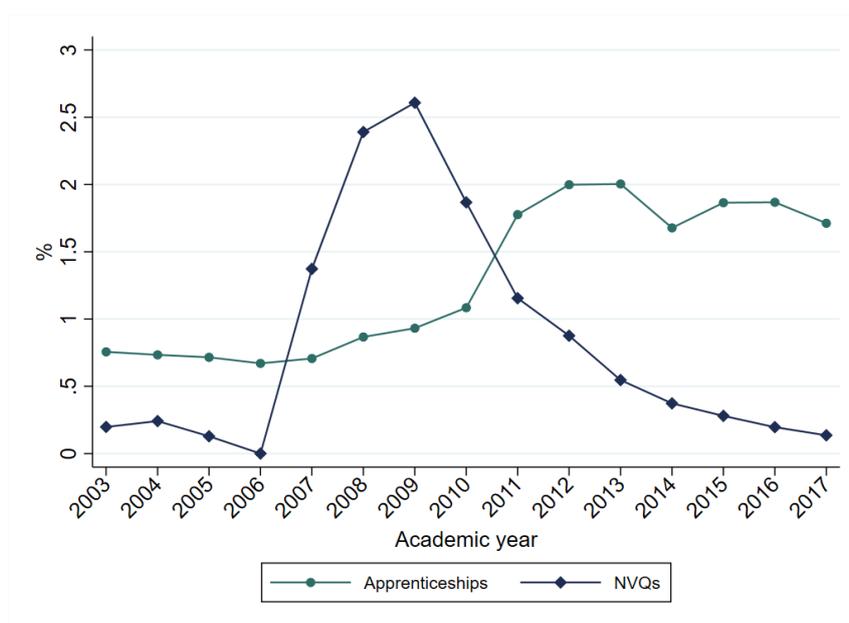
<sup>20</sup> For apprenticeships at non-levy-paying firms there is 90-10 co-investment between the government and the firm. In 2019, firms’ share of co-investment was reduced to 5%.

<sup>21</sup> To avoid double-counting NVQ courses, we only consider those not delivered as part of an apprenticeship.

<sup>22</sup> Train-to-gain was a policy initiative designed by the Labour government in 2006 as a response to reports lamenting the poor level of skills of the English workforce (Leitch Review, HMT (2006)). Under this programme, firms were subsidised to deliver training to their employees. The programme was very successful in terms of firms’ participation, but it was scrapped in 2011 amidst concerns that state subsidies were crowding out firms’ training investment.

<sup>23</sup> The level of training differs across England (the North West has the highest apprenticeship participation rate, for example), all regions share similar trends over the 2003-2017 period. For sectors, the ILR only reports the subject of the qualifications and has no information on the industrial sector workers are employed in, but these subjects can be mapped into industrial sector as their classification partly overlaps with them. Manufacturing, agriculture and business & finance having the highest incidence of NVQs and apprenticeships, but most sectors show similar trends over the years. One exception is construction, which, unlike other sectors, experienced a decline in the proportion of people starting apprenticeship training.

**Figure 11: Trends in participation in publicly-funded training by type**



*Notes:* The graph reports the number of apprenticeship and NVQs training spells started in each academic year (August-July) divided by the number of employed people (as estimated in the Annual Population Survey). The employed figure for 2003 is extrapolated using the 2004-2017 linear trend. As before, we focus on trainees aged between 16 and 65. *Source:* Own figures from ILR

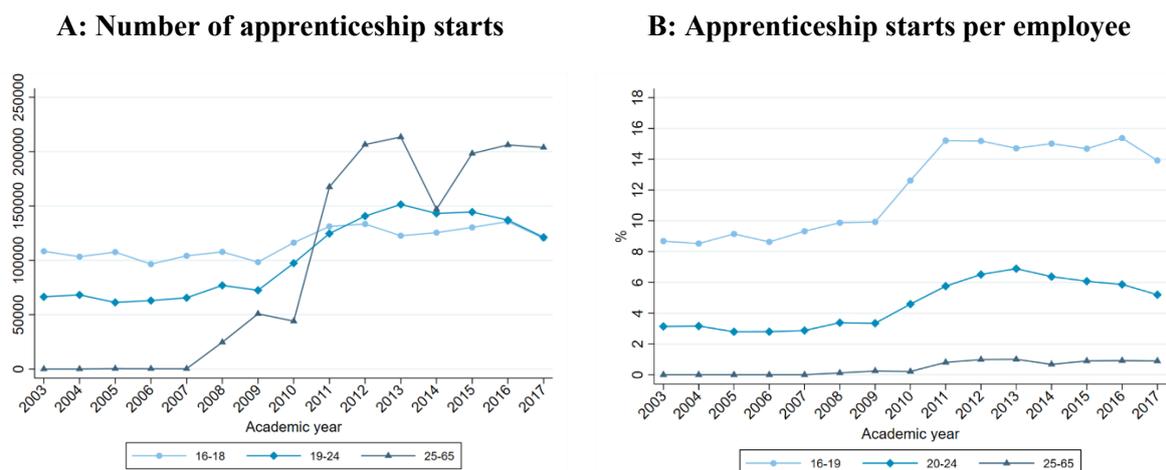
***Older age groups have accounted for the highest share of apprenticeships, but participation rates amongst younger workers are higher***

It has been shown that apprenticeships may confer younger people substantial payoffs in the labour market, but that returns are lower for learners above 25 years of age (see Cavaglia et al. 2017 and Morris and McIntosh 2018). Figure 12, panel A reports the number of apprenticeship starts over time and reveals that in absolute terms, the older age group (25-65 year olds) dominates in recent years. For this group, there were no apprenticeships until few years after the government lifted of the age-cap in 2004, and they have grown rapidly since.

However, normalising by the employed population in each age group, we do find that participation rates are higher for younger workers (Figure 12, panel B).<sup>24</sup> Apprenticeship participation rates in younger groups are consistently higher and have risen since 2009 – though the upward trend started reversing in 2013.

<sup>24</sup> We note that a large share of the younger age groups are still in education, but choose to normalise by the employed population so that we can understand the share of employed population in each group that is participating in apprenticeships, for consistency with the previous analysis on work-related training in the LFS (in Section 2).

**Figure 12: Apprenticeships trends by age group**

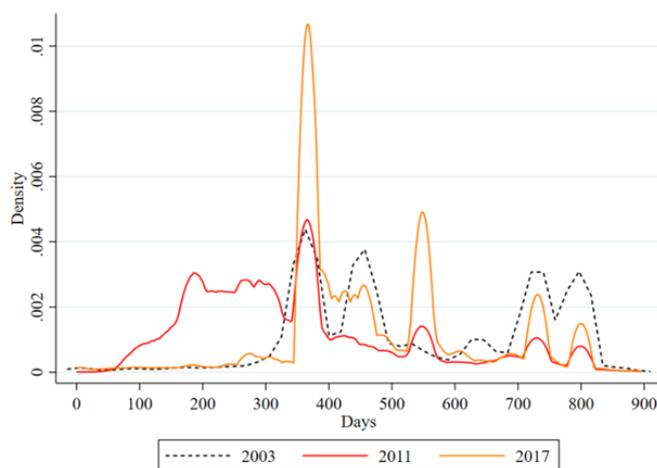


*Notes:* Panel A reports the number of apprenticeship started in each academic year (August-July) by age group. Panel B plots apprenticeship participation rates obtained by dividing the number of apprenticeship starts by the number of employed individuals (as estimated in the Annual Population Survey) in each age group. The employed figure for 2003 is extrapolated using the 2004-2017 linear trend. *Source:* Own figures from ILR.

***Increasing participation in apprenticeships has coincided with a fall in their duration***

A commonly voiced concern is that the overall increase in apprenticeship participation rates may have occurred at the expense of their quality (McNally, 2018). Figure 13 plots the distribution of the duration of apprenticeships over time (2003, 2011 and 2017). This shows that apprenticeship durations decreased considerably in 2011 (versus 2003) with a higher share of apprenticeships lasting less than a year. This prompted the government in 2012 to mandate a minimum apprenticeship length of 12 months, which led to an increase in apprenticeships' length thereafter (as seen for 2017) although most last just one year.<sup>25</sup>

**Figure 13: Distribution of apprenticeship duration over time**



*Notes:* Apprenticeship duration refers to the planned duration of apprenticeships started in a given academic year and not to their actual duration. *Source:* Own figures from ILR.

<sup>25</sup> Nafilyan and Speckesser (2019) evaluated the effect of this reform and found a positive effect of increased apprenticeship duration on apprentices' subsequent earnings. This seems to confirm that longer training duration is interpreted in the labour market as a sign of better training quality.

#### 4. Trends in job-related training, as reported by employers

We now turn to a consideration of more recent trends in work-related training as reported by firms in the Employer Skills Survey (ESS).<sup>26</sup> This survey has been carried out every two years since 2011 and provides information on skills challenges, recruitment and training.<sup>27</sup>

##### *Employers report relatively constant training rates since 2011, but there are indications that the quality of training offered has declined*

Employer responses in the ESS suggest that over the period 2011-2017, training provision has remained relatively constant, with around two thirds of firms stating that they had provided training for their employees over the last twelve months (ESS Research report, 2018). Similarly, the proportion of staff trained has been constant since 2013 at just over 60 per cent. In fact, these trends are consistent with results from LFS that the aggregate trend over the past decade has been relatively flat, following the sharp fall in the early 2000s.

However, there are indications that training quality, as measured by duration of courses or expenditure, has declined.<sup>28</sup> The total number of days trained per trainee in the UK has fallen by 18% from 7.8 in 2011 to 6.4 in 2017, and total training expenditure per trainee has fallen by 17%. It appears that these general declines apply across industries, with the exception of the construction and wholesale & retail sectors where expenditure per trainee appears to have risen between 2011 and 2017 (Figure 14), though average days per trainee declined in these sectors. Some of these changes might be explained by a rise in online training which could be cheaper / quicker to deliver in some settings.<sup>29</sup> However, another indication of falling quality is the finding that, of those trained, the share being trained to nationally recognised qualifications has fallen from 22% in 2011 to 18% in 2017.

The apparent decline in training quality found in ESS is consistent with our findings based on LFS and ILR data, as well as Green et al. (2016). Employers also report an increased use of online training, consistent with our findings in LFS, a trend which might be expected to accelerate in light of Covid-19 and social distancing requirements.

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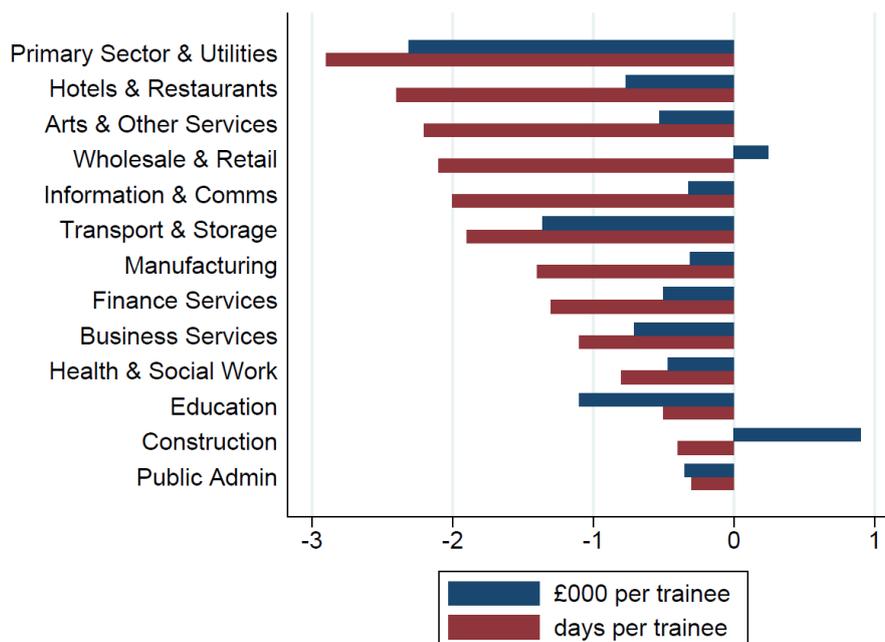
<sup>26</sup> UK Commission for Employment and Skills, Department for Education. (2019). Employer Skills Survey, 2011-2017: Secure Access. [data collection]. 4th Edition. UK Data Service. SN: 7745, <http://doi.org/10.5255/UKDA-SN-7745-4>

<sup>27</sup> The population covered by this survey consists of establishments (local units) in the Inter-Departmental Business Register (IDBR) with at least two staff on the payroll, across all sectors (public and private).

<sup>28</sup> See ESS Research Report (2018) Section 5, Training and Workforce Development

<sup>29</sup> Online training or e-learning has risen across sectors (Figure 5.6, ESS, 2018), though there is wide variation in its use. Sectors that experienced particularly large declines in training expenditure (per trainee), between 2011 and 2017 include the primary sector and utilities, transport and storage and education. Of these, the use of online training is particularly high and has risen substantially since 2015 in education; but it is relatively low in the primary sector and transport and storage. It should be noted however, that while total expenditure on online training or e-learning has risen across the board, it represented just 1% of total training expenditure in 2017.

**Figure 14: Change in expenditure and training days per trainee by industry, 2011-2017**



Note: Expenditure (2017 prices). Source: Employer Skills Survey 2018 report.

***A third of employers report that much of the training offered relates to statutory induction or health and safety, and recruitment tends to be preferred to training for addressing skills shortages***

Employer responses also suggest that a considerable amount of training may not involve skill development. As documented in the ESS Research report (2018), a third of employers state that at least half of their training in the previous 12 months has been merely statutory training aimed at induction, health and safety or first aid.<sup>30</sup> This might partly explain why relatively few UK employees consider training to have improved the way they work, despite a high participation rate versus international peers (Section 1).

This documented decline in training expenditure is puzzling given reports of ongoing skills shortages in the same survey, however when asked about actions to overcome hard-to-fill vacancies, a relatively small proportion of firms state that they are willing to offer training.<sup>31</sup> Increasing the speed of recruitment and using new recruitment methods were reported to be the preferred options by 41% and 33% of employers respectively.

Recruitment alone, however, is unlikely to solve these issues. First of all, employers report that nearly two-thirds of internal skill gaps are related to the fact that staff are new to the role. Furthermore, the most common skills lacking among staff are reportedly similar to those found lacking among applicants, such as time management and task prioritisation, contributing to nearly three-fifths of all skills gaps. Finally, faster and better recruitment can be partly seen as a zero-sum game where firms compete for better-skilled workers without directly investing in their transferable skills.

<sup>30</sup> In fact, 12% said that all their training in the last 12 months was induction or health and safety (equivalent to 8% of all employers). ESS Research Report (2018), pp107-108. And it was most common that induction/health and safety comprised all training in Hotels and Restaurants (21%) and Construction (18%).

<sup>31</sup> 10% of employers were prepared to offer training to less qualified recruits, 9% of employers to increase training of existing staff and 8% to expand trainee programmes (ESS, 2018).

When employers who would have liked to provide more training were asked their reasons for not providing as much training as desired, over half of employers pointed out that either they lack sufficient funds or staff lack sufficient time to participate. These were by far the most commonly reported reasons, with other reasons (e.g. lack of appropriate training/qualifications, difficulty finding flexible training providers, or staff not being keen) each being chosen by up to 5 per cent of employers.<sup>32</sup>

## **5. What can explain the apparent decline in on the job training in the UK?**

Overall, the analysis presented here suggests that there has been a general decline in training rates which cannot be explained by changes in the composition of the workforce. Moreover, there has also been a decline in training quality, as measured by the duration of training received by workers – a trend confirmed in administrative records on publicly funded training and surveys of employers in more recent years.

The analysis of publicly funded work-related training suggests that participation increased dramatically in the 2000s, reflecting a shift towards a more active training policy by the government but has been declining in the last decade. It is hard to ascertain the overall effect of these policies on training decline (public and private together) as we do not know whether firms would otherwise engaged in training. Yet, these figures appear to confirm that both firms and workers react to changes in the economic and policy environment, both at the extensive margin (participation in training) and intensive margin (duration/amount of investment in training).

We now turn to some potential and non-mutually exclusive explanations. We discuss their relative plausibility in this context, though empirically distinguishing between them is outside the scope of this paper.

### ***Reduced need for training***

It could be argued that the fall in training demand could be due to a fall in the expected private returns from training – due either to increased labour market flexibility or a low skills trajectory chosen by firms. However, this does not accord with the notion of the UK as a ‘knowledge economy’. The optimistic scenario would be that the workforce is better educated and simply needs less training at work. However, given the UK’s ongoing poor productivity performance, and the international comparisons summarised in Section 1, does not seem that reduced training can be explained by a reduced need for training workers.

### ***Changes in the nature of training***

The fall in recorded training participation and volumes might be explained by improved efficiency of training delivery – for example via increased use of online learning, or more focus on team-based learning which might not be picked up in the training data – for example regular appraisals and mentoring, and careful design of work organisation and incentives. It is hard to assess the extent to which this may be true given data availability, but again, given that the ongoing poor productivity performance and skills shortages in the UK, and the fact that, on average, management practices and technology adoption amongst firms (particularly SMEs) are relatively low by international standards,<sup>33</sup> this seems unlikely to be the main factor explaining changes in training.

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<sup>32</sup> See ESS Research Report p119.

<sup>33</sup> For example, the World Economic Forum World Competitiveness Report (World Economic Forum, 2019), states that UK ICT adoption, while increasing, remains low by OECD standards: the country ranks 31st globally and only 16th in Europe, with a score of 73.0, which is 20 and 15 points lower than the scores of Korea and Sweden, respectively. The World Management Survey has shown that UK management practices lag those in the US and Germany for example (see Bloom et al., 2016).

### ***Rising importance of transferrable skills***

Many studies have documented an increase in the share of non-routine tasks in the economy, associated with rises in employment shares in the high-skilled occupations and low-skilled service occupations, as a result of skill-based technological change (Autor et al., 2003; Autor and Dorn, 2013; Goos et al., 2014). This may further imply an increasing demand for transferable skills: both high-skilled managerial and professional occupations and low-skilled service occupations emphasise transferable social and cognitive skills. Consistently, research finds that the return to social skills is increasing in the US (Deming, 2017) and UK (Morris, 2019).

Indeed, according to the ESS, most of the skills UK employers find to be lacking among applicants and existing staff are transferable: gaps in complex analytical skills reportedly contributes to 40% of all skill-shortage vacancies, and a third of all skill-shortage vacancies were attributed, at least in part, to a lack of digital skills, including both basic computer literacy and more advanced or specialist IT skills. For personal skills, in both 2015 and 2017, the most common skill of this type lacking in the labour market was the ability to *manage ones' own time and task prioritisation* (51% of all skill-shortage vacancies were attributed to this). Indeed, in an analysis of reskilling needs by 2030, McKinsey (2019) highlight six core areas, many of which appear to be transferrable: basic digital; leadership and management; interpersonal and advanced communication; teaching and training; STEM knowledge; and critical thinking and information processing. In this context, an increasing reluctance of employers to invest in training, despite the presence of skill shortages, is in line with a scenario where they fear they will not be able to recoup their investment – which is particularly the case for transferrable skills.

### ***Increased financial constraints***

Training is a discretionary expenditure, so financially constrained firms are likely to reduce investment in training as constraints become more binding. In the years following the financial crisis, many firms in the UK (in particular SMEs) have faced credit constraints which could be a factor explaining the trends (LSE Growth Commission, 2017). Indeed, half of employers in the ESS report that financing (or time) constraints are a barrier to training. There are few papers that analyse this potential channel,<sup>34</sup> though there is a large literature that links increased credit constraints to reduced fixed capital investment. More recently, Costa et al. (2019) find evidence that sterling depreciation following the EU referendum in 2016 increased intermediate import prices and hence costs, and that firms responded by lowering wages and reducing training (there was no benefit in exports to offset this). In the context of the economic shock caused by Covid-19, such constraints are likely to become much more acute for many firms.

To the extent that government training subsidies help mitigate firms' (and workers') financial constraints, changes in the government training budget might have also influenced the trends described. In particular, there has been a drastic fall in the adult education budget since the early 2000s (Britton et al.,2020): up until 2010 this was mostly at the expense of adult classroom-based courses due to an increasing emphasis on funding workplace learning. However, since 2009-10 there has been about a 18% real terms fall in the public spending for adult work-based training due to the phasing-out of *Train-to-Gain* which has been only partly compensated by an increase in the budget for adult apprenticeships (Britton et al.,2020).

### ***Minimum wages***

In the period that training participation rates have been falling, the UK minimum wage has been increasing. A number of papers in different contexts have analysed the relationships between minimum

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<sup>34</sup> Popov (2014) has found a link between credit constraints and on the job training using firm level data from 25 transition economies.

wages and training. Acemoglu and Pischke (2001) set out how in competitive labour markets, the minimum wage is likely to reduce training as it prevents affected workers from taking wage cuts to finance the training. In non-competitive labour markets, minimum wages induce firms to train their unskilled employees. They find empirical evidence to support this hybrid model based on US data from 1987-1992 – with little overall impact of minimum wages on training.

### ***Immigration***

Increased immigration is a potential candidate explanation for reduced training – an increase in skilled immigrants might lead to reduced training of native workers. Indeed, the period in which training has declined has also seen a large increase in immigration into the UK. Mountford and Wadsworth (2019) set out a theoretical framework whereby immigration can lead to decreases or increases in training, and the impacts might differ across sectors. In their model, increases in training could be expected if skilled immigrants lead to increased profitability and induce firm entry into sectors that train workers. The authors find that immigration has a positive effect on training in the traded sectors and negative in the non-traded sectors. While the effects are not large, the authors conclude that immigration might have some role in allocating native workers to low training sectors.

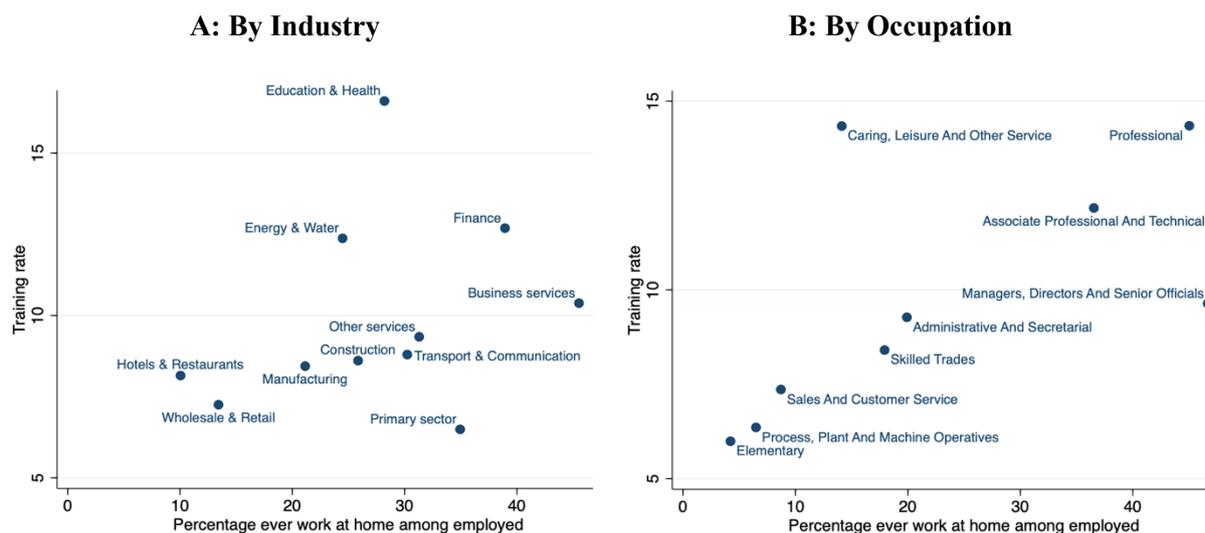
## **6. How has Covid-19 changed things, and what are the implications for policy?**

The scale of labour market displacement resulting from the Covid-19 crisis implies an even more urgent need for workforce training going forwards. Despite a variety of government support schemes, including the furlough scheme, many workers have already, or are anticipated to lose their jobs in light of the Covid-19 crisis. As at November 2020, there were 819,000 fewer people in employment compared with February 2020 (ONS, 2020). Redundancies reached a record high in August to October (ONS, 2020), and even with extra support and an extension of the furlough scheme during the second national lockdown, further large-scale redundancies are expected in the coming months as many jobs are not expected to be viable once we emerge from the crisis.

### ***Many of those worst affected by the Covid-19 crisis have also tended to receive less training***

The pandemic has already had an uneven impact on people and places - having a disproportionate impact on the most vulnerable, the poorest, the youngest, the least educated, and ethnic minorities (Bell et al., 2020). Occupations that are less amenable to home-based work are largely concentrated among the lower wage deciles (Dingel and Neiman, 2020). And (pre-pandemic) training rates have tended to be lower in the sectors and occupations where working at home is less prevalent, as shown in LFS data combined with ONS data on homeworking by sector or occupation (Figure 15). This suggests that those most affected by the crisis in labour market terms have also tended to receive less training in the past.

**Figure 15: Pre-Covid training participation rates and working from home**



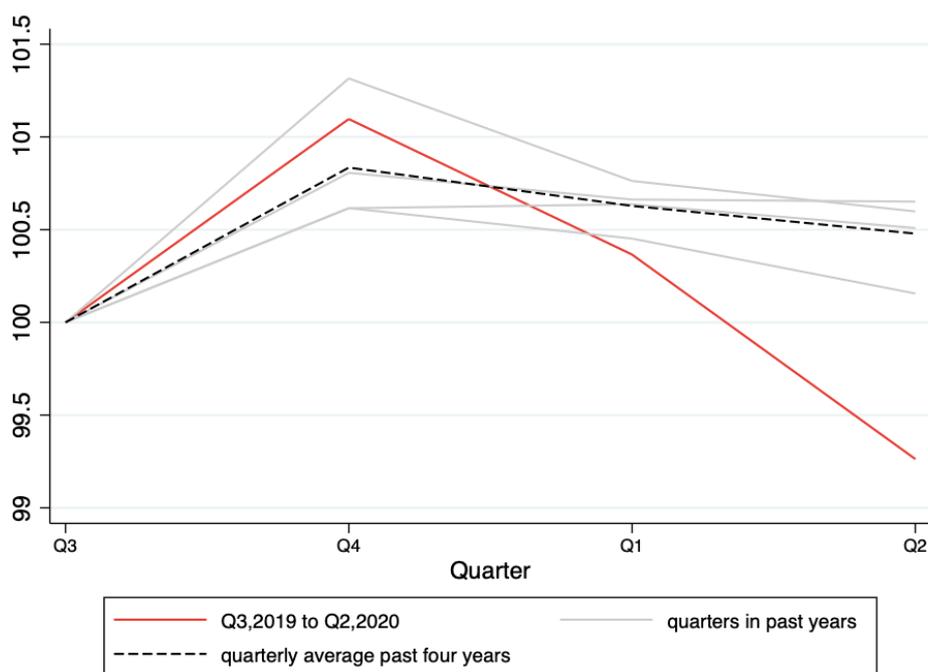
*Notes:* 1-digit level industry classification with 11 industries. 1-digit level occupation classification with 9 occupations. The pre-pandemic training rate is from the Labour Force Survey 2019. The sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Participation rates aggregated to sectors and occupations. Homeworking rates are from ONS analysis based on the Annual Population Survey 2019. *Source:* Quarter 2 UK LFS (2019); ONS, 2020.

Looking forwards, given that those who will have suffered most due to disruptions in the labour market and schooling tend to be those who are worse off financially, and in many cases, already at a disadvantage before Covid-19, there are major risks of educational and labour market scarring which would exacerbate inequalities in the longer term (Elliot Major and Machin, 2020). This points to training and retraining becoming even more important as people seek new jobs in the post-Covid-19 world.

***Training, for those employed, has taken a hit during Covid-19***

The data analysis presented so far all relates to the pre-Covid period. Using the LFS datasets for the first and second quarters of 2020 we assess how job-related training has been affected by the pandemic so far. Clearly, since training tends to be a discretionary expenditure for firms, and given the disruptions to business operations, we would expect training activities to have fallen. Indeed, this has been the case, as shown in Figure 16 where we plot the quarterly training rate over recent months (for those employed in the private sector) relative to its level in the third quarter of 2019 (red line), and compare these changes to those across the equivalent quarters in previous years.

**Figure 16. Quarterly training rates during and pre-pandemic, (Q3=100)**



*Notes:* Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. *Source:* *Quarterly Labour Force Survey, 2015 to 2020, UK*. The red line shows the training rate relative to its level in Q3, 2019; over the four quarters since. And this trends is compared to the equivalent periods in recent years.

In further analysis, we compare the change in the training rate from Q2 2019 to Q2 2020 across segments of the labour market.<sup>35</sup> In aggregate, there was a reduction of just under 1 percentage point. We find that the largest decline in training applies to the younger workforce aged 16 to 25, and to those without a university degree (see Appendix Table A2). The change in training also varies across industries. In fact, participation in training increased in the finance sector and business service sector, while the decline was largest (over 3 percentage points) in Transport and Communications, Hospitality and Construction.

Overall, this analysis suggests that younger, less educated workers have not only suffered in employment or income terms, but those in employment have also received less training since the onset of the pandemic.

***The evidence suggests that enhancing existing policies, and introducing new ones could help to increase the quantity and quality of job-related training in light of Covid-19 disruption and economic transition towards a zero-carbon economy***

The analysis set out in this paper suggests that the UK was already in need of improved policies and incentives for increased investment in workforce training. In face of largescale labour market displacements and risks of long-term scarring, Covid-19 has made these needs all the more urgent. Moreover, an effective skills policy will also be crucial in light of the transition to net-zero greenhouse gas emissions, in order that individuals can access the new job opportunities associated with it, and to achieve a just transition for those working in emitting sectors. The establishment of a new ‘Green Jobs Taskforce’ which will ‘focus on the immediate and longer-term challenges of delivering skilled workers for the UK’s transition to net zero’ is an important step in this regard.

<sup>35</sup> The aggregate training rate of 10.1 per cent as at Q2 2019 is the most recent point in Figure 3.

From the perspective of a profit maximising firm, the benefits of investing in *upskilling* might be more obvious than *reskilling* (except in circumstances where staff can be deployed to different roles within the same firm) with implications for the appropriate policies for each, and whether incentives should be targeted at firms or individuals themselves. Indeed, given the context of rising unemployment due to Covid-19, many of those who will need training might not be in employment, or in employment with on-the-job training opportunities. Increased training incentives or financial assistance targeted at individuals, and assistance for individuals deciding on training / career routes will therefore be valuable in this context. Recent policy announcements to encourage individuals to invest in their skills, including the ‘lifetime skills guarantee’ (within the National Skills Fund) and further programmes of support in the ‘Plan for Jobs’, and 2020 spending review are welcome. But the evidence suggests that, on the business side, new or enhanced support or incentives in a number of areas can be effective in increasing the quantity and quality of work-related training.

- **Human capital tax credits.** Financing constraints are cited by businesses as a barrier to training, and Covid-19 is putting extra pressure on many firms due to changes in demand or restrictions in operations. Incentives for investment in their staff might make it easier for firms to adapt their business models, while retaining employees. The use of incentives in the tax system, akin to those already in place to support R&D investments, could help to increase firm investment in upskilling their workforce. The case for ‘human capital tax credits’ was set out in the LSE Growth Commission (2017) and in a subsequent paper by Costa et al. (2018). There could be potential to pilot this type of policy in areas where displacement has been particularly acute in the current crisis, with a focus on particular skills or qualifications that are recognised to add value; or areas where change is anticipated over the coming years (e.g. greening car industry, see Unsworth et al., 2020a for further discussion).
- **A more broadly defined Apprenticeship Levy.** The jury is still out on the effectiveness of the apprenticeship levy, but the Covid-19 crisis can be an opportunity to consider some changes towards a broader approach. Battiston et al. (2020) reported a stark decrease in apprenticeships offered by SMEs around the time the levy was introduced (see Section 3) and SMEs are more likely to face liquidity constraints in light of Covid-19. Recently announced steps to facilitate the transfer of funds from large levy-paying firms to smaller enterprises are likely to increase the use of levy funds.<sup>36</sup> However, there are also concerns that the levy may not give firms sufficiently strong incentives to offer apprenticeships to young people (for whom returns have been shown to be higher, and for whom the economic impacts of Covid-19 have been particularly severe) with firms using their funds towards expensive apprenticeships for senior workers when this may not always be the most suitable type of training for them. This could be addressed in a number of ways – for example, part of the funds raised with the levy could be earmarked to pay for apprenticeships for young people, the rest of the funds could be repurposed, allowing firms to spend the money towards training courses other than apprenticeships (Elliot Major and Machin, 2020; CBI, 2020).
- **Devolution of skills policy.** Since August 2019, the Adult Education Budget has been completely devolved to Greater London Authority and the other Mayoral Combined Authorities in England. This, however, excludes apprenticeship funding which, as discussed, represents the main type of publicly-funded job-related training. Increased devolution of apprenticeship and training policy should be considered where local knowledge of skills gaps and opportunities can increase its effectiveness, drawing on the lessons from recent attempts. For example, Cavaglia et al. (2020) found that local Authorities who in 2015-2016 were given additional flexibility to deliver an apprenticeship incentive

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<sup>36</sup> In the 2020 Spending Review Chancellor of the Exchequer announced that from August 2021 levy-paying firms will be available to transfer all their funds to SMEs. Currently large firms can only transfer up to 25% of their funds. In addition, the government will launch a new service to match large firms with ‘compatible’ SMEs.

scheme targeted to SMEs (AGE<sup>37</sup>) did not have more local apprenticeship starts. It is important to ensure that further devolution is accompanied by sufficient local government and LEP capacity, and data availability, in order to identify strategic opportunities and skills needs as part of the development of Local Industrial Strategies.

- ***Job creation and retraining schemes.*** Job creation and workers' retraining should be at the centre of a sustainable, resilient and inclusive recovery from the Covid-19 crisis. Unsworth et al., (2020b) highlight the job creation potential across a range of net-zero-aligned investments and new/enhanced skills will be key to the transition. Measures announced in the government's summer 2020 'Plan for Jobs' promise to offer jobs to workers formerly employed in the worst-hit sectors of the economy. Training is likely to be important here: workers at higher risk of job loss (and/or likely to face difficulty finding a job) tend to have lower levels of educational attainment. Most workers will need to undergo at least some training before being redeployed to new occupations or sectors. The government has announced some interventions in this direction: for example, following recommendations from the Augar review (2019), funding for adult learners' first full Level 3 qualification has been restored allowing workers without two A-Levels or equivalent to reskill in a new occupation without incurring any financial cost. The 2020 Spending Review allocated up to £138m towards this purpose but this sum is unlikely to meet the economy's need for retraining.<sup>38</sup> It is also important to ensure that the qualifications studied are relevant for local labour market needs and are suitable for learners and tighter integration with the National Career Service could help achieve this.

Taken together these types of reform are likely to help address increase the quantity and quality of investment in workforce training which will be central to achieving a more inclusive, resilient and sustainable economy in the recovery from Covid-19.

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<sup>37</sup> At national level, the Apprenticeship Grant for Employers scheme (AGE) consisted of an additional grant of £1,500 paid to SMEs for each 16-24 apprentice hired. 40 LAs were able to administer the scheme more flexibly: most areas used the acquired flexibility to target firms with up to 250 employees (rather than 50 as in the rest of the LAs) and to provide additional payments for apprenticeships in strategic sectors.

<sup>38</sup> Currently, the average funding rate for 'Full Level 3' qualifications for adult learners is approximately £3,300 (excluding additional uplifts). As an upper-bound, this would enable to retrain approximately 42,000 adults in 2020/21. To put this number in context, according to the 2019 UK Labour Force Survey (Q2), in England there were 9.1 million economically active, adults aged between 25 and 64 with no qualification at Level 3 or above.

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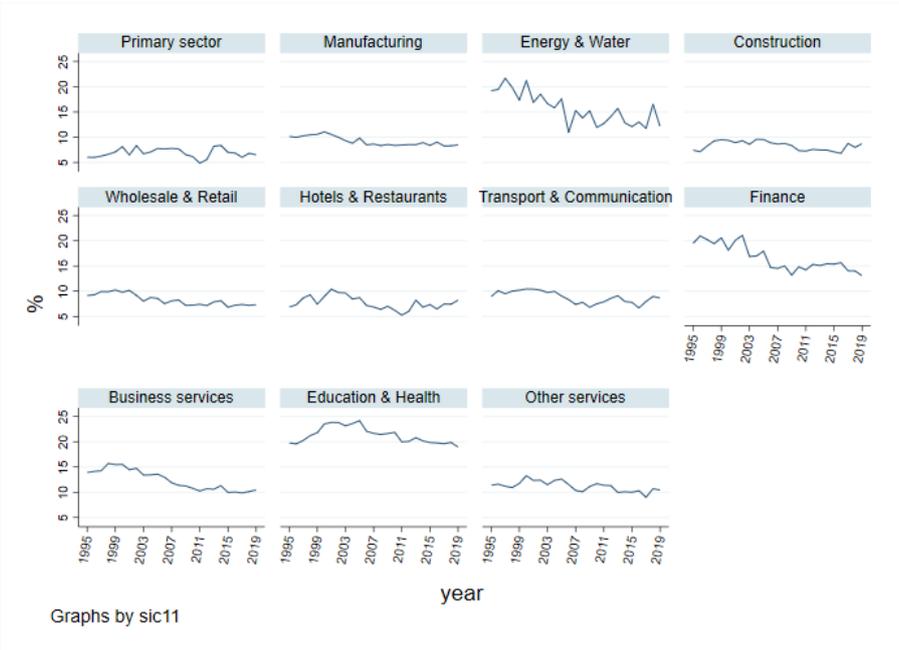
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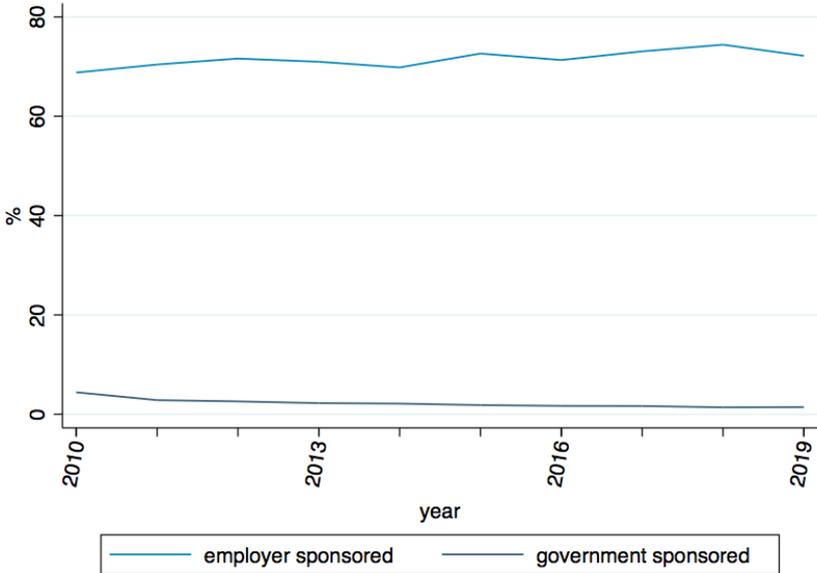
Appendix

Figure A1. Training participation rates by sector



Notes: Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Source: Quarter 2 UK LFS (1995-2019).

Figure A2. Who pays for the training, conditional on having been trained in the past 4 weeks



Notes: Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Source: Quarter 2 UK LFS (1995-2019).

**Table A1. Summary of survey data sources with data on job-related training in the UK**

Data source	Time periods	Latest sample	Participation variables	Other variables
Quarterly Labour Force Survey	Quarterly; 1995-2019	45,986	Job-related education/training in last 4 weeks Current apprenticeships Apprenticeships part of main job 4-digit occupation in apprenticeship	Length of training course (total length, does not have to be completed) categorical Time spent training on the job only (last week) 0-96 hours spent Time spent on education or training, including private study Funding - who pays for the fees for training Main place of education/training Type of training done in past 4 weeks  Education or training offered Training on or off job Main place of education/training Whether non-formal learning in last 4 weeks
Individuals skills and employment surveys	Five-year 2012-2017	3170	No publicly accessible codebook found	No publicly accessible codebook found
British Household Panel Survey	Annual; 1991-1997	10,300	Had work related training	Training: induction for current job Training: increase skills for current job Training: to develop skills generally Time on employer-based training, amount
European social survey	Biannual; 2002-2010	2,422 UK	During the last twelve months, have you taken any course or attended any lecture or conference to improve your knowledge or skills for work?	How many days in total have you spent on this training or education in the last 12 months? How much of this training or education was paid for by your employer or firm?
European working conditions survey	Five-year; 2005, 2010, 2015	1,560 UK	Training undertook in the past 12 months paid or provided by employer	How many days in total have you spent on training (include both job-related or paid by yourself) Do you think training is helpful to improve the way you work
Workplace Employment Relations Surveys	1990, 1998, 2004, 2011	2,680 firms	Proportion of employee trained. Average days of training	Training duration (days) On the job; off the job. Types of training
NIACE Survey	Annual; 1996-2017	5,039	I am currently doing some learning activities now	Learn for work or career. Learn for leisure or personal interest
National Adult Learner Survey (NALS)	2005,2010 ,2016	4,587	Formal/non-formal/informal learning	Vocational; non-vocational
Employers Employer Skills Surveys	Biannual; 2011-2019	87,430	Training rate	Skill shortages among applicants; Skill gaps among existing staff; Training types; expenditure per trainee or per employee. Training days per trainee or per employee Training towards qualifications. Barrier to training. Actions taken to overcome hard-to-fill vacancies.
Eurostat Vocational Training Survey	1993, 1999, 2005, 2010 and 2015	3,315 firms, UK	Training/non-training enterprises Participation in continuing vocational training	Planning and assessment of continuing vocational training Costs of continuing vocational training courses Time spent on continuing vocational training courses

EU Labour Force Survey	Quarterly, 1983-2018	14,596 UK	Education or training received during previous four weeks (formal + non formal)	Purpose of the training received (available from 1992 onwards). Answers include initial vocational training, continuous vocational training, and other purposes.
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**Table A2. Change in the training rate Q2 2019 to Q2 2020.**

	Q2, 2019	Q2, 2020	Change
Aggregate	0.101	0.093	-0.008
<b><u>Age Band</u></b>			
16/25	0.152	0.124	-0.028
26/35	0.100	0.098	-0.003
36/45	0.098	0.093	-0.004
46/55	0.092	0.084	-0.008
56/65	0.080	0.075	-0.005
<b><u>Education</u></b>			
Level 3 and below	0.084	0.072	-0.013
Degree holders and above	0.128	0.122	-0.006
<b><u>Occupation</u></b>			
High skill	0.122	0.122	0.000
Middle skill	0.088	0.066	-0.022
Service intensive	0.109	0.100	-0.009
Labour intensive	0.061	0.043	-0.019
<b><u>Industry</u></b>			
Primary sector	0.065	0.048	-0.017
Manufacturing	0.084	0.076	-0.008
Energy & Water	0.124	0.101	-0.023
Construction	0.086	0.054	-0.032
Wholesale & Retail	0.073	0.064	-0.008
Hotels & Restaurants	0.082	0.046	-0.035
Transport & Communication	0.088	0.050	-0.038
Finance	0.127	0.139	0.012
Business services	0.104	0.111	0.007
Education & Health	0.166	0.161	-0.005
Other services	0.093	0.095	0.001
Observations	30,127	23,943	

Notes: Sample includes workers (employed and self-employed) aged 16-65 in private sector, LFS person weights applied. Source: Q2, 2019 and 2020, LFS, UK