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Exploring trends in apprenticeship training around the introduction of the Apprenticeship Levy: emerging evidence using a matched apprentice-employer dataset

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Executive summary

The Apprenticeship system has been subject to a number of major changes in recent years. These include: the introduction of the Apprenticeship Levy in 2017 for employers with an annual pay bill of more than £3 million; a change in funding rules for all employers; and the transition from Apprenticeship Frameworks to Apprenticeship Standards which, amongst other things, introduces end-point assessment on all apprenticeships.

In this Briefing Note, we explore the evidence on the composition and distribution of apprenticeship training undertaken in England in recent years using a matched apprentice-employer level dataset. This contains information from the ILR (Individualised Learner Record) matched to the IDBR (the Office for National Statistics' Inter-Departmental Business Register).

Overall the number of apprenticeship starts has fallen significantly since the introduction of the Apprenticeship Levy, from around 0.5 million starts per year before the Levy was introduced to around 0.4 million per year today. There are now around 12 apprenticeship starts per 1,000 employees in SMEs and 15 starts per 1,000 employees in the largest enterprises with 250+ employees. Approximately half of all apprenticeship starts are now Levy funded.

There has been an acceleration in the switch from Intermediate to Advanced and Higher-level apprenticeships, with almost 20% now at Higher level compared with only 4% at this level in 2014/15. These trends are matched by a corresponding declining share at Intermediate level, from 60% in 2014/15 to only 37% in 2018/19. Apprenticeship starts were mostly concentrated in 'Health, Education & Public Administration' and the 'Services industries'. Finally, more northern regions seem to have higher levels of Apprenticeship training intensity, while London is the region with the lowest level of such training intensity.

Overall, the evidence presented does not suggest that there was a direct association between the introduction of the Levy and the decline in the number of apprenticeship starts, as large enterprises (which are more likely to be paying the Levy) experienced a smaller reduction in the number of starts compared to smaller enterprises (less likely to be paying the Levy). For smaller enterprises which are less likely to be directly impacted by the Levy, the strong decline in starts may be linked to a combination of adapting to the new funding system, the constraints on the pool of funding actually available for apprenticeship training, and the ongoing switch from Apprenticeship Frameworks to Apprenticeship Standards which have higher quality requirements.

The next steps will be to specifically examine employers who are subject to the Levy and look at their apprenticeship training patterns over time. This will enable us to assess what happened to training volumes before and after the introduction of the Levy for firms that are subject to the Levy. Furthermore, we plan to use information from the ILR and the employers' Digital Accounts to explore how changes in the funding rules have affected different employers, and what proportion of Levy funds available in their Digital Accounts have been used.

1. Introduction

This briefing note provides descriptive data on the number of apprenticeship starts over the previous decade, with particular attention focussed on the years before and after the introduction of the Apprenticeship Levy. While such data cannot claim to provide a causal analysis of the impact of the Levy on apprenticeship numbers, it is nevertheless instructive to observe the changing patterns of participation over the period. As well as the aggregate statistics, we disaggregate the results by characteristics of the apprenticeship, in particular the level, as well as the characteristics of the employer, focussing mainly on employer size but also considering sector and region. The characteristics of the apprentices themselves, such as age, gender and ethnicity, are also considered. Such disaggregation allows us to see whether the overall trends in apprenticeship numbers are experienced by all employers and apprentices, or whether they are specific to certain groups and types of apprenticeship.

Starting from 2013/14, the Apprenticeship system in England has been subject to a wide set of reforms, including the introduction of Apprenticeship 'Standards' (alongside the phasing out of Apprenticeship 'Frameworks' by 2020), and the introduction of the Apprenticeship Levy from April 2017.

Apprenticeship Standards

- The introduction of *Apprenticeship Standards* (from the academic year 2014/15) seeks to ensure that all apprenticeships meet minimum quality requirements: the training received is occupation-focused and is directly relevant for the tasks required to be undertaken as part of subsequent employment in that occupation. More generally, compared with *Apprenticeship Frameworks*, Apprenticeship Standards are intended to be significantly more occupation-focused (rather than qualification-focused), directly developed by employers (instead of sector bodies), with an external end-point assessment (instead of having no final assessment).
- Since August 2012 all apprenticeship training (whether Standards or Frameworks) has a *minimum duration of 12 months*. Also, for Apprenticeship Standards, the end-point assessment can only be taken after the minimum duration has been met;
- *Funding mechanisms* were also re-arranged and simplified. In particular, government contributions to apprentices on a Framework were dependent on the apprentice's age, the specific components of the training, and 'Area uplifts' amongst other factors. In contrast, during the period in advance of the introduction of the Apprenticeship Levy, apprentices engaged on Standards had two-thirds of their training costs supported by the government with no consideration of age or any other special circumstances. With the introduction of the Levy, the funding mechanisms were completely re-arranged depending on whether employers were Levy-paying (further information in the next section);
- In parallel with the introduction of Standards, a *20% minimum threshold for off-the-job training* was introduced, meaning that apprentices are required to spend at least 20% of their normal working hours on off-the-job training¹. This requirement applies to both Apprenticeship Frameworks and to Apprenticeship Standards at all levels.
- Apprenticeship Frameworks are being phased out and will be withdrawn at the end of July 2020 and Apprenticeship Standards will become the sole system for new apprenticeship starts. This transition is intended to address the complexity of the current approach and is meant to unify the funding mechanisms. Apprenticeship programmes in the new Standards

¹ English and maths up to and including Level 2 does not qualify for the purposes of the 20% requirement

system are allocated to one of 15 funding bands, detailing the maximum amount that can be spent on training for one apprentice using either the Apprenticeship Levy or government funding. This amount is independent of the apprentice's age, location or specific design of the training programme. The new system potentially provides more flexibility to employers, as they can design new apprenticeships to their needs in Trailblazers (groups of employers) and have greater influence over the costs of apprenticeships by negotiating the cost directly with the training provider.

Introduction of the Apprenticeship Levy

- In April 2017 the Government introduced the Apprenticeship Levy, a levy on businesses equating to 0.5% of their pay bill in excess of £3 million per annum. The original announcement was made in July 2015. The Levy is essentially a tax, which is collected by the government but made accessible again to the employer (through a Digital Account) in order to fund off-the-job apprenticeship training and assessment costs. This levy only applies to the amount of the pay bill exceeding £3 million, hence companies with annual pay bills below this threshold are not affected by the Levy. The intention of this reform was to increase the number of apprenticeship starts and to boost productivity within the economy (also increasing at the same time the quality/intensity of Apprenticeships and tailoring apprenticeship training more to the employers' needs)².
- In terms of *funding mechanisms*³, the funds paid by employers subject to the Levy accumulate in their Digital Accounts and can be spent on apprenticeship training up to the maximum threshold established for each Apprenticeship⁴. The government also partly subsidises these apprenticeship costs by providing a 10% top-up on the Apprenticeship Levy paid by companies, meaning that, for Apprenticeships funded through the Levy, 90% of the costs of the apprenticeship up to the maximum threshold are paid by employers and 10% by the government⁵.
- For smaller *employers not subject to the Levy*, the government pays 95% of training costs (for starts from April 2019, while the co-investment rate was 90% in the period before);
- Levy-paying employers can now *transfer* up to 25% of their levy funds⁶ (declared for the previous tax year) to other employers (for example smaller firms in their supply chain);

Evidence on the introduction of the Apprenticeship Levy

Official statistics⁷ have shown a substantial decline in the number of starts after the introduction of the Apprenticeship Levy, compared to those observed in previous academic years.

The analysis recently published by the Resolution Foundation (2019⁸) highlighted that the fall in apprenticeship starts was primarily driven by a decline in Level 2 Apprenticeships, which, according to

² See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/482754/BIS-15-604-english-apprenticeships-our-2020-vision.pdf

³ For more information on funding mechanisms see the documentation available [here](#)

⁴ It is also possible for employers affected by the Levy to fund Apprenticeships for employers not subject to the Levy (for example for smaller employers in their supply chain).

⁵ Apprenticeship training that cannot be fully met by funds from the employer apprenticeship service account (because there are insufficient funds) is co-funded by employers at a 5% rate (10% before April 2019), while the remaining 95% is funded by the government

⁶ From April 2019. Between April 2018 and April 2019, the maximum proportion transferrable was 10%.

⁷ See DfE's 'Apprenticeship and levy statistics: October 2019' available at: <https://www.gov.uk/government/statistics/apprenticeship-and-levy-statistics-october-2019>

⁸ See the Resolution Foundation (2019) 'Trading up or trading off? Understanding recent changes to England's apprenticeships system', available at: <https://www.resolutionfoundation.org/publications/trading-up-or-trading-off/>.

previous CVER research, provided limited value in some subject areas⁹, and that the fall in starts at lower levels had been partially offset by the increase in starts at Level 4 and above (with a particularly rapid increase at Levels 6 and 7). The report also highlighted that, although the overall composition by age has not changed much, the group of learners aged 25 or above had experienced a much larger shift from lower-level to higher-level apprenticeships compared to younger learners and that there had been no geographical shift in the location of starts (contrary to pre-Levy expectations of a regional re-distribution towards London and the South East)¹⁰. Importantly, the Resolution Foundation analysis suggested that there was currently no evidence to suggest that the Levy was directly responsible for the decline in the number of starts, instead suggesting that the regulatory reforms introduced at the same time as the Levy were a more plausible explanation for the observed change.

A recent report published by the Learning and Work Institute (2019)¹¹ contains an initial assessment of the impact of the Levy and the new funding rules on apprenticeship budgets. In the report the authors remark how the shift towards higher level apprenticeships (which tend to be more expensive) and from frameworks to standards (normally longer and with a robust end point assessment) is driving up average apprenticeship costs. Moreover, only around 22% of funds in the Levy Digital Accounts was left unused after two years and expired, potentially becoming available to fund apprenticeships for non-Levy paying employers. This is less than the government had originally anticipated. The authors highlight that the combination of these factors resulted in the apprenticeship budget being overspent (possibly by more than £1billion) and a squeeze on the funding available for smaller enterprises (with reports of providers turning away Small and Medium Enterprises that want to recruit apprentices due to lack of funding), with a potential loss of 75,000 apprenticeships in SMEs.

Focus of the current analysis

This Briefing Note goes beyond the information previously published by the Department for Education (DfE) or available in the Individualised Learner Record (ILR) by providing a descriptive analysis of emerging patterns in apprenticeship training between 2010/11 to 2017/18 at both the apprentice and enterprise level. In particular, using information from the matched ILR, Employer Data Service (EDS) and Inter Departmental Business Register (IDBR), we are able to examine not only the demographic characteristics of apprentices (from the ILR), but also look at the characteristics of those employers engaging with apprenticeship training (from the IDBR). This enables us to investigate further the observed decline in starts by looking at the type of employers (in terms of size and industry) most heavily affected.

In general, we refer to the change in the number of Apprenticeship starts between 2016/17 and 2017/18 (although we also present figures for 2015/16 and previous years): although the Levy came into effect during the 2016/17 academic year (April 2017), there was a strong surge in the number of starts in the two months preceding the introduction of the Levy (as shown in Figure 2), resulting in an overall total number of starts in line with the previous academic years. The findings are qualitatively similar if we look at the change between 2015/16 and 2017/18, so we have generally focused on the two academic years immediately preceding and following the introduction of the Levy.

The remainder of the note is organised as follows. Section 2 provides a brief overview of the data sources used for the analysis and the matching rate (a detailed description of the matching strategy is

⁹ Cavaglia *et al.* (2018).

¹⁰ "However, there were fears that if the levy did in fact presage a new 'customer base' of large firms, then levy-paying firms would likely be concentrated in London and the South East", Resolution Foundation (2019), p.13.

¹¹ Learning and Work Institute (2019), Bridging the Gap: Next Steps for the Apprenticeship Levy, October 2019 ([here](#))

provided in the Annex 2). Section 3 presents the trends in the number of starts over time and by the level of Apprenticeship while Section 4 decomposes the trends by employer characteristics (enterprise size, industry, and region). Section 5 examines the characteristics of the Apprentices – age, gender, ethnicity and the subject area of study. Section 6 documents the sources of funding, with a focus on how the Apprenticeship Levy has been distributed across enterprises and individuals. Finally, Section 7 provides conclusions and next steps.

2. Data sources and matching

This study uses information from a range of data sources¹², namely:

- The **Individualised Learner Record** (academic years: 2010/11-2017/18), which contains data from Further Education providers on Apprenticeships and other publicly funded training, learners’ and training characteristics (e.g. level of Apprenticeship, subject area etc.). The ILR also provides details on funding for different learning aims. For learning aims undertaken through the employer (such as Apprenticeships), the ILR also includes an employer identifier;
- The **Employer Data Service** (or ‘Blue Sheep’ data) is maintained by a third-party provider and contains data on employers undertaking publicly funded training (linked to the ILR). The information in the EDS dataset is collated from various data sources but does not directly match to any meaningful definition of business unit; and the
- **Inter Departmental Business Register** (extracts: Sept 2010-Sept 2018), which contains data on registered businesses at the enterprise-level, local unit-level etc., including their employment and turnover and can be linked to ONS’ surveys and other official data.

Information from the various data sources had to be matched before any analysis could be undertaken. To achieve this, we have undertaken and refined the data matching exercise on several occasions in recent years, and the figures presented in this note reflect the latest matching approach (which was applied to all the years and extracts of data). Detailed information on the matching strategy to link the ILR/EDS to the IDBR can be found in Annex 2. The matching exercise has been performed for the period 2010/11 to 2017/18 and enabled linking around 95% of all apprenticeship starts in 2017/18 (and 92% across all years). Yearly match rates for the whole period are presented in Table 1. For Levy-funded Apprenticeships, the match rates are even higher (in excess of 96%).

Table 1 ILR/IDBR match rates for Apprenticeship starts, by academic year

Apprenticeship starts linked to the IDBR	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Total
#	408,250	466,340	466,330	403,150	460,850	472,730	463,710	355,960	3,497,320
%	89%	90%	91%	92%	92%	93%	94%	95%	92%

Note: Numbers are rounded to the nearest 10; reporting number and proportion of Apprenticeship starts linked to the IDBR;
Source: London Economics based on ILR-EDS/IDBR matched data

Official statistics for the academic year 2018/19 have been published and have been incorporated into the analysis when possible. However, as the matched ILR-EDS/IDBR dataset is currently only available up to 2017/18, much of the evidence presented here relates only to the period 2010/11-2017/18.

¹² For more information see http://cver.lse.ac.uk/textonly/cver/pubs/cverbrf003_technical_paper.pdf

3. Findings

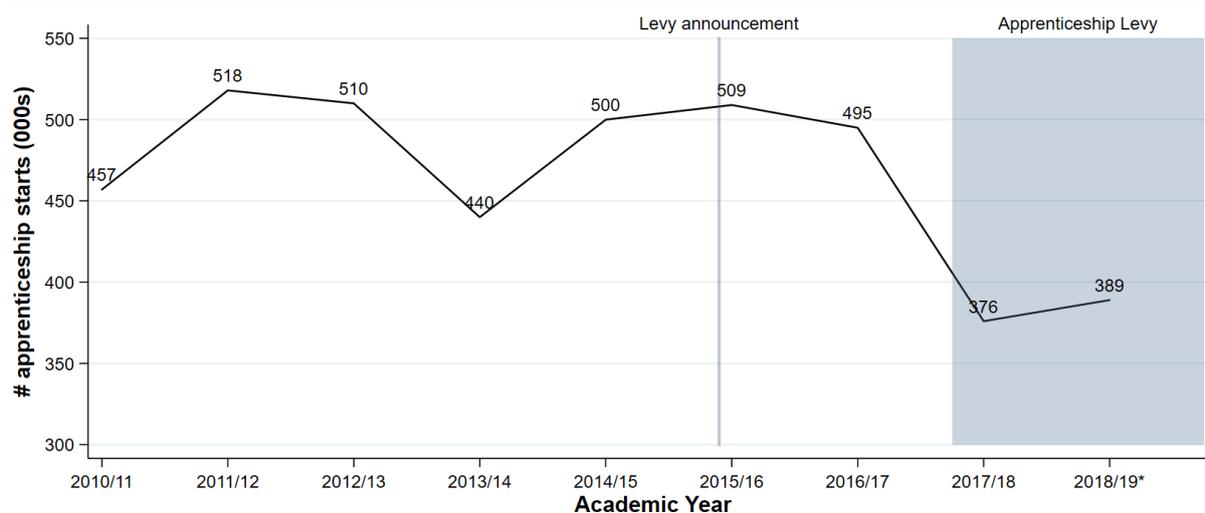
Summary: Apprenticeship starts in aggregate

- Overall the number of Apprenticeship starts remained quite stable between 2014/15 and 2016/17 (around 500,000), before falling significantly to 376,000 in 2017/18 and 389,000 in 2018/19.
- Quarterly and monthly data show no change in the aggregate pattern of Apprenticeship starts after the announcement of the Levy in July 2015 up until March 2017. However, in March and April 2017 there was a surge in the number of starts followed by a sudden decline in the last quarter of 2016/17.

3.1 Apprenticeship starts over time: Overall trend

The most visible trend around the introduction of the Levy is the sharp drop in apprenticeship starts, which fell from 495,000 in 2016/17 (and 509,000 in the previous academic year) to just 376,000 in 2017/18, with only a limited recovery to 389,000 in 2018/19 (see Figure 1). This corresponds to a decline of around 24% between 2016/17 and 2017/18.

Figure 1 Apprenticeship starts, 2010/11-2018/19



Note: Totals are rounded to the nearest thousands. *2018/19 figures based on DfE statistics: 'Apprenticeship and levy statistics: October 2019'

Source London Economics' analysis of Individualised Learner Record (ILR) data

Figure 2 breaks down the statistics on the number of starts by 3-month period for the academic years 2014/15-2018/19¹³, allowing us to look at the months before and after the introduction of the Levy¹⁴ and also covering the period before the Levy was announced (2014/15 academic year as the Levy was announced in the July 2015 budget).

The trend in apprenticeship starts is highly seasonal, with a peak in the number of apprenticeships coinciding with the first quarter of each academic year (and in particular in September). The data show very little change in the period between the Levy announcement and two months before the

¹³ The 2018/19 figures are based on DfE statistics published in 'Apprenticeship and levy statistics: October 2019';

¹⁴ Even though the Levy was introduced in April 2017 and employers started paying into their Digital Accounts in that month, Levy funds only became usable from the following month and the first Levy-funded apprenticeships only started in May 2017.

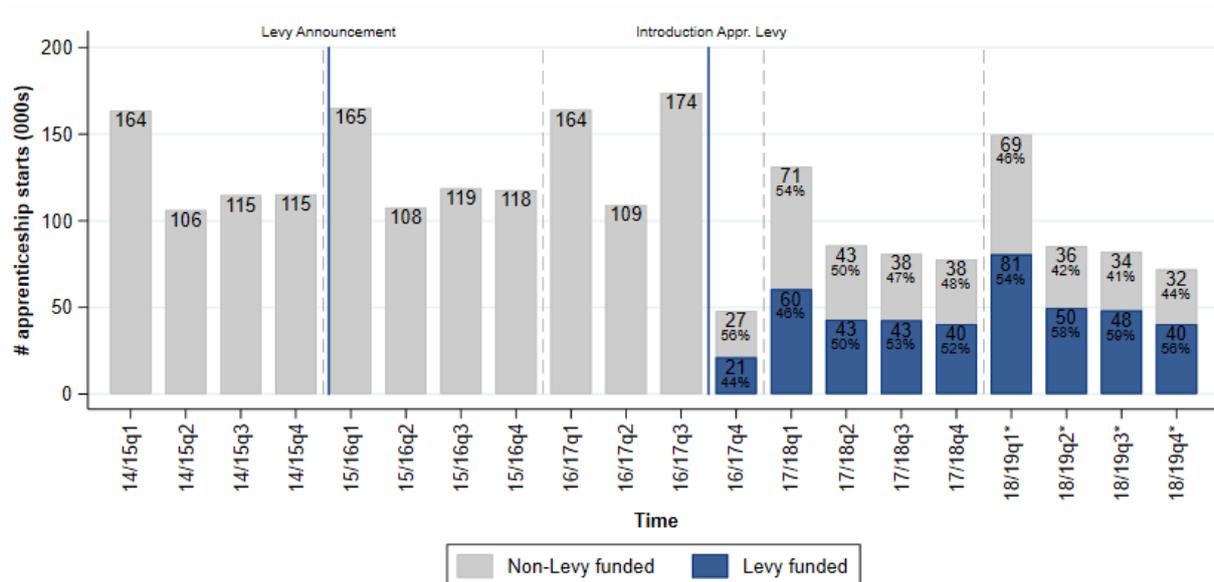
introduction of the Levy: in fact, numbers for the 2015/16 quarters are only marginally higher than the corresponding quarters in 2014/15 (by between 1,000 and 4,000 per quarter), and, up to the month of February 2017, the number of starts for the academic year 2016/17 were nearly identical to the corresponding period in the previous academic year.

However the last two months prior to the introduction of the Levy (March and April 2017, belonging to Quarter 3 of 2016/17) saw a sharp boost in the number of starts compared to the same period in the previous academic year (135,000 vs. 79,000), followed by a dramatic drop after April 2017 (with only 48,000 starts compared to 118,000 in the corresponding period in the previous year). Furthermore, all 2017/18 quarters saw a severe decline compared to the corresponding period in previous academic years. Thus, the decline in the number of starts had already started in the final quarter of the 2016/17 academic year (immediately after the introduction of the Levy) and persisted in 2017/18 (with only a limited recovery in 2018/19). The evidence suggests that, probably due to uncertainty over the new funding arrangements, employers decided to bring forward to 2016/17 quarter 3 the starts they would have normally undertaken in the last quarter.

In Figure 15 in Annex 1 we present the number of starts by quarter broken down by enterprise size (defined by employment band), and the trend pre-Levy seems to be consistent across the different categories of firm size. Specifically, irrespective of enterprise size, up until the final quarter prior to the introduction of the Levy, the number of starts was very similar to the number of starts observed in previous years. In the last quarter (more precisely the last two months) prior to the introduction of the Levy, a spike in Apprenticeship starts across the different groups was observed. We explore in further detail evidence by enterprise size in the next section.

Figure 2 also breaks down the number of starts into Levy-funded and non-Levy-funded apprenticeship starts after May 2017 and illustrates that in the first quarter after the implementation of the Levy, approximately 44% of all apprenticeship starts were Levy-funded. The proportion increased to more than half of total starts by the beginning of 2018 and stood at around 56% in 2018/19.

Figure 2 Levy support and apprenticeship starts over time by quarter 2014/15-2018/19



Note: The chart displays the total number and percentage of Levy supported apprenticeship starts through direct payments from the Apprenticeship Service Digital Account of the employer. Totals are rounded to the nearest thousand STG. *2018/19 figures based on DfE statistics: 'Apprenticeship and levy statistics: October 2019'

Source London Economics' analysis of Individualised Learner Record (ILR) data

3.2 Apprenticeship level

Summary: Apprenticeship starts by level

- Recent evidence shows a rapid decline in the number of starts at the Intermediate level, with Intermediate Apprenticeships now representing only 37% of all starts (down from 60% in 2014/15). During the same period, the number of starts at Higher levels increased by around 270%, and represented 19% of all starts in 2018/19 (compared to just 4% in 2014/15). These trends had already started before the introduction of the Levy and accelerated significantly in the most recent two academic years.
- Looking at starts by level for particular types of firms, evidence shows that between 2016/17 and 2017/18, the number of starts at all levels declined for small and medium enterprises, while for large enterprises there was a slight increase in the number of starts at Advanced level and a large rise of those at Higher level (84%).

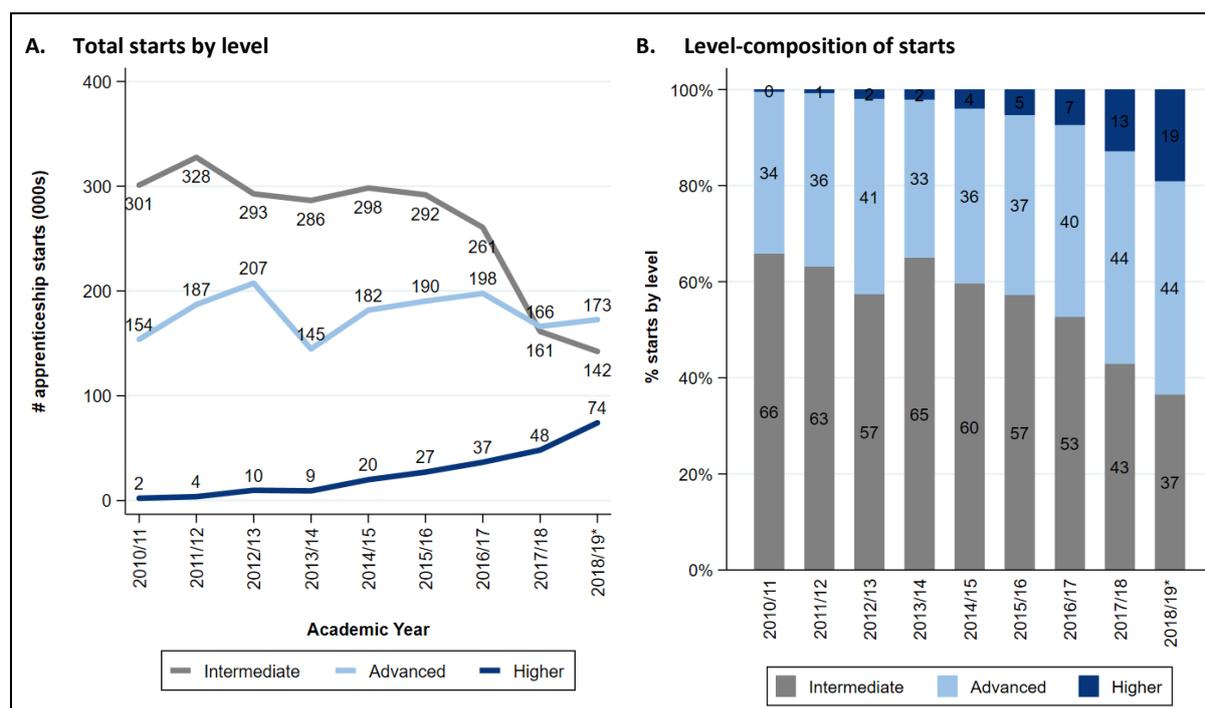
To further explore the characteristics of the decline in apprenticeship starts after 2016/17, in Figure 3 we present the number and proportion of starts by level over time (from 2010/11 to 2018/19). For the purpose of the current analysis, apprenticeship starts at higher level represent all starts at Level 4 and above.

Around the introduction of the Levy, the analysis illustrates that there was:

- A substantial decline in both the absolute number and the proportion of apprenticeship starts at the Intermediate Level (L2), which declined from 53% in 2016/17 to 43% in 2017/18 and 37% in 2018/19. The absolute number of starts at Level 2 fell from 261,000 in 2015/16 to 161,000 in 2017/18 and 142,000 in 2018/19 (a combined decline of almost 46%);
- A decline in the absolute number of starts at Advanced level (L3) - from 198,000 in 2015/16 to 166,000 in 2016/17 (corresponding to a decline of 16%) – alongside a partial recovery in 2018/19 (to 173,000). As a proportion of total starts, the number of new starts at Advanced level rose slightly from 40% in the period pre-Levy to 44% post-Levy.
- In contrast, the number of starts at Higher Level (L4 and above) doubled between 2016/17 and 2018/19, from 37,000 to 74,000 in 2018/19 (with 48,000 in 2017/18). The proportion of starts at Higher Level also rose rapidly, from 7% (in 2016/17) to 13% (in 2017/18) and 19% (in 2018/19).

More generally, starting from 2013/14, the analysis indicates a significant compositional shift in apprenticeship starts - from apprenticeships at Intermediate level to Advanced and Higher levels. Reflecting the increasing relevance of Apprenticeship Standards (see Figure 16 in Annex 1) and the shift from lower to higher level apprenticeships, the average planned duration has also increased (Figure 17 in Annex 1). In particular, the average planned duration for Intermediate and Advanced apprenticeships was relatively stable between 2014/15 and 2016/17 (around 15 months and 18.5 months respectively) but rose significantly in 2017/18 (to 16.2 months and 20.5 months respectively). On the other hand, the average planned duration for Higher apprenticeships increased steadily between 2014/15 and 2016/17 (by approximately one month per academic year) before rising sharply in 2017/18 (with a cumulative increase from 18.3 months in 2014/15 to 25.5 months in 2017/18). Overall, the average planned duration across all apprenticeship starts was around 16.3 months in 2014/15, increasing to 19.3 months by 2017/18.

Figure 3 Total number and composition of apprenticeship starts in by level (2010/11-2017/18)



Note: Totals are rounded to the nearest thousands. *2018/19 figures based on DfE statistics: 'Apprenticeship and levy statistics: October 2019'

Source London Economics' analysis of Individualised Learner Record (ILR) data

4. Employer characteristics

Thanks to the information available in the matched dataset, it is possible to investigate the characteristics of employers engaging with apprenticeship training and the extent to which this engagement has changed over time by looking at the period before and after the introduction of the Levy¹⁵. The employers' characteristics considered as part of this analysis are: the size of the enterprise (measured in terms of employment¹⁶), industrial sector of the enterprise and region of training (proxied by the location of the education provider where the training is undertaken). Before undertaking the analysis by employer type, we removed records that were unmatched at the end of the matching process¹⁷ and therefore only consider those employers for whom we hold the relevant information.

4.1 Enterprise size

Summary: Apprenticeship starts by employer size

- Training trends before the introduction of the Levy were quite similar across enterprises of different sizes; however, the reduction in the number of starts after the Levy was introduced was much less pronounced for large enterprises (i.e. those enterprises with

¹⁵ It should be noted that the analysis presented in this Briefing Note is aggregate – in the sense that we do not follow specific enterprises over time.

¹⁶ The definition of employment used includes both employees and working proprietors

¹⁷ Reflecting the matching rate presented in Table 1, employer information is not available for around 11% of starts in 2010/11, 10% in 2011/12, 9% in 2012/13, 8% in 2013/14 and 2014/15, 7% in 2015/16, 6% in 2016/17 and 5% in 2017/18.

employment of 250 or more and likely to be subject to the Levy) compared to smaller enterprises.

- This is true when looking at the absolute number of Apprenticeship starts, but also when considering measures of the intensity of apprenticeship training by enterprise size (defined as the number of starts divided by total employment in England). The intensity of apprenticeship training declined from around 20 starts per 1,000 in employment for SMEs to approximately 12 starts per 1,000 in employment, while remaining relatively flat for large enterprises (declining from approximately 15 to 14 starts per 1,000 in employment over the time period).

As presented in Figure 4 (panel A), large enterprises (with employment of 250 or more¹⁸) were responsible for approximately 199,000 apprenticeship starts in 2017/18, whilst medium (50-249 employment band) and small enterprises (those with employment up to 50) accounted for 45,000 and 111,000 starts respectively¹⁹. Excluding a slight decline in 2013/14, apprenticeship starts in small and medium enterprises increased moderately, but steadily, between 2010/11 and 2015/16 (2016/17 for medium enterprises) but declined sharply between 2016/17 and 2017/18 (by 34% in the case of small enterprises and by 42% in the case of medium-sized enterprises). In contrast, apprenticeship starts in large enterprises increased between 2010/11 and 2011/12 before declining markedly in 2013/14 (from 242,000 in 2011/12 and 186,000 in 2013/14²⁰) and subsequently recovering to approximately 220,000 starts between 2014/15 and 2016/17. Compared to smaller-size enterprises, starts in large enterprises have declined less severely (9%) following the introduction of the Levy, from around 218,000 to 199,000 (between 2016/17 and 2017/18).

Across all enterprise size-bands, the decline in apprenticeship starts has always been larger in respect of Intermediate Apprenticeships compared to Advanced and Higher apprenticeship starts (Figure 4, panel D). For large enterprises the decline in apprenticeship starts was solely driven by the decline in Intermediate Apprenticeships: in fact, in large enterprises, Advanced Apprenticeship starts grew by 2.4% between 2016/17 and 2017/18 while Higher Apprenticeship starts have almost doubled (+84%) in the same period.

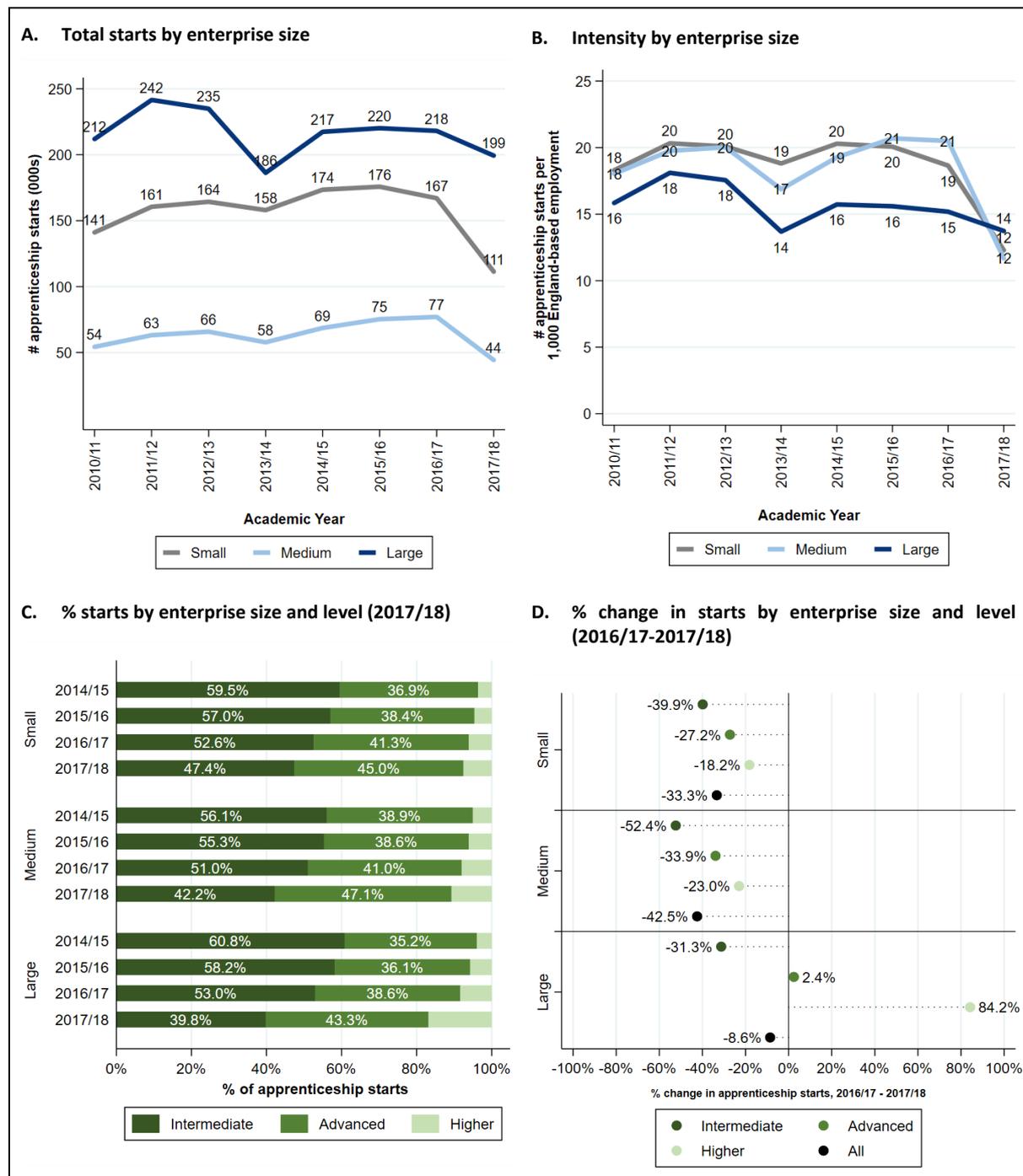
The analysis illustrates that after the introduction of the Levy, larger enterprises have, on average, a higher incidence of apprenticeship starts at Level 4 and above. In 2017/18, Higher level apprenticeships accounted for 17% of apprenticeship starts in large enterprises, but only 11% and 8% in medium and small sized enterprises respectively (Figure 4, panel C). On the other hand, Intermediate Apprenticeships accounted for 47% of starts for small enterprises, 42% for medium enterprises and less than 40% for large enterprises. It should be noted that these figures only apply to 2017/18 and reverse a trend in the previous academic years, where the proportion of starts at Intermediate Level was relatively higher for large enterprises, while the proportion of starts at higher level was in line with the figure for medium-size enterprises. In other words, the strong shift from Intermediate to Higher level apprenticeships observed for large enterprises mainly occurred after April 2017, and at a much faster rate compared to the trend observed for medium and small enterprises.

¹⁸ UK-based employment, as recorded in the IDBR.

¹⁹ It was not possible to allocate around 5% of apprenticeship starts to any enterprise in the IDBR in 2017/18.

²⁰ As reported in <http://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf>, the Department for Education have attributed this fall to the introduction and subsequent withdrawal of advanced learner loans for apprentices aged 24+ (i.e. older apprentices were required to take these loans to pay half of the cost of advanced level apprenticeships)

Figure 4 Total number of apprenticeship starts by enterprise size (2010/11-2017/18)



Note: Totals are rounded to the nearest thousands. Information on the employer is not available for around 11% of starts in 2010/11, 10% in 2011/12, 9% in 2012/13, 8% in 2013/14 and 2014/15, 7% in 2015/16, 6% in 2016/17 and 5% in 2017/18.

Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data

The evidence presented so far refers to the absolute level of Apprenticeship starts by enterprise size. To provide an aggregate measure of the intensity of apprenticeship training undertaken by enterprise type, we combined information from the matched dataset with aggregate employment figures for England from the IDBR. Intensity measures are then presented for enterprises of different sizes in each academic year as the number of apprenticeship starts per 1,000 in employment in enterprises of that

size (based in England²¹). As displayed in Panel B of Figure 4, large enterprises historically had a lower apprenticeship intensity compared to smaller-sized enterprises. In particular, the intensity of apprenticeship training stood at approximately 2% (i.e. 20 starts per 1,000 in employment) up to 2016/17 for small and medium enterprises, while it declined from approximately 1.8% to 1.5% (15-18 starts per 1,000 in employment) for large enterprises. Thus, the gap between large and small and medium sized enterprises ranged between 2 and 4 starts per 1,000 in employment up to 2016/17.

However, following the introduction of the Apprenticeship Levy, apprenticeship training intensity has declined sharply amongst small and medium sized enterprises (from 21 and 19 per 1,000 in employment 2016/17 to approximately 12 per 1,000 respectively in 2017/18). For large enterprises instead, the figure has stayed relatively flat (declining from 15 to 14 per 1,000 between 2016/17 and 2017/18). As a consequence, in the first academic year following the introduction of the Levy (2017/18), apprenticeship intensity was higher in large enterprises (14 starts per 1,000 in employment) compared to small and medium sized enterprises (12 starts per in 1,000 in employment), reversing the trend observed in the pre-Levy period.

4.2 Industry

Summary: Apprenticeship starts by industry

- Apprenticeship starts were mostly concentrated in two macro-sectors: ‘Health, Education & Public Administration’ and the ‘Services industries’, which accounted for almost 84% of all starts in recent years. Moreover, while the former sector has a much higher apprenticeship training intensity, it also experienced a stronger decline - in both absolute and intensity terms - in the period 2016/17 to 2017/18.
- Although the main employer types were historically large enterprises in ‘Human health and social work activities’ and in ‘Education’, the number of starts in these sectors has declined for Intermediate and Advanced Apprenticeships, while it has grown at Higher levels (but not as much as in other sectors). Conversely, large enterprises in the ‘Professional, scientific and technical activities’ sector experienced a rapid growth in both Higher level and Advanced apprenticeships.

Figure 5 (panel A) presents the total number of starts by sector of industrial activity (based on the enterprise SIC code in the matched ILR/IDBR dataset). The different industries have been aggregated into four aggregate categories: ‘Agriculture and Energy’ covering SIC sections A to E (except C), ‘Manufacturing and Construction’ including SIC sections C and F, ‘Services Industries’ covering SIC sections G to N and R to U and ‘Health, Education and Public Administration’ incorporating SIC sections O, P and Q.

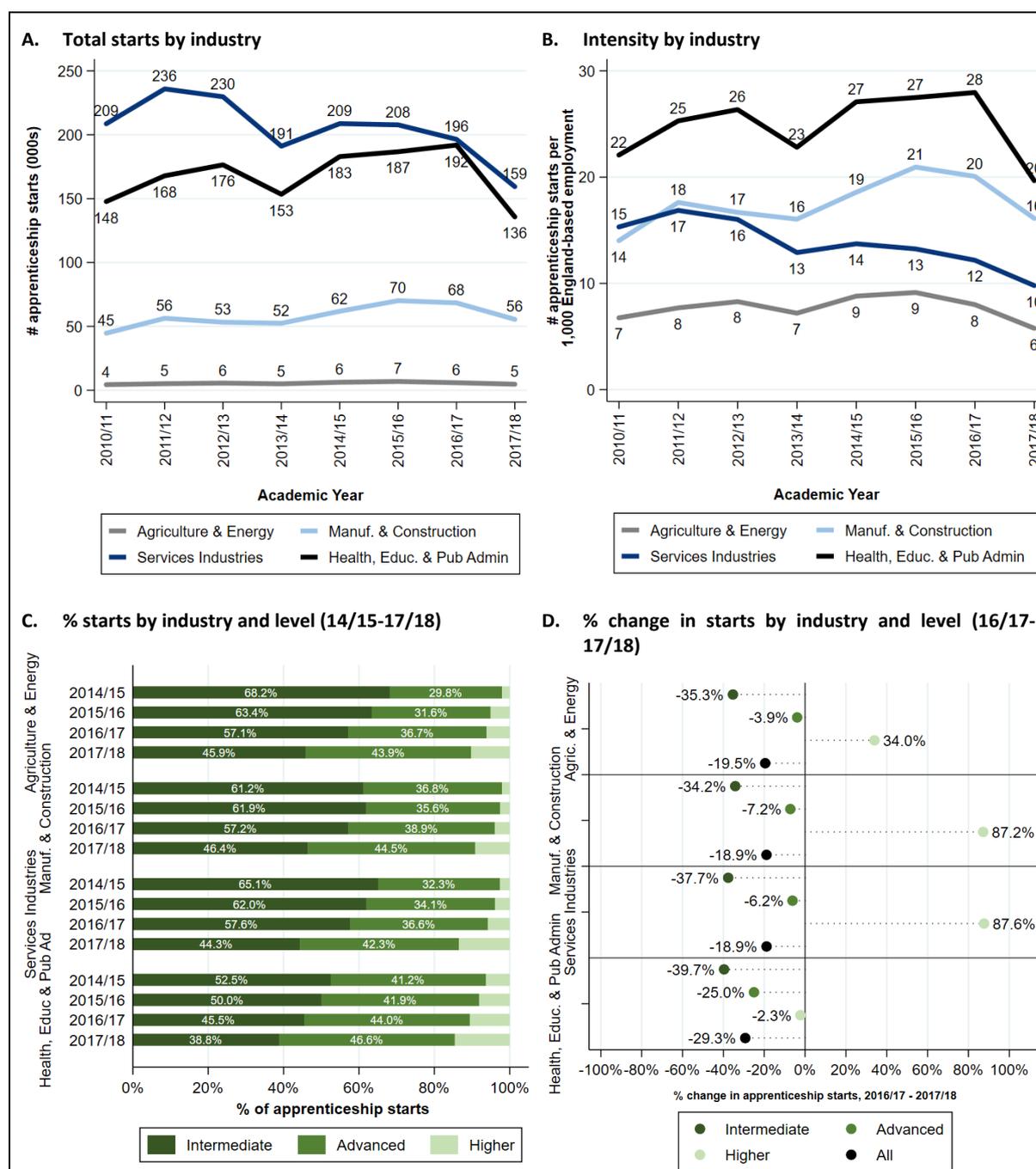
Across the entire period under consideration, the ‘Health, Education & Public Administration’ sector and ‘Services industries’ sector accounted for the vast majority of apprenticeship starts (a combined 84% of total starts in recent years). In 2016/17, 192,000 apprenticeship starts occurred in the ‘Health, Education and Public Administration’ sector, declining to 136,000 in 2017/18. For ‘Services Industries’, the number of apprenticeship starts declined from 196,000 to 159,000 between 2016/17 and 2017/18. In the other macro-sectors, the number of starts dropped from 68,000 to 56,000 in ‘Manufacturing and Construction’ and from approximately 6,000 to about 5,000 in ‘Agriculture and Energy’²². Thus, the decline in the number of starts in the period before and after the introduction of the Levy was most acute in the ‘Health, Education and Public Administration’ sector (almost 30%), while in the other industries, the percentage decline was approximately 20%²³.

²¹ Calculated as employment in English local units

²² Approximately 5% of starts have not been successfully matched to the IDBR and therefore have no information on industry of the employer.

²³ This is mainly driven by a drop in apprenticeship starts in the Health sector, see Figure 6 and discussion.

Figure 5 Total number of starts and apprenticeship intensity by industry (2010/11-2017/18)



Note: Apprenticeship intensity has been computed as total number of apprentices per thousand employment in the industry. 'Agriculture and Energy' includes SIC sections A, B, D & E; 'Manufacturing and Construction' includes SIC sections C & F; 'Services Industries' includes SIC sections G, H, I, J, K, L, M, N, R, S, T & U; 'Health, Education and Public Administration' includes SIC section O, P & Q. Information on the employer is not available for around 11% of starts in 2010/11, 10% in 2011/12, 9% in 2012/13, 8% in 2013/14 and 2014/15, 7% in 2015/16, 6% in 2016/17 and 5% in 2017/18. **Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data**

Panel B in Figure 5 shows apprenticeship training intensity by industry²⁴. Despite accounting for 45% of starts in 2017/18, the intensity of apprenticeship training in the 'Services industries' is relatively modest compared to other sectors, with only 10 starts per 1,000 in employment in 2017/18. This compares to 20 and 16 starts in the 'Health, Education and Public Administration' sector and the 'Manufacturing and Construction' sector respectively (while figures for the 'Agriculture and Energy'

²⁴ Measured as ratio of the number of starts in each industry and the overall England-based employment in that industry.

sector are around 6 starts per 1,000 in employment). Reflecting the sharp decline in the total number of starts in this sector, the intensity of apprenticeship training in the 'Health, Education and Public Administration' sector dropped considerably post-Levy: in 2016/17 there were 28 starts per 1,000 in employment in the sector which declined to 20 starts per 1,000 in employment in 2017/18 (representing a decline of about 28%). A similar rate of decline was also experienced in the 'Agriculture and Energy' sector (from 8 to 6 starts per 1,000 in employment), while the reduction in apprenticeship training intensity for the other two sectors was less pronounced (around 20%) - (from 20 to 16 starts per 1,000 in employment in 'Manufacturing and Construction' and from 12 to 10 starts per 1,000 in employment in the 'Services industries'.

As displayed in Figure 5 (Panel C), the level-composition of apprenticeship starts is in general similar across industries, with the exception of the 'Health, Education & Public Administration' sector, characterised by a lower proportion of starts at the Intermediate level (39% vs. 44%-46% in the other sectors) and a larger proportion at Advanced and Higher level (47% vs. 42%-45% and 15% vs. 9%-13% respectively). The proportion of starts at Higher level is greater in the 'Services Industries' and 'Health, Education & Public Administration' (13%-15%) compared to the other sectors (9%-10%). The compositional shift away from Intermediate to Advanced and Higher apprenticeships over time is clear in all four macro-sectors but was particularly pronounced for 'Services Industries' between 2016/17 and 2017/18 (with the proportion of starts at Higher level more than doubling from 5.8% to 13.4% in the period).

Finally, Figure 5 (Panel D) presents the percentage change in apprenticeship starts between 2016/17 and 2017/18 for each industry - disaggregated by level. Reflecting this compositional shift, the analysis illustrates a decline in the number of starts at Intermediate and Advanced level for all industries and an increase in starts at Higher level in 'Services Industries' (+88%), 'Manufacturing and Construction' (+87%) and 'Agriculture and Energy' (+34%). In contrast, starts at Higher level in the 'Health, Education and Public Administration' sector declined marginally (2.3%). More generally, although Intermediate apprenticeships declined markedly across all sectors, the number of Advanced apprenticeship starts only declined significantly (by 25%) for the 'Health, Education and Public Administration' sector.

4.3 Size & Industry

The aggregate results presented above may mask large underlying variation by SIC section and enterprise size. A breakdown of starts by industry and enterprise size is displayed in Figure 6, which presents the percentage change between 2016/17 and 2017/18 as well as the total number of apprenticeship starts in 2017/18 by enterprise size for selected SIC sections (focusing on SIC sections grouped in either 'Health, Education and Public Admin' ('HE & PA' in orange) or 'Services Industries' ('SI' in blue)). All series are also presented separately by level of apprenticeship. The key-findings are:

Intermediate Apprenticeships

- Between 2016/17 and 2017/18, we observe a decline in apprenticeship starts at Intermediate level across almost all SIC sections under consideration - irrespective of the enterprise size. The only exception were large enterprises operating in the 'Information & Communication' (J) sector which experienced an increase of approximately 70% in the number of apprenticeship starts.
- Across all SIC sections the decline is generally relatively greater for small and medium enterprises, compared to large enterprises operating in the same industrial sector.

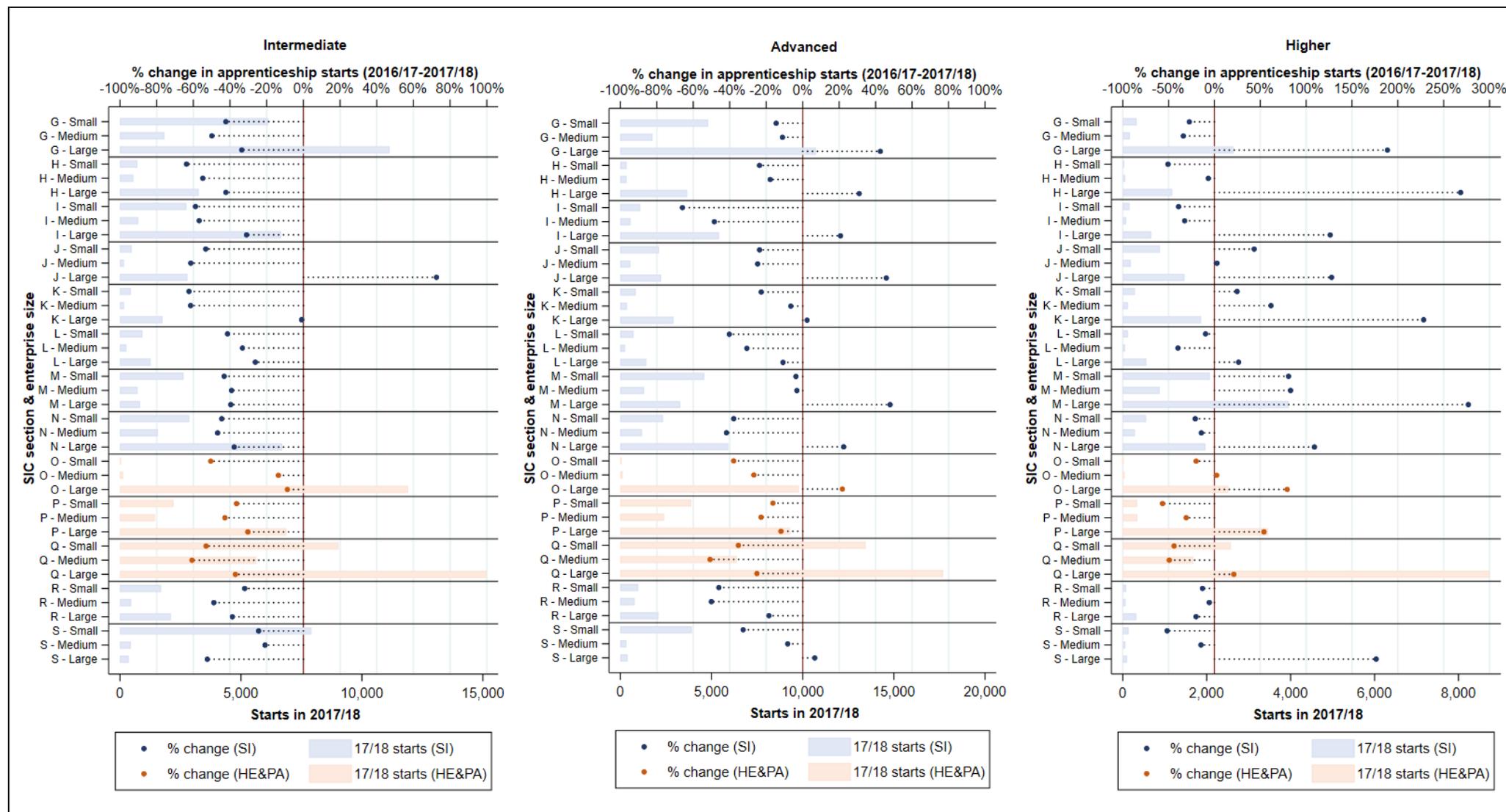
Advanced Apprenticeships

- Across all SIC sections presented in Figure 6 we observe a decline in the number of starts at Advanced level between 2016/17 and 2017/18 for small and medium enterprises.
- For large enterprises, the number of starts at Advanced level have typically increased for most sectors, with a few notable exceptions: Advanced apprenticeship starts in the 'Human health and social work activities' (Q, the sector with the largest number of starts) have fallen by more than 20%, while the decline for the 'Education' (P) and 'Arts, entertainment and recreation' (R) stood at 16% and 19% respectively.

Higher Apprenticeships

- The number of starts at higher level has increased for large enterprises across most of the SIC sections between 2016/17 and 2017/18 (the only exception being 'Arts, entertainment and recreation' (R), which only accounts for a very small proportion of overall apprenticeship starts). An increase in Higher level apprenticeship starts in excess of 200% is identified for 'Professional, scientific and technical activities' (M), 'Transportation and storage' (H) and 'Financial and insurance activities' (K). The increase for large enterprises in 'Human health and social work activities' (Q) and 'Education' (P) – the two sectors accounting for the relatively significant number of starts at higher level in 2016/17) - was 21% and 54% respectively.
- Amongst small and medium enterprises, the analysis indicates a decline in the number of starts at Higher level for all SIC sectors except 'Professional, scientific and technical activities' (M).
- Overall, despite enterprises operating in the 'Human health and social work activities' sector being the largest contributors to Higher level apprenticeship starts in both 2016/17 and 2017/18, the sharp increase in starts observed between 2016/17 and 2017/18 was mainly driven by large enterprises operating in the 'Professional, scientific and technical activities' (M).

Figure 6 Total number of apprenticeship starts in 2017/18 by selected SIC section, enterprise size and level of apprenticeship and percentage change from 2016/17



Note: SIC sections: G 'Wholesale and retail trade; repair of motor vehicles and motorcycles'; H 'Transportation and storage'; I 'Accommodation and food service activities'; J 'Information and communication'; K 'Financial and insurance activities'; L 'Real estate activities'; M 'Professional, scientific and technical activities'; N 'Administrative and support service activities'; O 'Public administration and defence; compulsory social security'; P 'Education'; Q 'Human health and social work activities'; R 'Arts, entertainment and recreation'; S 'Other service activities'. Information on the employer is not available for around 6% in 2016/17 and 5% in 2017/18. **Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data**

4.4 Region of training

Summary: Apprenticeship starts by geographical location

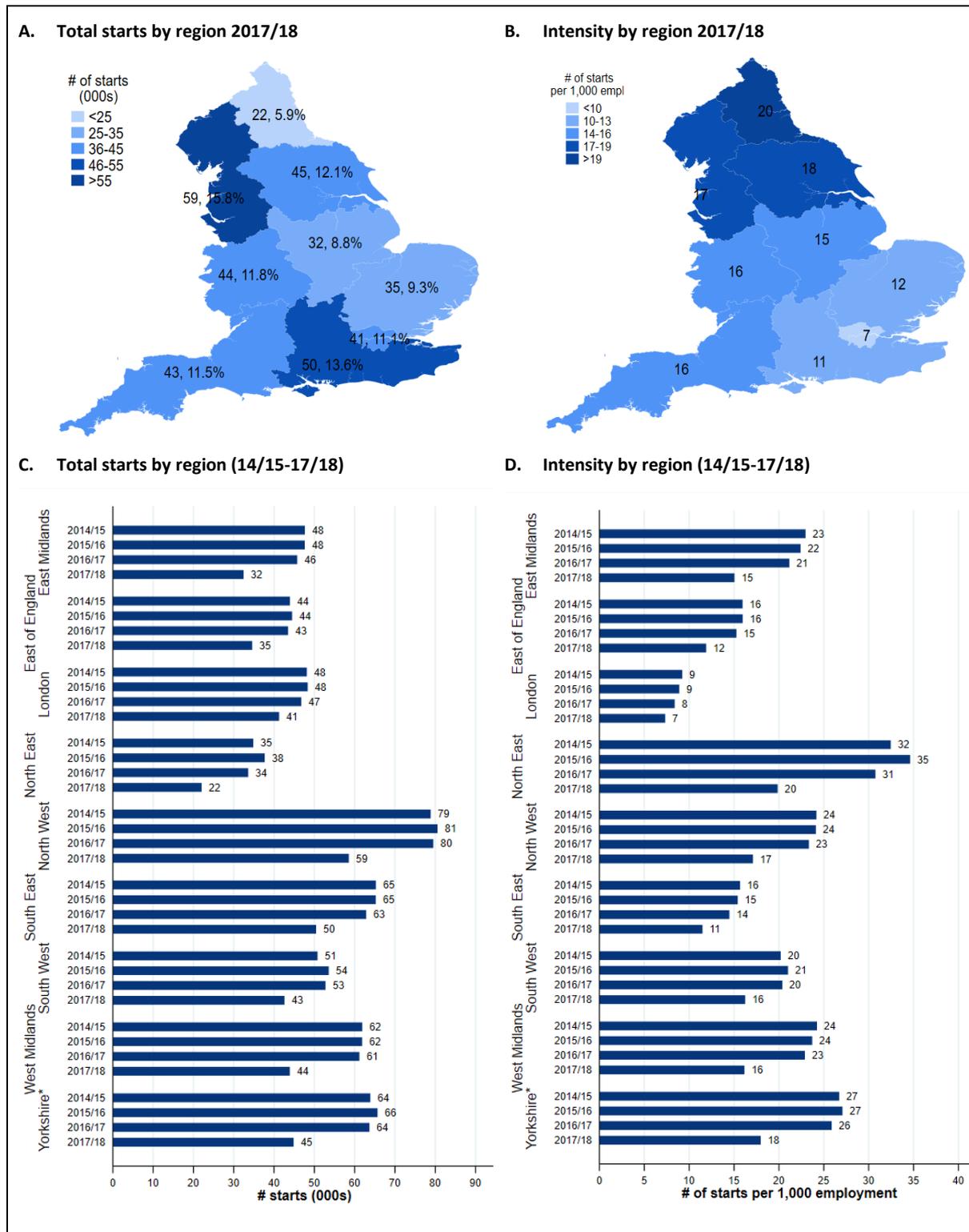
- Looking at historical data, northern regions seem to have higher levels of Apprenticeship training intensity (17-20 starts per 1,000 in employment in 2017/18), while London is the region with the lowest level of training intensity (7 starts per 1,000 in employment).
- However, the decline in the number of starts between 2016/17 and 2017/18 was typically higher for northern regions (reaching 34% in the North East) compared to London (12%), the South East and the South West (around 20%).

As shown in Figure 7 (panel A), in 2017/18, the largest concentration of apprenticeship starts was in the North West (59,000, or 16%), followed by the South East (50,000, or 14%) and Yorkshire and the Humber (45,000, or 12%). In contrast, only 22,000 (6%) of apprenticeship starts were in the North East. However, this distribution of starts across English regions partially reflects the geographical distribution of population and employment in England.

To provide a measure of the variation in the engagement in apprenticeship training across English regions, we also present a measure of intensity of apprenticeship training in each region (Figure 7 panel B), again expressed as number of starts per 1,000 in employment in each region. Overall, regions in the north of England appear to be characterised by higher intensity levels compared to regions in the south. In particular, despite accounting for only 6% of all starts in 2017/18, the North East was the region with the highest intensity, with approximately 20 apprenticeship starts per 1,000 in employment in the region, followed by the Yorkshire and the Humber (18 starts per 1,000 in employment) and the North West (17 starts per 1,000 in employment). The lowest intensity was found in London, with only 7 apprenticeship starts per 1,000 in employment in 2017/18.

In order to explore changes in apprenticeship training engagement over time, panels C and D of Figure 7 also present information on the total number of starts and intensity by region for the period 2014/15 and 2017/18. Across all regions, there was little variation in both the number of starts and the intensity of apprenticeship training in the three academic years prior to the introduction of the Levy (2014/15 and 2016/17). However, between 2016/17 and 2017/18, the number of starts then dropped in all regions, with considerable declines in the North East (from 34,000 to 22,000, a 34% decline), Yorkshire and the Humber (from 64,000 to 45,000, 30% decline) and in the East Midlands (from 46,000 to 32,000, 29% decline). On the other hand, only a moderate 12% decline was observed in London (from 47,000 to 41,000). Similar results are found with regards to intensity.

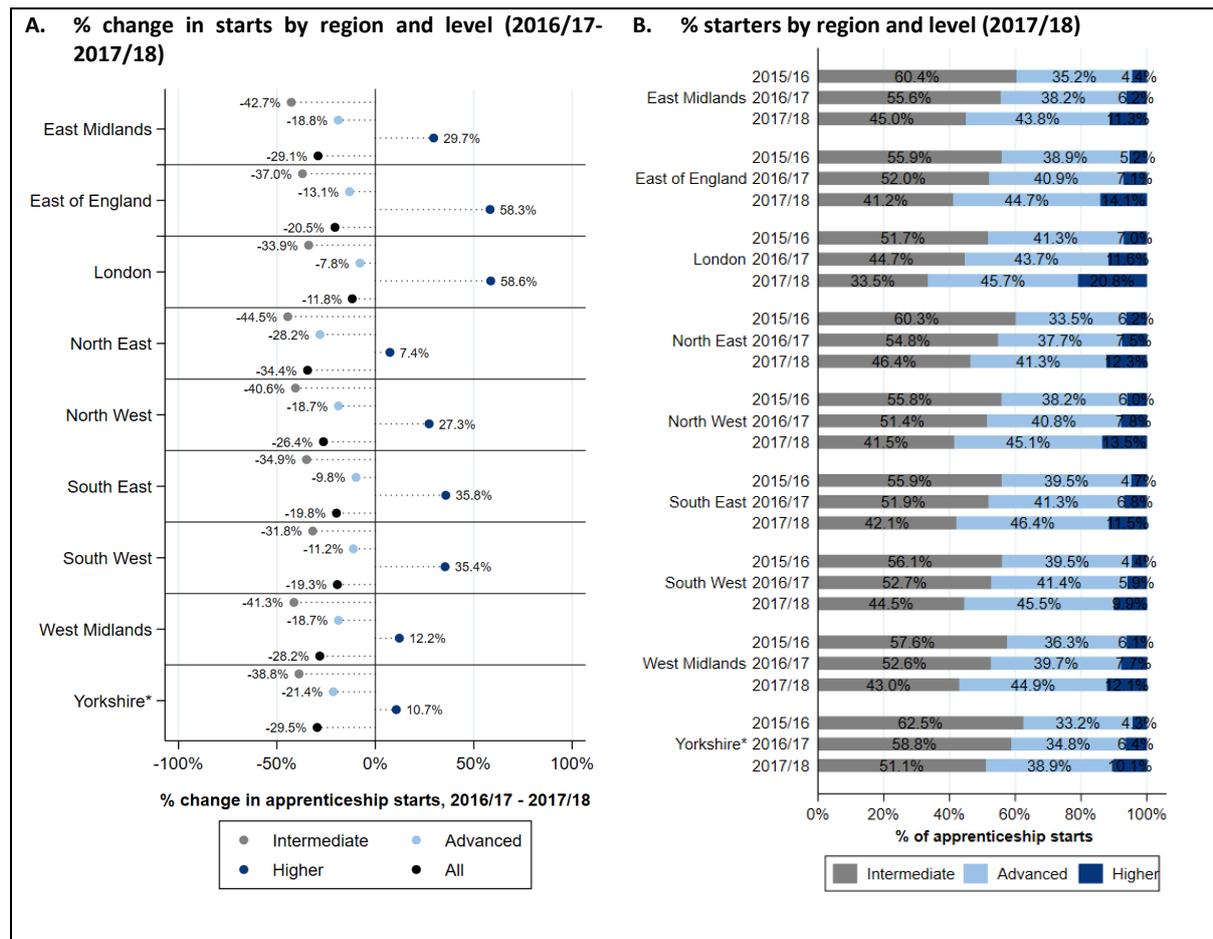
Figure 7 Total number of starts and intensity by region, 2014/15-2017/18



Note: Region of training defined in terms of education provider location. Starts at providers located in Scotland, Wales, Northern Ireland, Isle of Man and Channel Islands have been excluded. **Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data**

As displayed in Figure 8 (panel A), which shows the percentage change in total number of apprenticeship starts between 2016/17 and 2017/18 by level and region, Higher level apprenticeships increased in all regions, whereas Intermediate and Advanced starts declined everywhere. The largest increase in Higher level apprenticeships was observed in London (+59%) and the East of England (+58.3%). These regions were also characterised by a larger proportion of higher apprenticeships among all apprenticeship starts in 2017/18 (21% and 14% respectively) compared to all other regions (Figure 8 (panel B)).

Figure 8 Apprenticeship starts in 2017/18 by industry and apprenticeship level and change from 2016/17



Note: *Yorkshire & the Humber. Region of training defined in terms of education provider location. Starters at providers located in Scotland, Wales, Northern Ireland, Isle of Man and Channel Islands have been excluded. **Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data**

5. Individual and apprenticeship characteristics

Summary: Characteristics of apprenticeship starters and aims

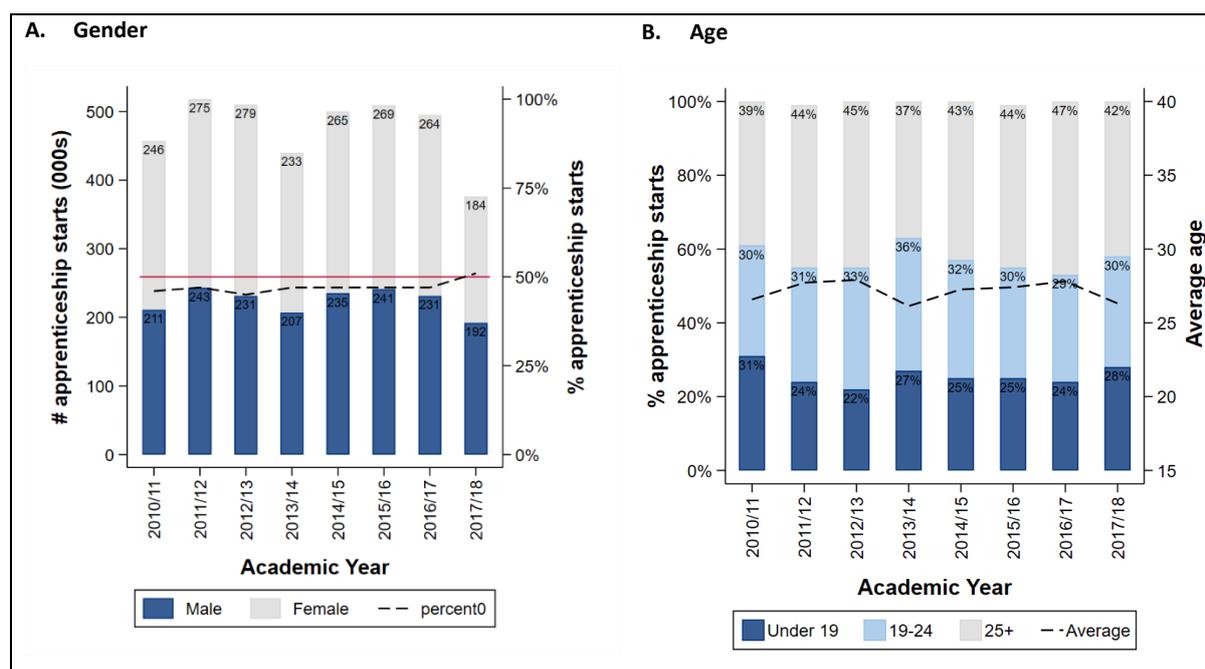
- The proportion of male starters has increased by approximately 4.4 percentage points (from 46.6% to 51.0%) between 2016/17 and 2017/18. This means that we observe a stronger decline in the number of female apprenticeship starters (30% between 2016/17 and 2017/18 compared to 17% for men).
- In relation to age, 42% of starters in 2017/18 were 25+, while 30% were aged between 19 and 24, and 28% were age 18 or below. Compared to 2016/17, the analysis suggests that there has been a decline in the proportion of starters aged 25 or above (47% to 42%) and an increase in starters aged less than 19 years old (24% to 28%).
- Ethnic background composition was relatively stable between 2015/16 and 2017/18, implying that the decline over time was similar across different ethnic groups. Also, in 2017/18 higher level apprenticeships were relatively more popular amongst learners from BAME backgrounds compared to white British learners.
- Males and females tend to undertake apprenticeships in different subject areas, in particular, males tend to select courses in 'Engineering', 'Construction' and 'ICT', while 'Health' is particularly relevant for females. 'Business & Law' is popular among both males and females and it accounted for more than 55% of all starts at Higher level in 2017/18.

This section presents descriptive statistics on demographic and course characteristics of starts for the period 2010/11 and 2017/18. In particular, we present information on gender of apprentices, age at start of the apprenticeship, ethnic background of apprentices and subject area of study.

5.1 Gender and Age

In Figure 9 (panel A), we show the breakdown by gender of apprenticeship starts for the eight-year period between 2010/11 and 2017/18. The dashed line represents the proportion of male starts in each year. Out of the 376,000 new apprenticeship starts in 2017/18, 192,000 starts were male, representing around 51% of all starts. Compared to 2016/17, this represents an increase of 4.4 percentage points in the proportion of male starts (from 46.6% to 51.0%). This means that we observe a relatively larger decline in the absolute number of female starts between 2016/17 and 2017/18 following the introduction of the Levy. In particular, although there has been an overall 24% decrease in the number of starts, the decline is approximately 30% for women (from 264,000 to 184,000) compared to 17% (from 231,000 to 192,000) for men.

Figure 9 Apprenticeship starts by gender and by age, 2010/11-2017/18



Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.

Considering age at start of the program (Figure 9 (panel B)), 42% of starts were aged 25 or above in 2017/18, whilst 30% were aged between 19 and 24. The remaining 28% were 18 or younger. Compared to 2016/17, the analysis suggests that there was a decline in the proportion of starts aged 25 or above (47% to 42%) and an increase in starts aged less than 19 years old (24% to 28%).

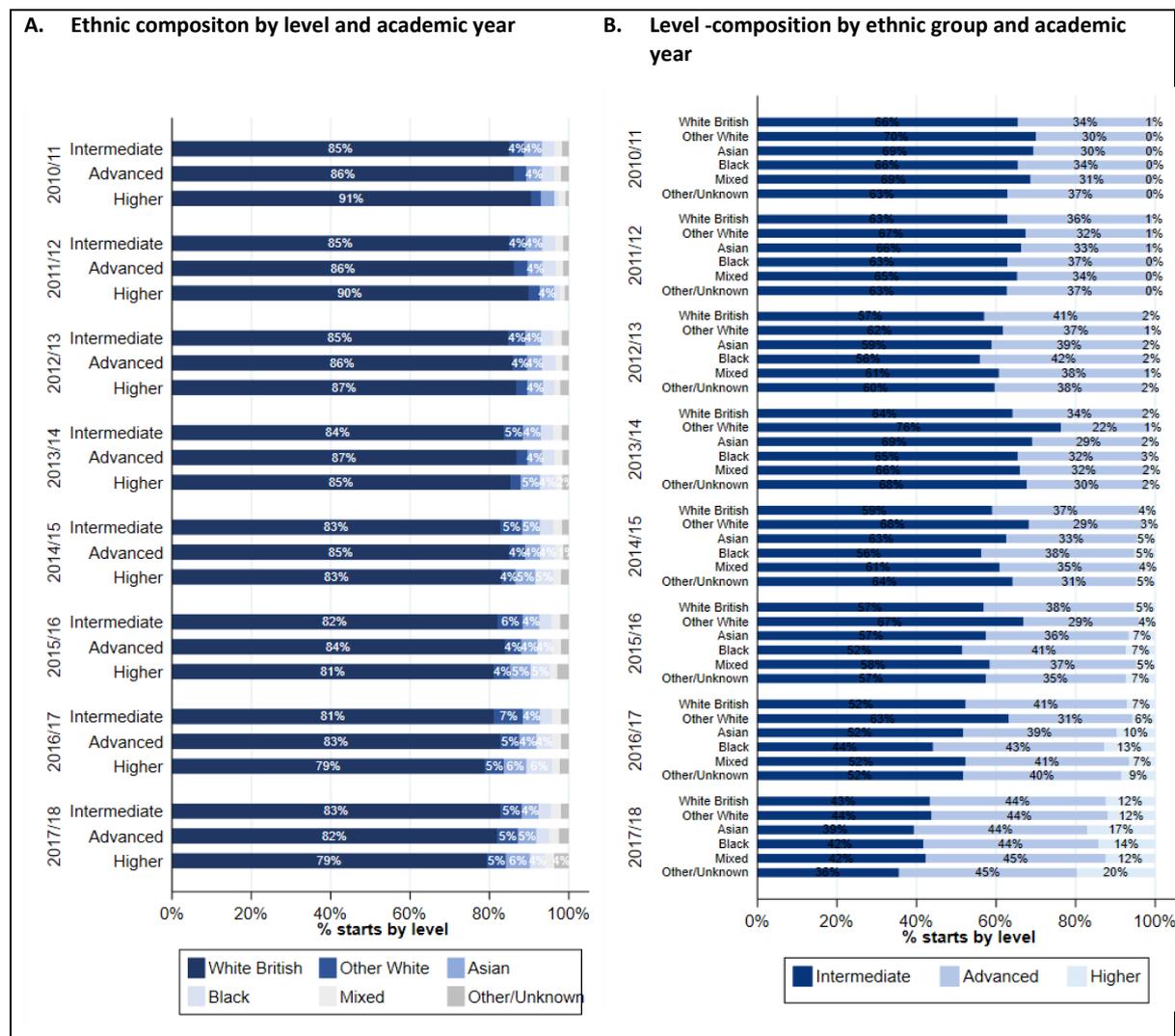
Reflecting this, the average age of starts at the commencement of their apprenticeship (dashed line) declined from 28 to 26 between 2016/17 and 2017/18. However, this trend is not necessarily linked to the introduction of the Levy and may also be driven by other factors (i.e. separate initiatives), as the proportion of starts by age band seems to fluctuate over time to some extent.

5.2 Ethnicity

Panel A of Figure 10 shows the ethnic background of starts between 2010/11 and 2017/18 by level of apprenticeship. The figures suggest that the ethnic background composition was relatively stable between 2015/16 and 2017/18, implying that the decline over time was similar across different ethnic groups. Overall, the vast majority of apprenticeship starts at all levels in 2017/18 were amongst individuals who were white British, although this incidence declines slightly as the level of apprenticeship increases (83% at Intermediate level, 82% at Advanced level and 79% at Higher level). Apprentices from an Asian background and 'other' white backgrounds were typically the second most commonly represented ethnic groups accounting each for approximately 5% of starters in 2017/18.

As presented in Panel B of Figure 10, the shift in the composition of starts from Intermediate to Advanced and Higher level between 2010/11 and 2017/18 was observed for all ethnic groups. However, in 2017/18, apprenticeships at Higher level were relatively more popular amongst learners from BAME backgrounds: Higher level apprenticeship accounted for 17% of starts by Asian learners and 14% of starts by Black learners compared to 12% for white British starts.

Figure 10 Apprenticeship starts by ethnic group, 2010/11-2017/18



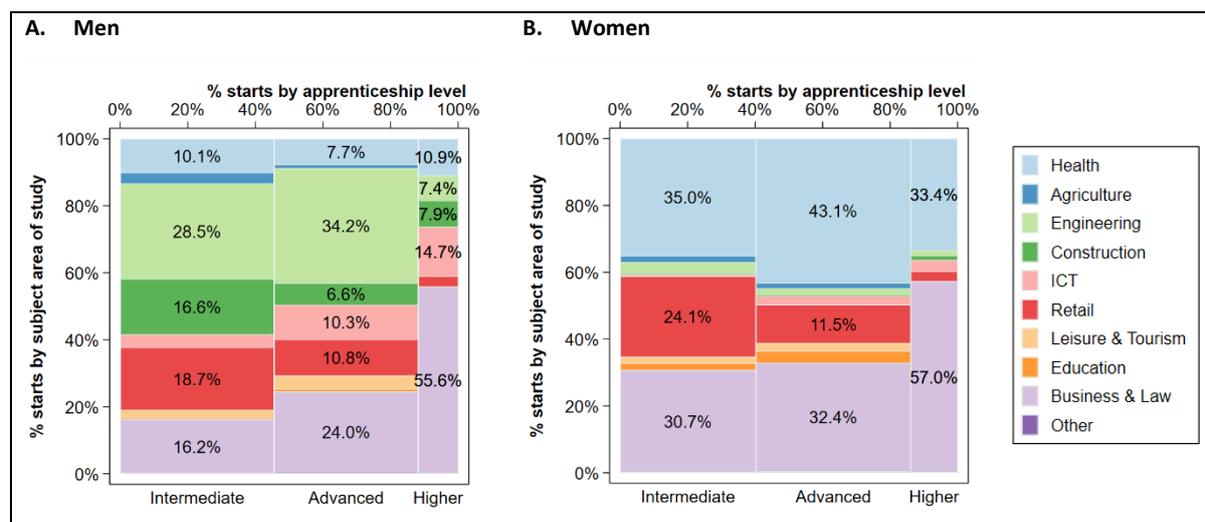
Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.

5.3 Subject area of study

In this section, we consider the subject area of study for apprenticeships started in 2017/18. Males and females tend to undertake apprenticeships in different subject areas, with the differences being more pronounced for Intermediate apprenticeships compared to apprenticeships at higher levels.

Relatively popular subject areas of study amongst 2017/18 starts were: 'Business & Law' (at all levels) and 'Retail' (at Intermediate level) for both males and females; 'Engineering', 'Construction', 'ICT' (at all levels) for males; and 'Health' (at all levels) for females. More than 50% of Higher level Apprenticeships were in 'Business & Law' (for both males and females)

Figure 11 Distribution of subject area of study in 2017/18 by gender and apprenticeship level (Intermediate, Advanced, Higher)



Note: The horizontal axis provides information on the incidence of the apprenticeship level (Intermediate, Advanced, Higher) while the vertical axis provides information on the subject area of apprenticeship within a given level

Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.

Figure 12 presents the percentage change in the number of starts by gender, subject area of study and level between 2016/17 and 2017/18. The number of apprenticeship starts at Intermediate level fell significantly for all subject areas between 2016/17 and 2017/18 except for males in 'ICT' (+21%) and females in 'Construction' (+11%). However, these subject areas represent a very limited share of starts in 2017/18. Similarly, at Advanced level, there was a decline for all subject areas except 'Construction' and 'ICT' (for both males and female) and 'Agriculture' (females only) and 'Retail' (males only).

Finally, looking at apprenticeships at higher level, there was a large increase in the number of starts (in excess of 200% in some cases) between 2016/17 and 2017/18 for most subjects (for both men and women), with the only exception being in 'Health' related subjects, for which the reduction stood at 17.8% for men and 22.7% for women (which mirrors the decline in apprenticeship starts at employers in the 'health' sector discussed previously).

Figure 12 Percentage change in total number of starts between 2016/17 and 2017/18 by subject area of study, gender and apprenticeship level

	Men				Women			
	Intermediate	Advanced	Higher	All	Intermediate	Advanced	Higher	All
Health	-36.6%	-30.4%	-17.8%	-32.2%	-45.9%	-32.7%	-22.7%	-37.3%
Agriculture	-13.3%	-11.5%		-13.3%	-14.2%	5.9%		-5.5%
Engineering	-35.0%	-6.5%	134.9%	-20.9%	-43.2%	0.1%	125.7%	-26.7%
Construction	-7.0%	16.5%	314.1%	5.0%	11.1%	46.2%	340.7%	68.7%
ICT	20.5%	2.0%	66.3%	15.8%	-52.7%	68.9%	157.0%	38.7%
Retail	-36.5%	17.3%	206.5%	-22.7%	-37.9%	-20.9%	165.5%	-31.4%
Leisure & Tourism	-43.0%	-34.5%		-38.2%	-46.2%	-20.9%		-33.8%
Education	-32.6%	-37.4%		-35.6%	-30.1%	-41.2%		-37.7%
Business & Law	-46.4%	-2.3%	76.3%	-13.6%	-45.7%	-14.0%	31.9%	-23.7%
Other	-44.1%	-4.1%	56.1%	-6.8%	-33.0%	11.8%		-2.5%

Note: Figures only presented for groups with at least 50 starts in 2017/18.

Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.

6. Levy-funding

Summary: Apprenticeship starts in aggregate

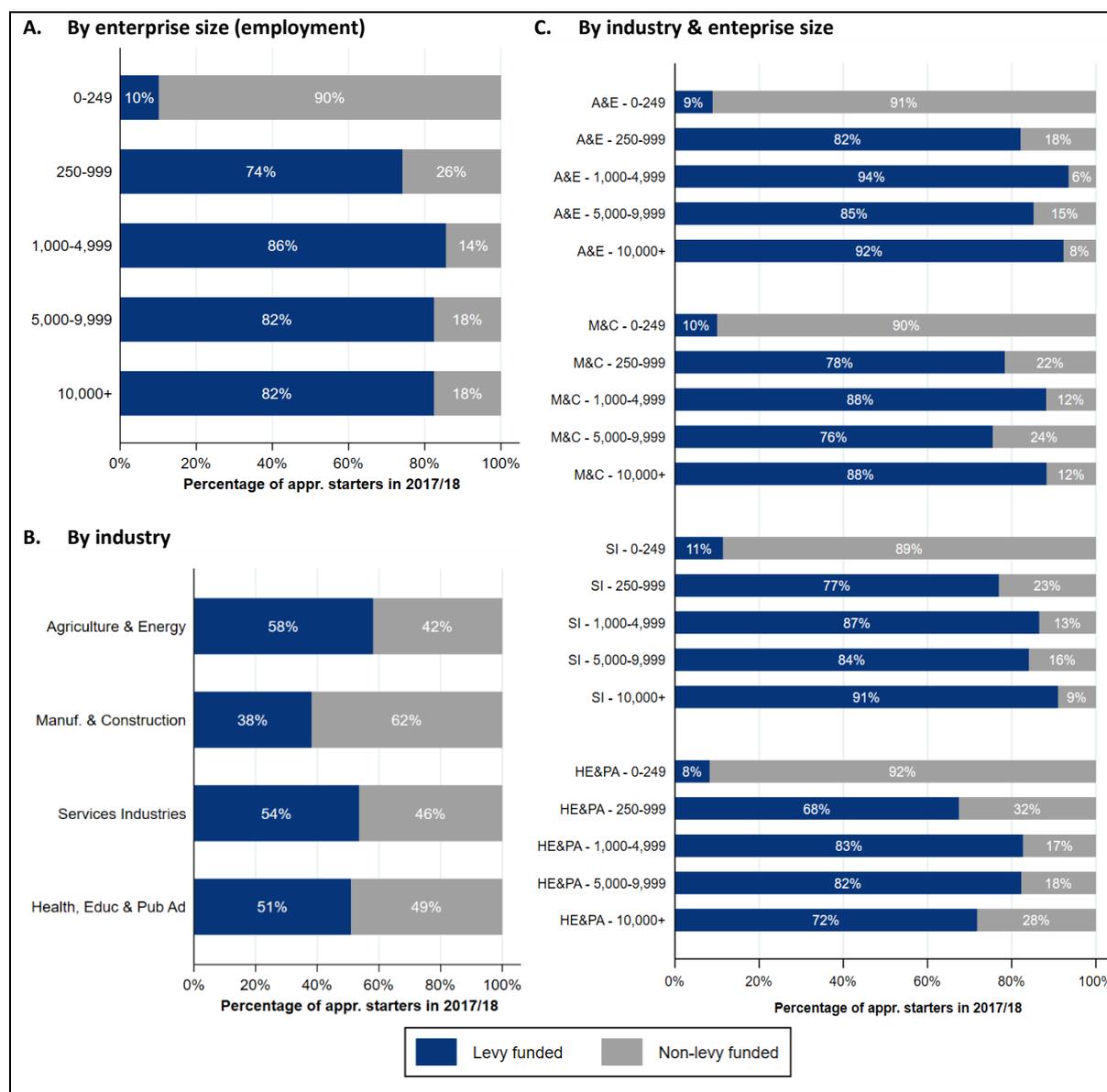
- In the first quarter after the implementation of the Levy (2016/17q4) approximately 44% of new starts were Levy-supported. By 2018/19, this proportion had increased to 56%.
- Only approximately 10% of 2017/18 starts at enterprises with employment of 250 or fewer were Levy-funded. On the other hand, amongst larger enterprises, the proportion of Levy-funded starts in 2017/18 stood at more than 74% for enterprises in the 250 to 999 employment band and more than 80% for enterprises with employment of 1,000 or more.
- Considering the economic sector of the employer, there appears to be a higher concentration of Levy-funded starts in some industries compared to others. However, differences across industries are mainly driven from the firm-size composition of training employers within each sector.

This section illustrates some of the analysis relating to the source of funding for 2017/18 apprenticeship starts and presents descriptive statistics on the proportion of starts that were Levy-supported. We identify Levy-funded apprenticeship starts (or Levy-supported apprenticeship starts) as those starts for which a direct payment from the Apprenticeship Service (AS) Digital Account of the employer has been made. As discussed previously (and displayed in Figure 2), in the first quarter after the implementation of the Levy (2016/17q4) approximately 44% of the new starts were Levy-supported. In 2017/18, the proportion increased to more than 50%.

Figure 13 presents information on the proportion of Levy-supported starts in 2017/18 disaggregated by industry and size of the employer. As expected, only approximately 10% of 2017/18 starts at enterprises with employment of 250 or fewer were Levy-funded (Figure 13 (panel A)). On the other hand, amongst larger enterprises, the proportion of Levy-funded starts in 2017/18 stood at more than 74% for enterprises in the 250 to 999 employment band and more than 80% for enterprises with employment of 1,000 or more.

Considering the economic sector of the employer, there appears to be a higher concentration of Levy-funded starts in some industries compared to others: in particular, Levy-supported starts accounted for almost 60% of all starts in the 'Services Industries' and 'Agriculture and Energy' sectors, but only for 38% of starts in the 'Manufacturing and Construction' sector (reflecting enterprise size in each sector). In the 'Health, Education and Public Administration' sector, around 47% of starts in 2017/18 were supported by a direct payment from the employer Apprenticeship Service Digital Account. However, differences across industries are mainly driven from the firm-size composition of training employers within each sector. In fact, the industry gap in the proportion of Levy-supported starts is considerably reduced if we consider the proportion by industry *and* enterprise size (Figure 13, (panel C)).

Figure 13 Percentage of Levy-funded apprenticeships in 2017/18 by industry & enterprise size



Note: The chart displays the total number and percentage of Levy supported apprenticeship starts through direct payments from the Apprenticeship Service Digital Account of the employer. Information on the employer is not available for around 5% in 2017/18. In Panel B, 'Agriculture and Energy' includes SIC sections A, B, D & E; 'Manufacturing and Construction' includes SIC sections C & F; 'Services Industries' includes SIC sections G, H, I, J, K, L, M, N, R, S, T & U; 'Health, Education and Public Administration' includes SIC sections O, P & Q. In Panel C, 'A&E' indicates 'Agriculture & Energy', 'HE&PA' indicates 'Health, Education & Public Administration', 'M&C' indicates 'Manufacturing & Construction' and 'SI' indicates 'Services Industries'. *Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.*

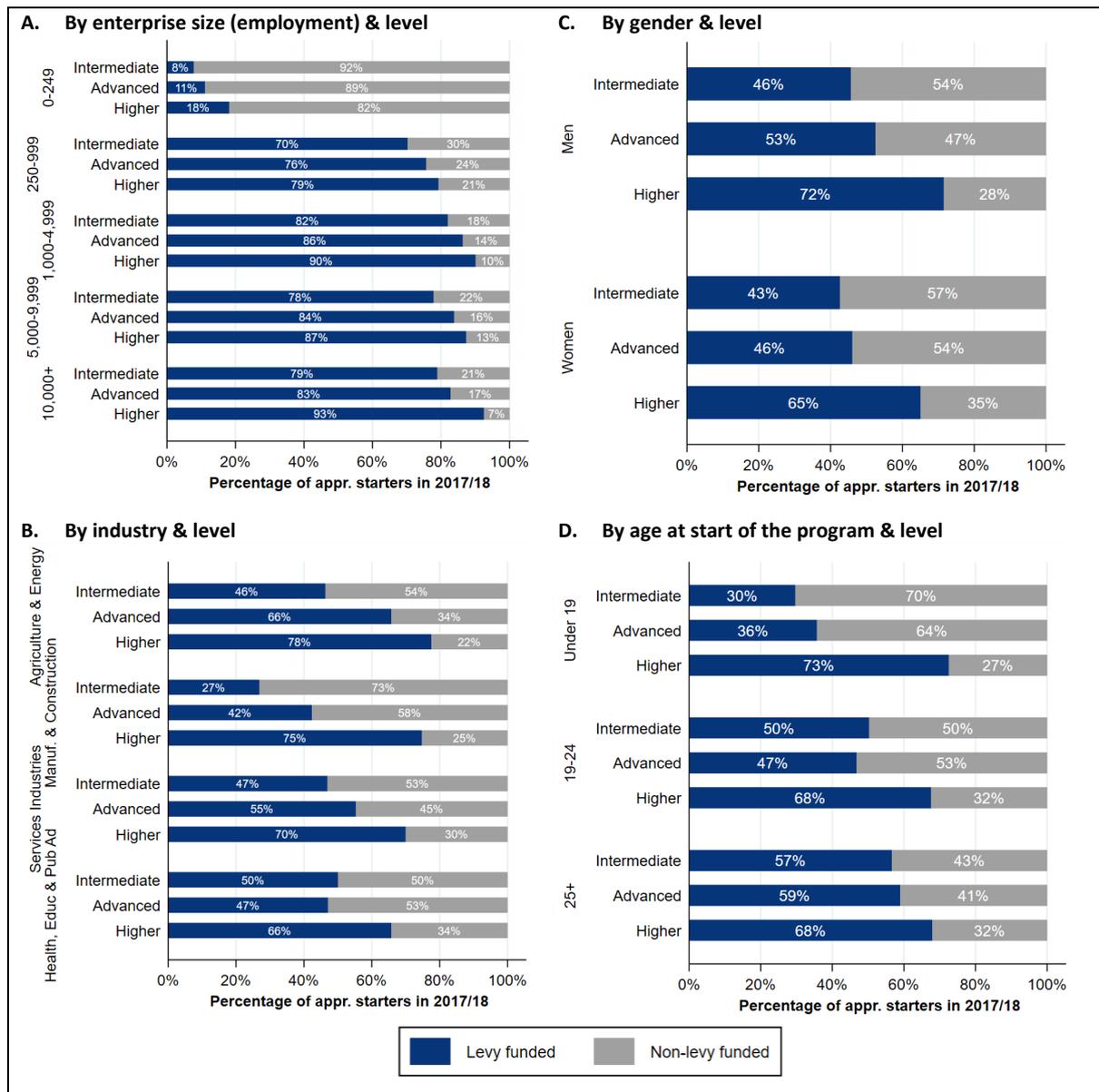
In the four panels of Figure 14, we present the percentage of Levy-supported starts in 2017/18 by enterprise size and level (Panel A), industry and level (Panel B), gender and level (Panel C) and age at start of the program and level (Panel D). Generally, across all the dimensions of disaggregation, we found that the percentage of Levy-supported starts increases with the level of the apprenticeship.

For example, considering apprenticeship starts at different levels by enterprise size (Panel A), more than 90% of higher apprenticeship starts were Levy-supported in very large enterprises (with employment of 10,000 or more) compared to 83% of Advanced apprenticeships and 79% of Intermediate apprenticeships.

A similar pattern emerges when looking at the disaggregation by industry and level. The gap in the proportion of Levy-supported starts is particularly pronounced for the 'Manufacturing and Construction' industry where around 75% of Higher starts are Levy-supported compared to 27% of starts at Intermediate level.

Finally, in terms of demographic characteristics of apprentices (panel C and panel D), at all levels, a higher proportion of men are Levy-supported than women. The gender gap stood at 3 percentage points for starts at Intermediate level (46% for men vs 43% for women), and 7 percentage points for starts at Advanced level (53% vs 46%) and at Higher level (72% vs 65%). Similarly, older learners appear to be more frequently Levy-supported than younger learners: the proportion of Levy-supported starts at Intermediate level stood at 30% amongst learners aged 18 or less, 52% for learners aged 19-24 and 57% for learners aged 25 or above. At Advanced level, the proportion of Levy funded apprentices stood at 36%, 47% and 59% respectively. The only exception are starts at Higher level, where we found a higher incidence of Levy-supported starts amongst learners aged 18 or less (73%) compared to older learners (68%). However, it should be noted that there are only very few Higher level apprenticeship starts in the youngest group.

Figure 14 Percentage of Levy-funded apprenticeships in 2017/18 by level (& other disaggregation)



Note: The chart displays the total number and percentage of Levy supported apprenticeship starts through direct payments from the Apprenticeship Service Digital Account of the employer. 'Agriculture and Energy' includes SIC sections A, B, D & E; 'Manufacturing and Construction' includes SIC sections C & F; 'Services Industries' includes SIC sections G, H, I, J, K, L, M, N, R, S, T & U; 'Health, Education and Public Administration' includes SIC section O, P & Q. Information on the employer is not available for around 5% in 2017/18. **Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data.**

7. Conclusions

In this briefing note we explore emerging evidence on Apprenticeship training undertaken in England in recent years using a matched apprentice-employer level dataset containing information from the Individualised Learner Record matched to the Inter-Departmental Business Register. Following the major policy changes to the Apprenticeship system in recent years, the analysis has illustrated some significant changes in the provision of apprenticeship training. In particular,

- The number of Apprenticeship starts has declined by approximately 24% following the introduction of the Levy.
- The reduction in the number of starts after the introduction of the Levy was much more significant for small and medium sized enterprises (i.e. those enterprises less likely to be subject to the Levy) compared to larger enterprises – both when looking at the absolute number of Apprenticeship starts but also when considering measures of the intensity of apprenticeship training.
- Since 2014/15, there has been a rapid decline in the number of starts at the Intermediate level, while the number of starts at Higher levels (Level 4 and above) increased by around 270% in the period; moreover the shift accelerated significantly in the most recent two academic years.
- Between 2016/17 and 2017/18, the number of starts at all levels declined for small and medium enterprises, while for large enterprises there was a slight increase in the number of starts at Advanced level and a large rise of those at Higher level (84%).
- In terms of the geographical location of Apprenticeship starts, northern regions (with higher levels of Apprenticeship training intensity) experienced the greatest decline in the number of starts between 2016/17 and 2017/18 (a decline of 34% in the North East compared to 12% in London); however the northern regions still have a much higher rate of apprenticeship training intensity compared to London and the other regions in the South of England.

Overall the emerging evidence presented does not currently suggest that there was a *direct association* between the introduction of the Levy and the decline in the number of Apprenticeship starts, as large enterprises experienced a smaller reduction in the number of starts compared to smaller enterprises. Moreover, the introduction of the Levy seems to have accelerated the switch from lower-level to higher-level apprenticeships, as this effect was particularly strong for large enterprises.

For smaller enterprises (less likely to be affected by the Levy) the strong decline in starts may be linked to a combination of adapting to the new funding system, the constraints on the pool of funding actually available for Apprenticeship training and the ongoing switch from Apprenticeship Frameworks to Standards (with higher quality requirements).

The next steps in the analysis include: adding the ILR 2018/19 and linking it to the IDBR; looking specifically at employers subject to the Levy and at their behaviour in terms of training patterns over time (before and after the introduction of the Levy); and understanding how changes in the funding rules affected different employers.

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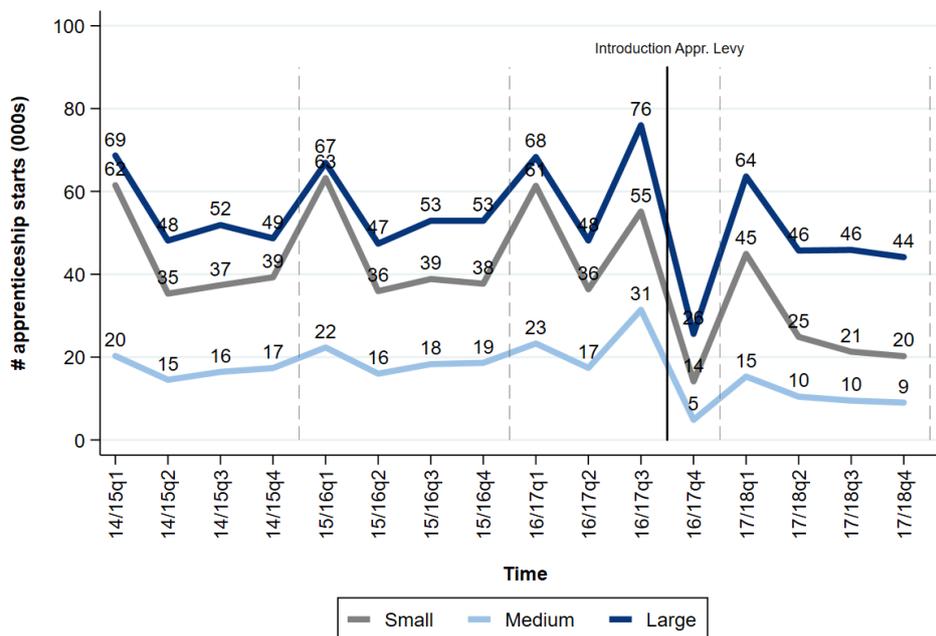
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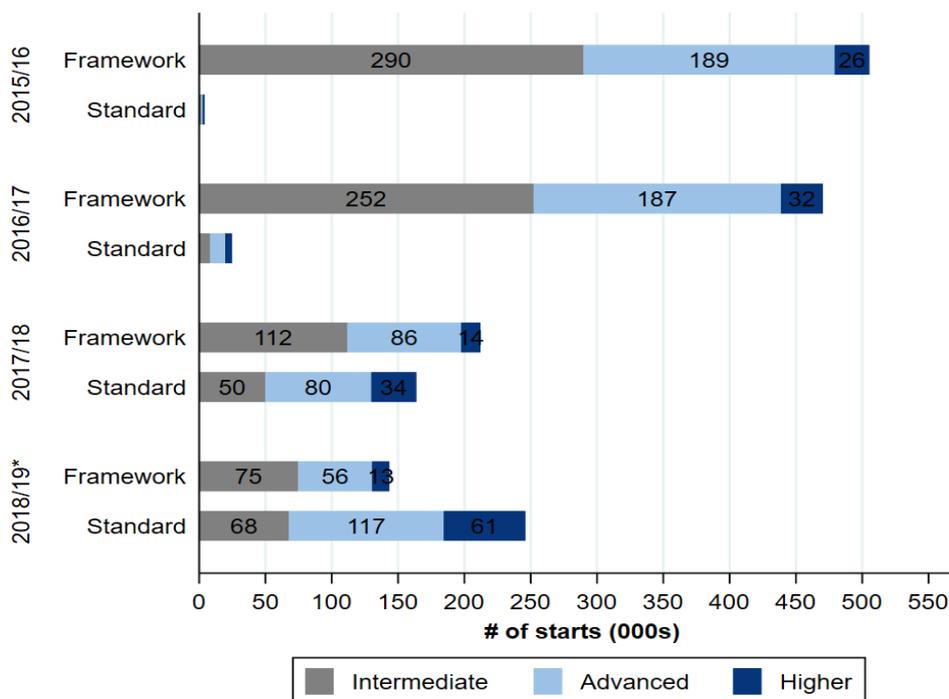
Annex 1: additional evidence

Figure 15 Levy support and apprenticeship starts over time by quarter 2014/15-2017/18



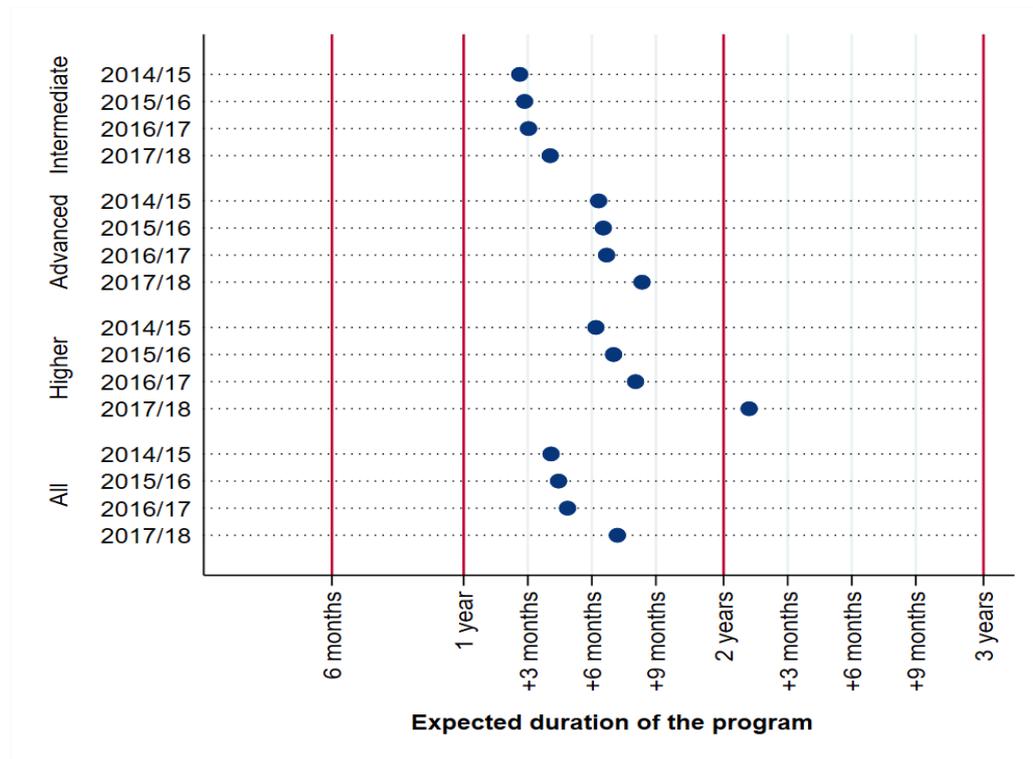
Note: The chart displays the total number of Apprenticeship starts by quarter. Totals are rounded to the nearest thousand. Information on the employer is not available for around 8% in 2014/15, 7% in 2015/16, 6% in 2016/17 and 5% in 2017/18.
Source: London Economics' analysis of Individualised Learner Record (ILR) data and Inter-Department Business Register (IDBR) data

Figure 16 Breakdown by Framework and Standards, 2015/16-2018/19



Note: *2018/19 figures based on DfE statistics: 'Apprenticeship and levy statistics: October 2019'
Source London Economics' analysis of Individualised Learner Record (ILR) data

Figure 17 Average planned duration by level, 2014/15-2017/18



Note: Average planned duration

Source London Economics' analysis of Individualised Learner Record (ILR) data

Annex 2: Matching the ILR/EDS to the IDBR – an overview

Coverage

- The matching approach was initially developed to match the ILR 2017/18 to the IDBR and then implemented for all other years (from 2010/11).
- The match was undertaken linking the EDS data for companies with at least one training aim to the September IDBR quarter extract after the end of each academic year (e.g. September 2018 for 2017/18 ILR).

Data Matching Summary

The matching strategy is described in detail in the technical report for the CVER BN003²⁵. Compared to previous matching exercise, the approach has been revised with the inclusion of the following steps:

- A pre-standardisation of company names for selected large companies with multiple units, so that they appear with the same name in both datasets and are more easily matched.
- We assigned the correct *entref* to EDS entities genuinely identifying recruitment companies (e.g. “hays” and “carillon”) and dropped the IDBR records identifying these companies to ensure there was no mismatch.
- We undertook a manual review of the most frequent company (and parent company) names left unmatched at the end of the process, and manually assigned records to the correct enterprise when possible. This was introduced to reduce the number of units belonging to large organisations left unmatched. In this final stage we did not match records with generic names not leading to a specific employer (e.g. ‘corner shop’ and ‘the surgery’) and companies operating with franchising stores not matching to specific local units in the IDBR (e.g. fast food companies).
- Based on our manual assessment of units matched via CRN, we changed the matching priority (more information in Table 2).
- We also manually reviewed records matching to both live and non-live units to assess whether the match on live units should always be retained over the match on non-live units.

²⁵ Conlon et al. (2017), “Matching firms engaged in publicly funded training in the Inter Departmental Business Register”, Technical Report for CVER Briefing Note 003, Centre for Vocational Education Research

Stage by stage guide

Table 2: Description of main changes

Stage	Description	Major changes
		<i>Minor changes in the sort order in various stages (e.g. priority given to IDBR units with larger employment when same name but different entref)</i>
Stage 1	Company name and postcode	
Stage 2	EDS company name matched to IDBR trading name and postcode	Added a step swapping company name and trading name
Stage 3	Company name and postcode district or EDS company name matched to IDBR trading name and postcode district	
Stage 4	First 7 letters of company/trading name, postcode (with/without SIC code)	Removed entries with “pension scheme” in the trading name
Stage 5	Parent/Ulimate name and postcode	New stage – information seems good enough
Stage 6	First word of company name/trading name and postcode and company name without vowels and postcode	Small number of matches on company name without vowels are now included here
Stage 7	Company name/First 11 letters of company name and postcode area	Use postcode sector/district with checks and postcode area if the company name does not appear anywhere else in the IDBR
Stage 8	Trading name and postcode area	Use postcode sector/district with checks (no postcode area). Remove generic names (such as “wine store”).
		<i>Throughout the following stages, we identify council units in the IDBR, as schools and libraries etc. are recorded as local council units</i>
Stage 9	First 7 letters of address (IDBR), company name, postcode and SIC code	
Stage 10	Full SIC 2007 and postcode	
Stage 11	3-digit SIC 2007 and postcode	Added specific code to identify further schools, nurseries and care homes etc.
Stage 12	Reverse first 7 letters of company name and postcode	Removed common names (e.g. services, solutions etc.)
Stage 13	Last word of company name and postcode	Removed common names and names identifying the main geographical area
Stage 14	Postcode and company name similarity	Removed postcode area name from company name. Tried to identify acronyms.
Stage 15	Postcode and building number	New stage based on postcode and building number. Common names are removed and there are the usual checks on name similarity.
Stage 16	Probabilistic matching based on company name and postcode	
Stage 17	Company name (groups sharing same enterprise reference number)	The validation rules now refer to the group (rather than enterprise) level. We also manually added <i>entrefs</i> for large companies left unmatched at the end of the matching process.

Source: London Economics

Combining the datasets

At the end of the process we combined the datasets to produce the final matched dataset according to these rules:

1. Match leading to live units.
2. Conflicting matches: When the match on non-live units is of high quality (stages 1-6) and the match on live units is of relatively low quality (stages 11 and below), we replace with the match based on non-live unit if the enterprise is live or dissolved within the last two years (although the matching unit is no longer live, the enterprise may still be live).
3. Match based on non-live units when matched stage live is missing and death date is in the last five years.
4. Match based on Company Registration Number.
5. Match based on remaining non-live units (matching to long dissolved enterprises).