Post-18 Education: Who is Taking Different Routes and How Much do they Earn?

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Post-18 education – who is taking the different routes and how much do they earn?

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Key findings

- We describe the educational trajectories and labour market outcomes for people who completed their GCSEs between 2002 and 2006. Our long span of longitudinal data enables us to follow these individuals through their schooling and beyond into their early careers.

- Only around 4% of those with at least a Level 3 qualification by age 19 gain a Level 4, 5 or foundation degree qualification as their highest qualification by age 25. Conversely, almost two-thirds achieve Level 6 as their highest qualification by the same age.

- Foundation degrees are often used as stepping stones to getting degrees. Around half of those who do foundation degrees also complete a degree by age 25. They almost always do so in the same subject.

- Similarly, around one-third of those who obtain Level 4 or Level 5 qualifications also obtain degrees by age 25. For the small number who combine Level 4 and Level 6 qualifications, it is just as common to do the Level 4 qualification after the degree as doing it before.

- People whose highest level of education is Level 4, Level 5 or a foundation degree have much lower prior attainment (as measured by GCSE scores taken at age 16) than people who do degrees.

- Subject choices for sub-degree-level qualifications are very different for men and women. Men are much more likely to be doing engineering & technology; architecture, building & construction (e.g. planning); or computing, while women are more likely to be doing business & administration or nursing. Foundation degrees in creative arts are also quite common.

We estimate 'returns' to the different qualification routes. Identifying the causal impact on earnings from taking the different qualification routes is difficult. Taking Level 4 and 5 qualifications was not (and still is not) a typical trajectory for young people, meaning the people we observe taking these routes are likely to be different from people who did not in ways that

are difficult to control for (i.e. the estimated returns could be affected by selection bias). We report our key findings on the earnings outcomes with this caveat very much in mind:

- All higher-level qualifications appear to lead to better earnings outcomes than finishing education at Level 3 for both men and women. Yet there is a great deal of variation in the magnitude of these estimates across the different qualifications taken and by gender.

- For women, completing a Level 5 qualification leads to the highest average return at the age of 26. Female Level 5 achievers (Level 5 only) earn approximately 45.2 log points (57%) more than stopping at Level 3 after adjusting for observable differences between the two groups. This equates to roughly a £9,800 increase in annual earnings at age 26, compared with average earnings of £17,000 from completing education at Level 3.

- For men, Level 4 qualifications lead to the highest average return at the age of 26. On average, these qualifications are associated with earnings at age 26 around £9,000 higher than for men who complete their education at Level 3. This means that male Level 4 achievers (Level 4 only) earn roughly 35.4 log points (42%) more at age 26 than men who complete their education at Level 3, after adjusting for observable differences.

- While the returns to university degrees relative to stopping education at Level 3 appear to be good, it is very notable that they are lower than male Level 4 and female Level 5 estimates. However, the relative earnings differential between these qualifications becomes smaller between the ages of 26 and 30. This, combined with evidence from other sources (e.g. Britton et al. (2020)[1] highlighted the large earnings growth of higher education graduates during their 30s) suggests that this gap will be smaller and may indeed reverse at later ages.

- The results are also heavily determined by some specific subject areas. For these reasons, it should not be assumed that massive expansion of sub-degree-level qualifications will yield similar returns to those reported here, especially if in different subject areas.

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[1] J. Britton, L. Dearden, L. van der Erve and B. Waltmann (2020), *The Lifetime Returns to Undergraduate Degrees*, Department for Education Report.

1. Introduction

After finishing compulsory education, young people in England have a range of higher education (HE) and further education (FE) options available to them. While people are familiar with the route taken by most HE learners – completing A Levels and then a degree at university – less is commonly understood about FE at tertiary level. In this note, we address this by describing the educational routes taken by individuals who choose to pursue tertiary-level FE courses. Additionally, we show how learners in different post-18 education routes differ by prior attainment, age and gender.

As well as presenting descriptive evidence, we examine the association between different educational pathways and future earnings. Specifically, we present estimates of the early-labour-market returns (at age 26 and age 30) associated with different levels of post-18 qualifications. We find that, on average, certain FE qualifications, such as Level 4 qualifications for men and Level 5 qualifications for women, are associated with higher average early-labour-market earnings than completing a degree. We find that these patterns hold even once we condition on observable characteristics. Whilst we use the term 'returns', we are careful not to claim that these estimates capture the causal impact of taking these qualifications, as there may be other factors that we do not observe that may potentially account for selection of different individuals into the different routes.

This note is structured as follows. We begin by introducing the data and sample used in our study. Next, we present our emerging findings on the different routes taken through post-18 education, as well as the characteristics of learners in different routes. Finally, we investigate earnings outcomes for the different post-18 routes and what happens to those earnings outcomes once we condition on observable characteristics of the people taking them.

2. Data and sample

We use data on five cohorts of secondary school leavers in England who completed their compulsory education between 2001/02 and 2005/06. For each of these individuals, we have compiled an education record from school through to FE and HE using data from three education registers – the National Pupil Database (NPD), the Individualised Learner Record (ILR) and Higher Education Statistics Agency (HESA) data.[2] We add earnings from HMRC tax records to these education records, which enables us to investigate how returns vary by post-18 qualification route.

In the empirical analysis that follows, we focus on a subset of state-school students in these five cohorts who are likely to have the option of studying higher-level courses. This restriction ensures a degree of comparability in the underlying characteristics of different learners for our empirical

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[2] The National Pupil Database contains data on pupils during their school years; the Individualised Learner Record gives further education data; and higher education records are taken from Higher Education Statistics Agency data.

analysis. Specifically, we consider individuals who completed their GCSEs between 2001/02 and 2005/06 and meet the following conditions:

1. They have obtained at least five A*–C GCSE grades and have achieved a Level 3 qualification by the age of 19.
2. They have post-compulsory education records (from the NPD Key Stage 5, ILR or HESA data).
3. They have earnings data available (from HMRC tax records).

Table 1 presents the sample size broken down by GCSE cohort and sample restriction. Column 1 gives the total number of state-school students in each cohort, and column 2 shows the number of students in each cohort that have achieved at least five 'good' GCSEs and Level 3 by the age of 19. Column 3 displays the number of students from column 2 for whom we are also able to match post-16 educational records from at least one source. Column 4 shows individuals with both post-16 educational and earnings records. In column 5, we additionally exclude individuals whose highest qualification is an apprenticeship or a postgraduate degree, as well as people with post-18 courses in more than two levels.[3] Lastly, column 6 reports the sample we use for analysis, which additionally removes individuals who do not have any positive reported earnings between the ages of 25 and 30.

Table 1: Sample by GCSE year

GCSE cohort	(1) Population	(2) ≥ 5 'good' GCSEs and Level 3 by 19	(3) Matched post-16 records	(4) Matched earnings data	(5) Final sample	(6) Final earnings sample
2002	548,505	217,240	205,893	198,139	174,458	166,463
2003	580,826	223,842	220,634	213,097	185,503	185,503
2004	597,829	238,945	235,195	227,994	197,405	197,405
2005	596,209	242,923	240,343	234,265	202,631	202,631
2006	622,410	248,326	245,935	240,535	207,327	207,327
Total	2,945,779	1,171,276	1,148,000	1,114,030	967,324	959,329

Source: Linked NPD–ILR–HESA–HMRC data.

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[3] We exclude individuals with post-18 courses in more than two levels because there are too few observations to be able to accurately estimate the returns to these educational pathways. We exclude apprenticeships as a distinct route which we are not considering in this analysis since our aim was to compare those who took the FE versus HE routes. We exclude postgraduate degrees to ensure we are comparing the earnings of those who took FE qualifications with those whose highest level of qualification is Level 6. As degrees offer a higher likelihood of progressing to postgraduate study, we are therefore not estimating the 'option value' of a degree for enabling further study.

3. Emerging findings on the routes taken and characteristics of post-18 learners

As well as estimating returns/earnings premiums, we seek to better understand the nature of higher-level (Level 4 and above) post-18 education in England. Here we focus on presenting evidence on two aspects of post-18 education for our sample of learners: (i) the education routes taken by learners in higher-level post-18 education and (ii) the characteristics of these learners.

(i) Routes taken by those in higher-level (Level 4 and above) post-18 education

A range of qualifications and routes are available to individuals who wish to progress from their Level 3 qualification. Table 2 presents the number of learners in our final sample who have progressed beyond Level 3 and have completed one or a combination of higher-level (Level 4, 5, 6 and foundation degrees) qualifications by the age of 25.

Table 2: The higher educational qualifications achieved by age 25 for individuals in the final earnings sample who progress beyond Level 3 qualifications

		Level 4	Level 5	Foundation degree	Level 6
Learners with qualification at one level		12,083	12,966	11,071	575,129
Learners with qualifications at two levels	Level 4 plus …	/	891	406	5,197
	Level 5 plus …	891	/	59	6,321
	Foundation degree plus …	406	59	/	13,199
	Level 6 plus …	5,197	6,321	13,199	/
Total in each level		18,577	20,237	24,735	599,846

Source: Linked NPD–ILR–HESA–HMRC data, from column 6 of Table 1 (excluding those with Level 3 only). Some individuals appear in more than one column in the bottom row.

Most importantly, Table 2 shows that only a small number of people in our sample complete higher-level FE courses compared with the number that complete a degree. Only around 6.5% of the sample (the state-educated students with a Level 3 qualification by age 19, a post-compulsory education record and at least one positive earnings record between 25 and 30) achieve Level 4, 5 or foundation degree qualifications by age 25 (including those who subsequently go on to Level 6).

Further, it is common for individuals who complete a higher-level vocational course or foundation degree to combine these with other qualifications. By far the most common of these combinations is to combine a lower-level qualification with a Level 6 qualification. As a result, only around 4% of the sample have a highest qualification of Level 4, Level 5 or a foundation degree, while

63% have a highest qualification of Level 6 (recall, postgraduate students are excluded entirely). The remaining third of the sample do not achieve a higher qualification than Level 3.

Figure 1: Number of learners who complete a Level 4 / Level 5 / foundation degree qualification plus a Level 6 qualification by the age of 25
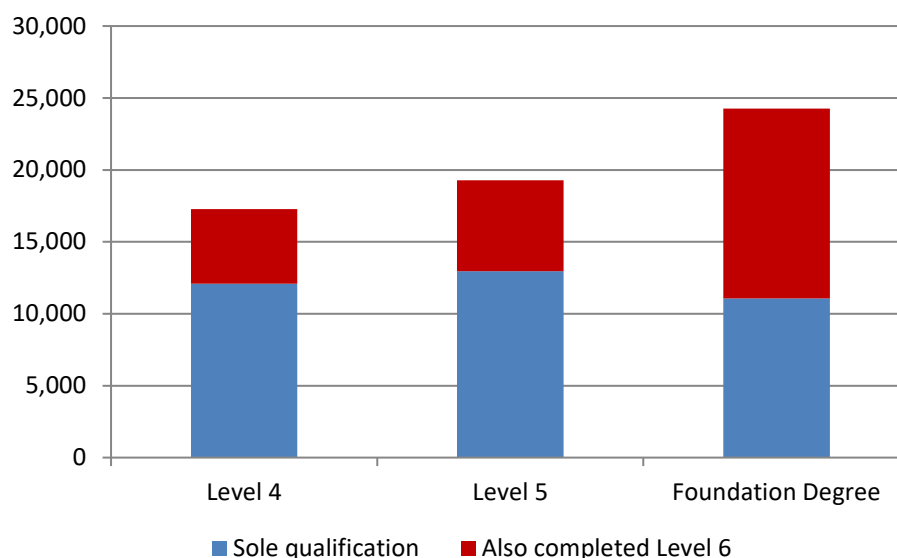
Source: Linked NPD–ILR–HESA–HMRC data.

Figure 1 summarises the combination of qualifications further. It shows that roughly one-third of those achieving Level 4 and Level 5 qualifications also obtain degrees by age 25. Perhaps unsurprisingly, the share achieving a degree of those who do foundation degrees is higher at just over 50%. This suggests that learners often use FE courses as a stepping stone to a degree. Indeed, 86% of learners combining Level 5 with Level 6 qualifications, and 93% of learners completing foundation degrees and Level 6 qualifications, make the sequential progression from the lower qualification to a degree. However, a different pattern is observed amongst those combining Level 4 with Level 6: only around 44% achieve Level 4 qualifications first and then a Level 6 qualification. So for those with both a Level 4 and a Level 6 qualification, slightly more than half are doing the degree-level qualification first.[4] It is worth keeping in mind though that the overall numbers here are small (only around 5,000 people combine Level 4 and Level 6 qualifications in our sample, compared with around 575,000 people who have a qualification at Level 6 only).

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[4] Of those who undertake a Level 4 qualification after Level 6, there is variation in the type of qualifications taken, although the two most common are teaching-related: an Award in Preparing to Teach in the Lifelong Learning Sector (23% of learners in this group) and a Certificate in Teaching English to Speakers of Other Languages (16% of learners).

Figure 2 highlights the subject areas studied by these learners with combined qualifications (those who have completed an FE qualification plus a degree). We see that the majority of these learners do their degree in the same subject area as their FE course, even though this is less common for those who combine Level 4 and Level 6 qualifications. This suggests Level 5 and foundation degree qualifications are being used as potential stepping stones to a degree in the same subject area.

Figure 2: Percentage of learners who complete their advanced FE qualification and degree in the same subject area
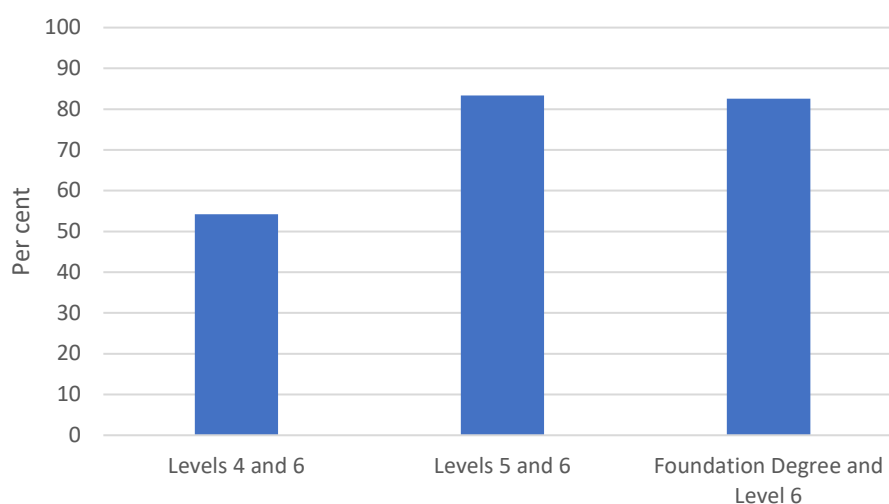
Source: Linked NPD–ILR–HESA–HMRC data.

(ii) The characteristics of different higher-level (Level 4 and above) post-18 learners

Prior attainment

Figure 3 takes a closer look at the GCSE attainment of different learner groups within the 2006 GCSE cohort.[5] For each level of education achieved by age 25, we show the distribution of a standardised GCSE score. The key message from this figure is that individuals with below degree-level attainment by age 25 are similar in terms of GCSE attainment, but degree-holders tend to have performed significantly better in their GCSEs.

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[5] In Appendix A1, for comparison purposes, we present a range of summary statistics on the educational attainment, earnings and characteristics of the entire 2006 GCSE cohort rather than just a subset of learners.

Figure 3: GCSE points (*z-scores*) distribution by highest level of education achieved by age 25
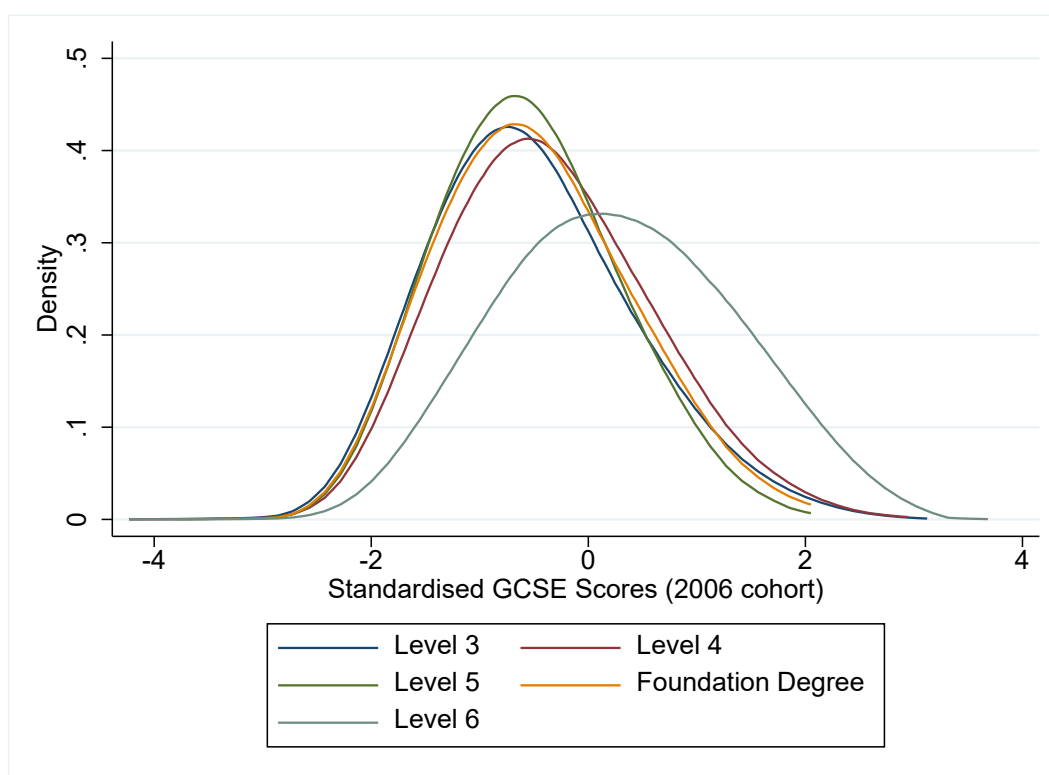
Source: Linked NPD–ILR–HESA–HMRC data. Sample based on final column of Table 1.

<u>Age obtaining qualifications</u>

Figure 4 shows that degrees are mostly completed by people between the ages of 21 and 22, whereas there is more variation in the age at which people complete other qualifications. It is more common for individuals to complete Level 4 and foundation degrees by age 21, whereas Level 5 learners tend to complete their qualifications at a later age. This diversity of progression patterns is likely to be related to different labour market experiences and different types of qualifications studied, and hence comparisons of earnings at a given age need to take account of this fact.

Figure 4: Age at which learners complete FE and HE qualifications
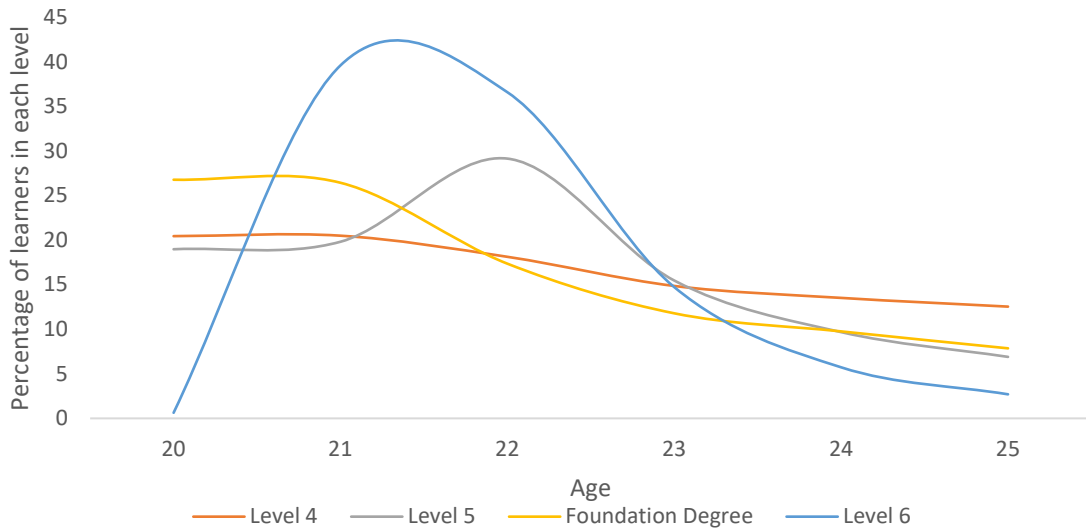
Source: Linked NPD–ILR–HESA–HMRC data. Sample based on final column of Table 1.

<u>Subjects studied</u>

Tables 3 and 4 show that, compared with HE learners, FE learners are predominantly concentrated in relatively few subject areas. This reflects individuals' demand for courses but also that sub-degree courses tend to be offered in a narrower range of subject areas. (In Appendix A2, we provide a breakdown of the numbers studying each subject area by gender.)

There are clear differences in subject choices between men and women. At Level 4, more than three-quarters of men study engineering & technology, architecture, building & construction (e.g. planning) or business & administration. Women are around twice as likely to study business & administration at Level 4 (40% vs 18%) but are much less likely to take the former subjects. Instead, nearly 30% of women study education at Level 4. At Level 5, around 70% of women study 'subjects allied to medicine' – mostly nursing – versus just 12% of men, while men are more likely to be doing engineering or computer science courses. At foundation degree level, computer science is again more popular for men, while women are more likely to be studying education. At this level, creative arts courses are common for both men and women. The gender balance of subject choices is more equal at Level 6 than at lower levels, and a far broader range of subjects are studied at Level 6.

Table 3: Percentage of males taking qualifications in selected subject areas by level

Subject area	Level 4	Level 5	Foundation degree	Level 6
Medicine & dentistry	<2%	<2%	<2%	2%
Subjects allied to medicine	<2%	12%	3%	3%
Biological sciences	<2%	4%	7%	9%
Veterinary sciences	<2%	<2%	4%	<2%
Physical sciences	<2%	<2%	<2%	7%
Mathematical sciences	<2%	<2%	<2%	3%
Computer science	2%	12%	9%	8%
Engineering & technology	39%	15%	17%	10%
Architecture, building & construction	20%	8%	4%	4%
Social studies	<2%	<2%	4%	8%
Law	<2%	<2%	<2%	4%
Business & administration	18%	16%	15%	14%
Mass communication	<2%	4%	5%	4%
Languages	<2%	<2%	<2%	4%
Historical & philosophy	<2%	<2%	<2%	5%
Creative arts & design	6%	10%	21%	11%
Education	8%	2%	3%	2%
Combined & other	4%	14%	5%	3%
Total (%)	100%	100%	100%	100%
Total (nearest hundred)	11,300	6,900	12,000	267,400

Source: Linked NPD–ILR–HESA–HMRC data. Sample based on final column of Table 1.

Table 4: Percentage of females taking qualifications in selected subject areas by level

Subject area	Level 4	Level 5	Foundation degree	Level 6
Medicine & dentistry	<2%	<2%	<2%	3%
Subjects allied to medicine	6%	70%	8%	9%
Biological sciences	2%	<2%	5%	11%
Veterinary sciences	<2%	<2%	9%	<2%
Physical sciences	<2%	<2%	<2%	3%
Mathematical sciences	<2%	<2%	<2%	2%
Computer science	<2%	<2%	<2%	<2%
Engineering & technology	3%	<2%	2%	<2%
Architecture, building & construction	3%	<2%	<2%	<2%
Social studies	2%	<2%	7%	9%
Law	<2%	<2%	<2%	6%
Business & administration	40%	9%	15%	10%
Mass communication	<2%	<2%	3%	4%
Languages	<2%	<2%	<2%	8%
Historical & philosophy	<2%	<2%	<2%	4%
Creative arts & design	6%	7%	28%	15%
Education	27%	3%	16%	7%
Combined & other	7%	3%	4%	2%
Total (%)	100%	100%	100%	100%
Total (nearest hundred)	7,200	13,300	12,700	332,400

Source: Linked NPD–ILR–HESA–HMRC data. Sample based on final column of Table 1.

4. Earnings outcomes for FE and HE qualifications

We now turn to investigate the earnings outcomes for people who took different post-18 education routes. We first outline our methodology and then present estimates of the effect of different post-18 qualifications on early-career earnings. Estimates have a causal interpretation under the assumption that there are no unobserved factors that influence both the choice to pursue a given educational pathway and future labour market outcomes. Although we control for many relevant variables, as we have already highlighted this remains a strong assumption. Results should be interpreted with this caveat in mind: positive earnings outcomes from certain routes amongst the people who chose to take them would not necessarily translate into positive outcomes for others (the majority) who did not. It is also important to bear in mind that we are estimating returns for individuals at an early point of their career; individuals pursuing different trajectories may have a very different pattern of returns over their lifetime.[6]

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[6] A range of papers compare the returns from different educational trajectories over the life cycle, including J. Britton, L. Dearden, L. van der Erve and B. Waltmann (2020), *The Lifetime Returns to Undergraduate Degrees*, Department for Education Report; E. A. Hanushek, G. Schwert, L. Woessmann and L. Zhang (2017), General education, vocational education, and labor-market outcomes over the life-cycle, *Journal of Human Resources*,

Methodology

We use regression analysis to estimate the average monetary returns from different educational routes relative to stopping education at Level 3.[7] Regression analysis enables us to calculate the earnings from different educational routes relative to finishing at Level 3 while accounting for underlying differences between learners in observable factors, such as socio-economic status and prior attainment. Here we describe the two main steps in our estimation strategy,[8] but more detail is provided in Appendix A3.

Defining qualification groups

Our empirical analysis begins by classifying each individual in our sample into a given educational route according to their trajectories up to age 25. We calculate the difference in returns relative to finishing at Level 3 for 10 different education routes:

1. Level 4 only
2. Level 4 and Level 5 (excluding foundation degrees)
3. Level 4 and a foundation degree
4. Level 4 and Level 6
5. Level 5 only
6. Level 5 and a foundation degree
7. Level 5 and Level 6
8. foundation degree only
9. foundation degree and Level 6
10. Level 6 only

In most cases, there are sufficient numbers of people in these groups to detect statistically significant differences in earnings from those leaving education with only Level 3 qualifications, but there are some exceptions. Specifically, there tend to be too few observations for individuals combining Level 4 with foundation degrees and individuals combining Level 5 with foundation degrees.

Statistical analysis of differences in earnings between qualification groups

The overall goal is to study the effect that completing each of these qualifications has on earnings. However, as has been said, there is likely to be a substantial amount of selection into the different education routes. We can deal with this *to an extent* using a regression-based approach that

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52(1): 49–88; and G. Brunello and L. Rocco (2017), The labour market effects of academic and vocational education over the life cycle: evidence from a British cohort, *Journal of Human Capital*, 11(1): 106–166.

[7] As data on self-employment earnings is not available for all our cohorts, our estimates are based on PAYE earnings only. In Appendix A4 (Tables A4.3 and A4.4), we show the sensitivity of estimates at age 30 (i.e. for one cohort) for including and excluding self-employment earnings. This only has a small effect on estimated returns.

[8] For completeness, we have also estimated the conditional probability of being employed based on educational attainment. These results are presented Tables A4.5 and A4.6 in Appendix A4.

controls for observable characteristics of the people taking each of the education paths, such as prior attainment and socio-economic status. Variables such as these are likely to affect both an individual's qualification group and their future earnings (for a description of this approach, see Appendix A3). Although this is likely to bring us closer to the true causal estimates of each route than the unconditional earnings differences would, it is unlikely that the final estimates using this regression approach will fully account for the selection into different routes. Nevertheless, we think that much can be learned from this exercise.

Findings

We report our regression estimates at age 26 and age 30 for both men and women,[9] in Tables 5 and 6 respectively. In each case, the unconditional results do not control for anything other than cohort and report the log-point differences (approximately, the percentage differences) in earnings of each of the qualification groups relative to the base group of Level 3 only (noting that this is based on *completed* qualifications only). The conditional results control for a very simple measure of labour market attachment,[10] prior attainment and background characteristics.[11] The full regression results are presented in Appendix A4 (Tables A4.1 and A4.2) and show the impact of the sequential addition of the control variables. The tables do not present estimates for the returns to Level 4 plus a foundation degree and Level 5 plus a foundation degree, because we do not observe a sufficient number of individuals completing these two qualification combinations to be able to accurately estimate returns.

The *raw* earnings premiums for some FE qualifications are high. For example, for women, the unconditional earnings of the Level 5 group are 44.1 log points (55%) above the Level 3 only group at age 26 (for men, the equivalent figure is 11.2 log points, or 12%). We see that in most cases the conditioning variables do not substantially change the raw estimates. However, this is not the case for the Level 6 only group. For women, the *unconditional* earnings of the Level 6 only group are 28.7 log points (33%) above the Level 3 only group at age 26, while the *conditional* earnings are only 18.6 log points (20%) higher. Similar drops in the estimates occur at age 30 and for men. Overall, this is unsurprising given the much higher prior attainment of those doing Level 6 qualifications relative to all of the other groups.[12]

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[9] We chose these two ages since age 26 is the latest age at which we have earnings data available for every GCSE cohort (2001/02 to 2005/06) in our sample, while age 30 is the latest age for which we have earnings data available for at least one cohort (the 2001/02 GCSE cohort).

[10] Specifically, this measure is an indicator of whether or not the individual was in paid work at any point in the previous year.

[11] A full list of controls is provided in Appendix A3.

[12] It is worth noting the conditional estimate of 13.2 log points for men at age 30, suggesting a 'return' to Level 6 qualifications of around 14%, which is considerably higher than the estimated returns of 6% for men in C. Belfield, J. Britton, F. Buscha, L. Dearden, M. Dickson, L. van der Erve, L. Sibieta, A. Vignoles, I. Walker and Y. Zhu (2018), The Impact of Undergraduate Degrees on Early-Career Earnings, Department for Education Report. This is for several reasons, including: the 'treated' group is different here (i.e. 'Level 6 only' does not include those who progressed from Levels 4/5/foundation degree to Level 6; it does not include anyone doing

Table 5: Age 26 unconditional and conditional earnings estimates relative to Level 3 only

	Women		Men	
	Uncond.	**Cond.**	**Uncond.**	**Cond.**
Level 4	0.267***	0.222***	0.386***	0.354***
	(0.0110)	(0.0105)	(0.00910)	(0.00867)
Level 4 plus Level 5	0.356***	0.338***	0.509***	0.475***
	(0.0554)	(0.0528)	(0.0286)	(0.0272)
Level 4 plus Level 6	0.177***	0.104***	0.285***	0.216***
	(0.0158)	(0.0151)	(0.0146)	(0.0139)
Level 5	0.441***	0.452***	0.112***	0.128***
	(0.00764)	(0.00729)	(0.0141)	(0.0134)
Level 5 plus Level 6	0.277***	0.267***	0.0971***	0.101***
	(0.0131)	(0.0125)	(0.0141)	(0.0134)
Foundation degree (FD)	-0.0293**	-0.0125	0.0406***	0.0547***
	(0.0102)	(0.00971)	(0.0111)	(0.0105)
FD plus Level 6	0.0700***	0.0624***	0.0381***	0.0374***
	(0.00931)	(0.00888)	(0.0101)	(0.00958)
Level 6	0.287***	0.186***	0.156***	0.0811***
	(0.00231)	(0.00242)	(0.00260)	(0.00271)
N[13]	444,307	444,307	355,797	355,797
Adjusted R-squared	0.038	0.136	0.016	0.120

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001. Significance is relative to Level 3 qualifications. There is insufficient sample to estimate L5 + FD and L4 + FD. 'Uncond.' indicates unconditional estimates, while the 'Cond.' estimates control for a simple measure of labour market attachment, prior attainment, student background, and school, local authority and cohort fixed effects.

lower-level qualifications in HE; and also it does not include people who go on to complete postgraduate degrees); the 'control' group here is different (it includes Level 3 only, and does not include sub-degree levels); the treatment of dropouts is different (this includes dropouts in the 'control' group, where Belfield et al. included dropouts in the 'treated' group); there are fewer conditioning variables because of the desire in this context to have a parsimonious set of controls across individuals with very different educational trajectories up to age 19 (most notably, Belfield et al. included a wide range of A Level controls which is not possible here because so many of the people taking FE routes did not take A Levels). The most important of these differences is the treatment of dropouts, which is a very complex issue in this context due to how this is measured across the different qualifications in the different datasets.

[13] The size of the final regression sample (800,104 observations) is smaller than the final earnings sample reported in Table 1 (959,329 observations) for three reasons: (i) only individuals with positive reported earnings at age 26 are included in the regression sample; (ii) individuals with key missing variables are omitted from the regression sample; and (iii) we exclude individuals with extreme earnings (i.e. below the 1st percentile and above the 99th percentile) from the regression sample.

Table 6: Age 30 unconditional and conditional earnings estimates relative to Level 3 only

	Women		Men	
	Uncond.	Cond.	Uncond.	Cond.
Level 4	0.259***	0.214***	0.330***	0.281***
	(0.0239)	(0.0232)	(0.0201)	(0.0195)
Level 4 plus Level 5	0.197	0.225	0.284***	0.241***
	(0.137)	(0.135)	(0.0664)	(0.0644)
Level 4 plus Level 6	0.222***	0.0875*	0.341***	0.226***
	(0.0370)	(0.0358)	(0.0373)	(0.0361)
Level 5	0.331***	0.328***	0.0863**	0.0995***
	(0.0186)	(0.0181)	(0.0291)	(0.0283)
Level 5 plus Level 6	0.178***	0.137***	0.0875*	0.0767*
	(0.0330)	(0.0321)	(0.0379)	(0.0366)
Foundation degree (FD)	-0.00393	0.0180	0.0410	0.0787**
	(0.0306)	(0.0298)	(0.0314)	(0.0304)
FD plus Level 6	0.133***	0.112***	0.0940**	0.0907**
	(0.0335)	(0.0326)	(0.0326)	(0.0315)
Level 6	0.358***	0.222***	0.219***	0.132***
	(0.00545)	(0.00587)	(0.00568)	(0.00605)
N	75,404	75,404	62,152	62,152
Adjusted R-squared	0.055	0.149	0.026	0.135

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001. Significance is relative to Level 3 qualifications. There is insufficient sample to estimate L5 + FD and L4 + FD. 'Uncond.' indicates unconditional estimates, while the 'Cond.' estimates control for a simple measure of labour market attachment, prior attainment, student background, and school and local authority fixed effects.

We use the regression results to calculate expected earnings for individuals with different qualifications at ages 26 and 30. These are reported in Table 7. It should be noted that these are average numbers and there will of course be considerable variation around these averages for different individuals (as indicated by the standard errors in Tables 5 and 6). Figures 5 and 6 show the same information for age 30 but as average earnings *differences from the base case of Level 3 only.* For each qualification, we show both the raw (unconditional) and conditional (when we include all controls) differences, relative to the base case of Level 3 only.

Table 7: Regression-adjusted average earnings (to nearest £100) for different qualification combinations at age 26 and at age 30

	Age 26 earnings (to the nearest hundred)		Age 30 earnings (to the nearest hundred)	
	Women	Men	Women	Men
Level 3[14]	17,000	21,400	19,600	28,000
Level 4	21,300	30,400	24,300	37,000
Level 4 plus Level 5	23,900	34,300	24,600	35,600
Level 4 plus Level 6	18,900	26,500	21,400	35,100
Level 5	26,800	24,300	27,200	30,900
Level 5 plus Level 6	22,200	23,600	22,500	30,200
Foundation degree (FD)	16,800	22,600	20,000	30,300
FD plus Level 6	18,100	22,200	22,000	30,600
Level 6	20,500	23,200	24,500	31,900

Source: Linked NPD–ILR–HESA–HMRC data. See notes to Tables 5 and 6.

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[14] We show raw average earnings of individuals whose highest educational attainment is Level 3. We adjust average earnings for all of the other qualifications based on our regression estimates. This uses the regression coefficient multiplied by earnings of the baseline group (i.e. those with a Level 3 qualification only) to calculate average or expected earnings for each group.

Figure 5: Age 30 unconditional and conditional cash returns relative to Level 3 only for women (Level 3 average = £19,600)
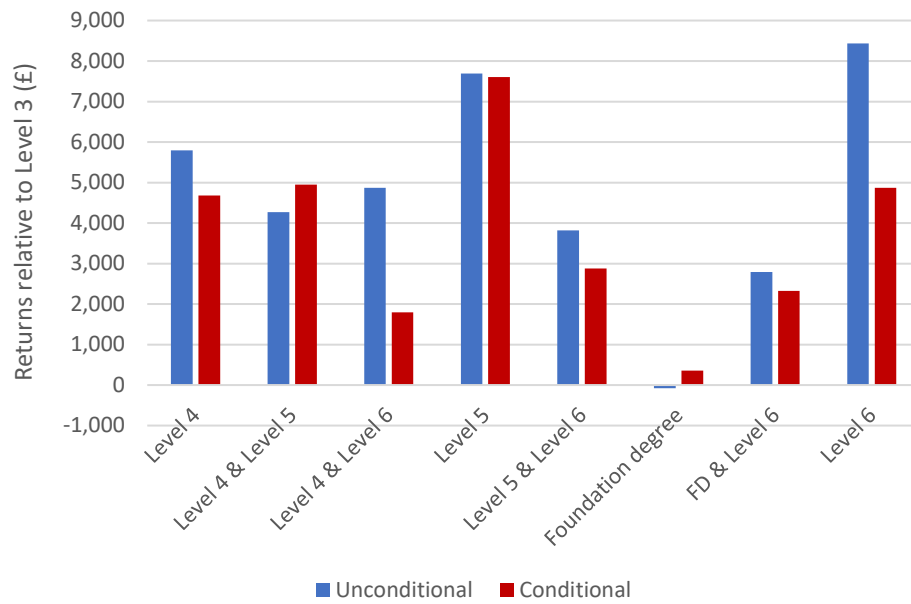
Notes: Draws on age 30 regression results from Table 6. Also see notes to Table 6.

Figure 6: Age 30 unconditional and conditional cash returns relative to Level 3 only for men (Level 3 average = £28,000)
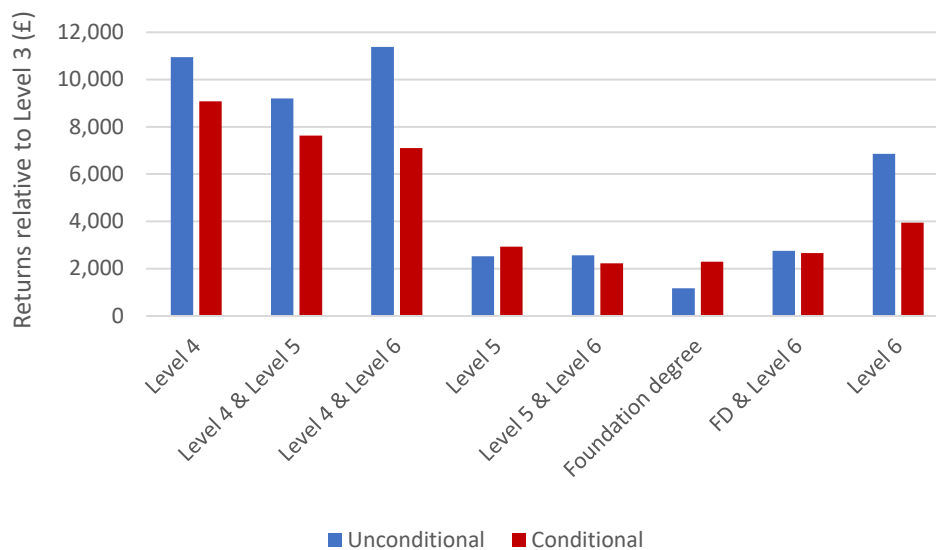
Notes: Draws on age 30 regression results from Table 6. Also see notes to Table 6.

To summarise our main findings, at age 26, we find that:

- All higher-level qualifications appear to lead to better earnings outcomes than finishing at Level 3, for both men and women. Yet there is a great deal of variation in the magnitude of these estimates across the different qualifications taken and by gender.

- For women, completing a Level 5 qualification leads to the highest average return at the age of 26. Female Level 5 achievers (Level 5 only) earn approximately 45.2 log points (57%) more than stopping at Level 3 after adjusting for observable differences between the two groups. This equates to roughly a £9,800 increase in annual earnings at age 26, compared with average earnings of £17,000 from completing education at Level 3.

- For men, Level 4 qualifications lead to the highest average return at the age of 26. On average, these qualifications are associated with earnings at age 26 around £9,000 higher than for men who complete their education at Level 3. This means that male Level 4 achievers (Level 4 only) earn roughly 35.4 log points (42%) more at age 26 than men who complete their education at Level 3, after adjusting for observable differences.

- Amongst both males and females, Level 4 and Level 5 achievers and those combining these qualifications with other high-level qualifications appear to have an early advantage compared with degree-holders (Level 6 only).

- Foundation degrees and Level 3 qualifications show comparable earnings returns for women. For men at age 26, foundation degrees lead to only a small return over finishing at Level 3. Foundation degrees combined with degrees do not fare a great deal better at this relatively early stage.

At age 30, we observe similar patterns:

- Males achieving Level 4 qualifications show relatively high returns. Men with a Level 4 qualification at age 30 (Level 4 only) have average earnings that are £9,000 higher than men qualified to Level 3, after adjusting for observable differences. Females achieving Level 4 qualifications also show strong conditional earnings returns.

- There are especially high estimates amongst females achieving Level 5, but the magnitude of these relative to other qualifications is smaller than at age 26.

- Degree-holders have consistently higher conditional earnings estimates than those who completed Level 3 only. Perhaps surprisingly, these are lower than male Level 4 and female Level 5 estimates. However, it is crucial to note that the relative earnings differential between these qualifications becomes smaller between the ages of 26 and 30. Evidence from other

sources (Britton et al., 2020[15]) highlight the large earnings growth of higher education graduates during their 30s, suggesting that this gap could indeed continue to shrink.

From our results, we see that Level 4 qualifications are associated with especially high earnings for men and Level 5 qualifications are associated with especially high earnings for women, and this holds true even once we adjust for observable characteristics. While we cannot perfectly adjust for selection into the different routes, this result is important as it suggests that for some groups of people these qualifications can lead to very good earnings outcomes.

The importance of subject

Connecting back to statistics reported in Tables 3 and 4, it is important to note that subject choices are likely to play an especially important role here. In Table 8, we show the most common qualifications taken at Level 4 and Level 5 by individuals in our sample.

Around 38% of the Level 4 learners in our sample have HNCs in engineering (25%) or building/construction (13%), and the majority of these learners are male. Around 50% of those who complete Level 5 qualifications take a DipHE in nursing, and the majority of these learners are female. Both sets of qualifications are likely to lead to occupations with high returns relative to occupations that are available to learners stopping at Level 3. Therefore, as well as labour market attachment and individual characteristics, the subject choices made within Level 4 and Level 5 qualifications play a big part in explaining our observed pattern of estimates. As a result, one should not assume that the same outcomes would be achieved for people studying at the same qualification level but in different fields. Moreover, one should bear in mind that the number of individuals with these qualifications is extremely small and one would expect the earnings outcomes to change if the inflow greatly increased.

Table 8: The most common qualifications at Level 4 and Level 5

	Qualification name	Percentage of learners in each level taking the qualification	Percentage of learners taking the qualification that are female
Level 4	HNC in engineering[16]	25%	5%
Level 4	HNC in building/construction	13%	9%
Level 5	DipHE in nursing	50%	92%

Source: Linked NPD–ILR–HESA–HMRC data.

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[15] J. Britton, L. Dearden, L. van der Erve and B. Waltmann (2020), *The Lifetime Returns to Undergraduate Degrees*, Department for Education Report.
[16] HNC in engineering is the most common. Related courses observed are HNCs in electrical, mechanical and civil engineering.

5. Conclusion

In this note, we have used evidence from the combined education and earnings records of five cohorts of students who completed their GCSEs in England between 2002 and 2006 to study the routes taken and outcomes realised by sets of post-18 learners. We have shown that by the age of 25, a comparatively small number of individuals in these cohorts complete tertiary-level FE qualifications compared with the numbers who complete degrees. Moreover, individuals who pursue tertiary FE qualifications differ from those who only complete HE qualifications. First, they differ by the educational routes they take, as it is common for FE learners to combine multiple qualifications and study FE qualifications in comparatively few subject areas. Second, they differ in their underlying characteristics, as degree-holders tend to have much higher levels of prior attainment.

We have also presented unconditional and conditional earnings estimates for the early-labour-market returns (at age 26 and age 30) associated with different FE and HE qualifications. We find that certain FE qualifications, such as Level 4 FE qualifications for men and Level 5 FE qualifications for women, lead to higher early-labour-market earnings on average than completing a degree, once we adjust for observable characteristics of those taking the different routes. We suggest that these results may be explained to a large extent by specific high-value subject areas that account for large shares of individuals within a given qualification level. Most notably, a high share of Level 4 learners are men completing qualifications in engineering or construction, whereas large shares of Level 5 learners are women who have completed qualifications in nursing. More generally, the estimated earnings differentials between university degrees and higher-level vocational education suggest that vocational qualifications can be a route to positive labour market outcomes.

The estimates we produce should be treated with caution for several reason. First, we are not fully able to control for selection into the different FE and HE routes, meaning that we cannot assume (for example) that individuals selecting into a Level 5 qualification would have achieved the same return to Level 6 as the average student if they had made a different choice. Second, the results are based on fairly small numbers of people selecting into Level 4 and 5 qualifications compared with a much large number of people with either Level 3 or Level 6 as their highest qualification level. Third, we do not observe some sources of earnings heterogeneity, such as an individual's occupation or the industry in which they work, and so we are unable to compare the earnings of people within the same job types. Fourth, it is crucial to consider how different educational trajectories prepare people for a lifetime in the labour market and whether they enable individuals to cope with technical change and economy-wide shocks. To explore this issue further, research investigating the difference in the earnings return to these different qualifications in mid and later career is required. Although our estimates are based on the most recent earnings data available, it may well be that with changes in the labour market, estimated returns may differ for individuals currently taking these qualifications. For example, radical reform either in how different routes are rewarded (e.g. in health and social

care) or in labour market demand for skills (e.g. through increased mechanisation) may well lead to important changes in the return to different educational trajectories.

Nevertheless, the estimated earnings differentials between university degrees and higher-level vocational education provide useful information for young people and for public policy. Despite the important caveats, it seems that sub-degree-level qualifications can lead to good outcomes for the young people well suited to those qualifications. This is especially relevant as the duration of vocational courses is typically shorter and so the financial cost to the exchequer and the opportunity cost to individuals are also lower (which are factors we do not account for in our calculations). Further, as well as labour market returns from such qualifications, many individuals appear to use them to progress within higher-level tertiary education and it is also important to maintain such progression possibilities in future reforms.

Appendix

A1: Summary statistics for all learners in the 2006 GCSE cohort

Table A1.1: Highest level of educational attainment (by level) and earnings at age 26

Highest level of educational attainment at 26	Frequency	Average earnings at 26 (nearest £100)	Average earnings at 26 (positive earnings only and nearest £100)
Up to Level 1	86,788	9,200	13,800
Level 2	126,263	13,000	16,300
Level 3 academic	39,257	18,200	21,100
Level 3 vocational	132,656	16,100	18,400
Level 4/5 (vocational)	30,527	18,500	20,500
Level 6+	206,919	22,800	24,800

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.2: Highest level of educational attainment and earnings at age 26

Highest level of educational attainment at 26	Frequency	Average earnings at 26 (nearest £100)	Average earnings at 26 (positive earnings only and nearest £100)
GCSEs	213,051	11,400	15,400
Further education	171,913	16,600	19,000
Advanced vocational qualification	30,527	18,500	20,500
Degree	206,919	22,800	24,800

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.3: Highest level of educational attainment by sex

Highest level of educational attainment at 26	Women	Men
Up to Level 1	33,755	53,033
Level 2	51,675	74,588
Level 3 academic	18,658	20,599
Level 3 vocational	67,897	64,759
Level 4/5 (vocational)	15,364	15,163
Level 6+	114,289	92,630
Total	301,638	320,772

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.4: Highest level of educational attainment by socio-economic status

Highest level of educational attainment at 26	Least deprived quintile	Most deprived quintile	Independent school pupils	Not eligible for FSM	Eligible for FSM
Up to Level 1	7,132	26,398	895	63,087	18,816
Level 2	14,601	31,281	2,402	99,047	20,636
Level 3 academic	8,923	4,105	4,514	31,799	2,642
Level 3 vocational	22,702	23,938	3,008	112,590	14,942
Level 4/5 (vocational)	6,142	4,755	1,612	25,685	2,977
Level 6+	56,072	18,640	30,239	164,137	11,800

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.5: Highest level of educational attainment at age 26 by ethnicity

Ethnicity	Up to Level 1	Level 2	Level 3 academic	Level 3 vocational	Level 4/5 (vocational)	Level 6+	Total
African	712	1,057	598	1,639	929	4,722	9,657
Any other Asian background	356	369	247	591	258	2,117	3,938
Any other black background	324	498	143	542	159	817	2,483
Any other ethnic group	551	645	311	777	260	2,028	4,572
Any other mixed background	565	731	321	873	218	1,687	4,395
Any other white background	1,404	1,788	842	2,159	574	4,633	11,400
Bangladeshi	633	897	359	955	319	2,202	5,365
Caribbean	984	1,760	377	1,968	578	2,420	8,087
Chinese	88	115	193	185	104	1,383	2,068
Indian	811	1,081	704	1,648	718	8,048	13,010
Irish	294	367	152	346	83	798	2,040
Pakistani	1,805	2,002	607	2,340	824	5,296	12,874
White British	69,611	103,283	28,130	108,622	22,597	132,917	465,160
White and Asian	204	330	175	394	122	1,151	2,376
White and black African	136	191	92	223	64	464	1,170
White and black Caribbean	816	1,165	256	1,125	242	1,218	4,822

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.6: Highest level of educational attainment at age 26 by KS4 school region

Region	Up to Level 1	Level 2	Level 3 academic	Level 3 vocational	Level 4/5 (vocational)	Level 6+	Total
North East	3,957	7,740	1,245	7,917	2,293	8,588	31,740
North West	12,339	19,887	4,801	20,901	4,774	27,980	90,682
Yorkshire and the Humber	9,857	14,474	3,374	14,621	3,235	18,145	63,706
East Midlands	7,853	12,086	3,311	11,497	2,557	16,971	54,275
West Midlands	9,999	14,904	3,783	15,072	3,824	21,757	69,339
East of England	10,180	13,566	4,917	13,942	2,972	23,549	69,126
South East	14,070	18,147	7,532	20,429	4,199	36,476	100,853
South West	8,109	12,723	4,572	14,433	2,770	20,031	62,638
Inner London	3,506	4,206	1,746	4,213	1,379	10,716	25,766
Outer London	6,918	8,530	3,976	9,631	2,524	22,706	54,285
Total	86,788	126,263	39,257	132,656	30,527	206,919	622,410

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.7: Educational attainment at age 26 by KS4 local authority

KS4 local authority	Total number of students	Number of students obtaining 5 good GCSEs	Number of students obtaining 5 good GCSEs (including English and Maths)	Number of students obtaining university degree by age 26
201	209	209	134	184
202	1,685	1,021	906	852
203	2,619	1,088	898	800
204	1,474	647	511	522
205	1,616	948	741	842
206	1,426	510	432	420
207	899	521	472	481
208	1,483	673	585	581
209	2,377	1,173	1,010	888
210	2,690	1,262	939	1,106
211	2,552	1,034	814	827
212	2,228	1,148	1,026	954
213	1,718	1,007	905	871
301	1,998	853	703	465
302	3,758	2,384	2,158	1,892
303	3,123	1,695	1,527	1,028
304	2,701	1,445	1,301	1,318
305	3,835	2,351	2,131	1,476
306	4,360	2,405	2,101	1,765
307	2,878	1,691	1,487	1,409
308	3,633	1,796	1,557	1,484
309	2,187	957	846	912
310	2,575	1,694	1,222	1,435
311	3,025	1,781	1,616	880
312	3,143	1,563	1,315	1,142
313	2,671	1,458	1,278	1,164

314	1,753	1,183	1,079	903
315	1,760	943	833	721
316	3,222	1,451	1,253	1,276
317	3,232	2,165	1,918	1,642
318	1,929	1,293	1,084	984
319	2,595	1,756	1,624	1,212
320	2,697	1,325	1,108	986
330	12,656	5,826	4,984	4,261
331	4,018	1,926	1,660	1,312
332	3,986	1,956	1,651	1,152
333	3,497	1,124	953	781
334	3,311	1,864	1,675	1,228
335	3,679	1,467	1,267	997
336	2,994	1,222	1,059	889
340	1,955	564	473	339
341	5,913	2,489	2,111	1,744
342	2,244	1,008	842	638
343	4,132	2,232	1,873	1,453
344	4,315	2,415	2,051	1,391
350	3,927	1,957	1,647	1,277
351	2,553	1,496	1,284	856
352	5,336	2,223	1,773	1,761
353	3,241	1,444	1,194	941
354	2,724	1,157	970	699
355	2,635	973	813	519
356	3,786	2,187	1,992	1,360
357	3,009	1,316	1,119	726
358	3,003	1,861	1,671	1,262
359	4,044	2,034	1,642	1,014
370	2,564	963	772	502
371	3,720	1,517	1,263	826
372	3,689	1,631	1,345	852
373	5,803	2,582	2,234	1,780
380	6,108	2,491	2,138	1,745
381	2,636	1,374	1,162	827
382	4,803	2,289	1,949	1,465
383	8,693	4,213	3,438	2,518
384	4,381	2,255	1,887	1,153
390	2,232	1,028	922	588
391	3,253	1,423	1,173	1,012
392	2,315	1,209	1,093	696
393	1,967	836	715	420
394	3,704	1,532	1,252	848
800	2,593	1,693	1,504	1,086
801	3,958	1,867	1,568	1,224
802	2,324	1,318	1,089	765
803	3,033	1,496	1,301	770
805	1,149	513	431	283
806	1,692	588	486	396
807	1,955	930	780	541
808	2,491	1,260	1,066	788
810	3,201	960	820	546
811	4,115	2,379	2,075	1,382
812	2,170	870	730	413
813	2,048	963	789	511
815	7,675	4,792	4,177	2,862

816	2,100	1,258	1,077	763
820	5,234	2,949	2,514	1,873
821	2,283	906	770	734
825	6,136	4,126	3,700	2,906
826	2,626	1,190	988	790
830	9,098	4,876	4,146	2,746
831	3,002	1,404	1,251	866
835	5,031	3,019	2,498	1,615
836	1,896	1,171	1,018	680
837	1,912	1,038	883	593
840	5,906	2,747	2,413	1,473
841	1,260	628	546	369
845	5,926	3,022	2,568	1,709
846	2,600	1,312	1,126	841
850	15,357	9,088	7,828	5,096
851	2,295	975	616	622
852	2,604	1,209	968	696
855	8,112	4,601	3,821	2,826
856	3,783	1,614	1,315	1,376
857	749	586	414	380
860	10,494	5,512	4,566	3,173
861	2,866	1,038	892	608
865	5,540	3,309	2,810	2,024
866	2,268	1,020	872	497
867	1,316	812	599	487
868	2,101	1,393	1,176	958
869	2,331	1,484	1,283	923
870	1,335	758	710	604
871	1,432	836	759	666
872	2,014	1,326	1,206	870
873	6,507	3,850	3,345	2,437
874	2,173	983	834	623
875	8,886	5,336	4,615	3,341
876	1,485	629	491	309
877	2,467	1,357	1,161	805
878	8,605	4,874	4,141	2,662
879	3,208	1,580	1,342	857
880	1,556	768	677	475
881	16,559	8,607	7,403	4,942
882	2,067	1,104	994	699
883	1,692	726	602	350
884	2,122	1,207	1,024	697
885	7,085	3,903	3,100	2,364
886	17,606	9,435	8,479	6,022
887	3,456	1,726	1,461	969
888	14,613	7,723	6,678	4,499
889	2,209	1,061	928	703
890	1,774	756	630	423
891	9,545	4,543	3,812	2,608
892	2,969	1,149	989	795
893	3,763	2,262	1,978	1,287
894	2,194	1,101	897	606
908	6,249	3,304	2,793	1,838
909	6,431	3,455	2,877	1,920
916	7,709	4,668	4,076	2,785
919	14,823	9,425	8,257	6,608

921	1,621	731	621	421
925	8,548	4,735	4,149	2,757
926	9,225	4,847	4,099	2,585
928	8,469	4,380	3,565	2,617
929	3,816	2,061	1,836	1,174
931	7,870	4,763	4,161	3,152
933	6,727	3,839	3,295	2,152
935	8,563	4,779	4,076	2,698
936	12,988	8,486	7,392	5,679
937	6,674	3,845	3,255	2,402
938	9,239	5,407	4,628	3,065

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.8: Highest level of educational attainment at age 26 broken down by GCSE attainment (whether or not 5 good GCSEs obtained)

Highest level of educational attainment at 26	Have not achieved 5 good GCSES	Have achieved 5 good GCSEs	Total
Up to Level 1	86,788	/	86,788
Level 2	97,343	28,920	126,263
Level 3 academic	4,806	34,451	39,257
Level 3 vocational	75,910	56,746	132,656
Level 4/5 (vocational)	9,565	20,962	30,527
Level 6+	20,220	186,699	206,919
Total	294,632	327,778	622,410

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.9: Highest level of educational attainment at age 26 broken down by GCSE attainment (points decile)

GCSE points decile	Up to Level 1	Level 2	Level 3 academic	Level 3 vocational	Level 4/5 (vocational)	Level 6+
1	30,116	17,122	349	4,678	514	1,740
2	22,821	24,441	283	10,424	821	1,477
3	15,240	23,694	720	17,187	1,796	3,391
4	9,348	19,530	1,939	22,161	3,202	6,891
5	4,499	14,430	4,409	22,512	4,353	12,591
6	2,048	10,785	6,752	19,631	5,081	20,929
7	1,225	6,692	7,388	14,277	4,771	28,943
8	847	4,445	6,944	9,999	4,149	37,421
9	454	3,077	5,774	7,103	3,281	44,162
10	190	2,047	4,699	4,684	2,559	49,374

Source: Linked NPD–ILR–HESA–HMRC data.

Table A1.10: Highest level of educational attainment at age 26 by educational attainment at age 19

Highest level of educational attainment at 19	Highest level of educational attainment at 26						
	Up to Level 1	Level 2	Level 3 academic	Level 3 vocational	Level 4/5 (vocational)	Level 6+	Total
Up to Level 1	86,788	34,533	43	10,022	984	1,410	133,780
Level 2	/	91,730	219	33,513	4,411	6,348	136,221
Level 3 academic	/	/	38,995	9,436	10,679	153,028	212,138
Level 3 vocational	/	/	/	79,685	13,350	44,425	137,460
Level 4/5 (vocational)	/	/	/	/	1,103	1,639	2,742
Level 6+	/	/	/	/	/	69	69
	86,788	126,263	39,257	132,656	30,527	206,919	622,410

Source: Linked NPD–ILR–HESA–HMRC data.

A2: FE and HE subject choices by gender for the 2002 to 2006 GCSE cohorts

Table A2.1: Number of men completing higher educational qualifications (by age 25) by subject area

Subject area	Level 4	Level 5	Foundation degree	Level 6
Medicine & dentistry	/	/	/	6,334
Subjects allied to medicine	/	815	384	8,695
Biological sciences	/	278	891	24,366
Veterinary sciences	/	/	534	1,684
Physical sciences	/	/	/	17,408
Mathematical sciences	/	/	/	8,491
Computer science	198	850	1,064	20,247
Engineering & technology	4,391	1,016	2,070	25,679
Architecture, building & construction	2,208	556	530	9,703
Social studies	/	/	422	21,638
Law	/	/	/	9,759
Business & administration	2,001	1,104	1,857	37,165
Mass communication	/	255	543	11,059
Languages	/	/	/	10,707
Historical & philosophy	/	/	/	13,591
Creative arts & design	661	720	2,470	29,824
Education	883	141	349	4,017
Combined & other	496	937	608	7,053
Total (nearest hundred)	11,300	6,900	12,000	267,400

Source: Linked NPD–ILR–HESA–HMRC data.

Table A2.2: Number of women completing higher educational qualifications (by age 25) by subject area

Subject area	Level 4	Level 5	Foundation degree	Level 6
Medicine & dentistry	/	/	/	9,366
Subjects allied to medicine	398	9,351	964	30,950
Biological sciences	129	/	638	37,307
Veterinary sciences	/	/	1,108	4,640
Physical sciences	/	/	/	10,922
Mathematical sciences	/	/	/	5,084
Computer science	/	/	/	3,489
Engineering & technology	222	/	247	4,824
Architecture, building & construction	231	/	/	3,246
Social studies	126	/	833	30,284
Law	/	/	/	18,497
Business & administration	2,899	1,222	1,894	34,134
Mass communication	/	/	333	14,281
Languages	/	/	/	27,776
Historical & philosophy	/	/	/	14,270
Creative arts & design	412	913	3,520	50,952
Education	1,930	376	2,028	24,642
Combined & other	510	386	547	7,762
Total (nearest hundred)	7,200	13,300	12,700	332,400

Source: Linked NPD–ILR–HESA–HMRC data.

A3: Estimating comparable FE and HE returns

We estimate the earnings returns to different qualifications using regression analysis on the education and earnings data of our final earnings sample. As we set out in Section 2, this sample includes state-school pupils from the five GCSE cohorts between 2001/02 and 2005/06 who obtained at least five A*–C GCSE grades and achieved a Level 3 qualification by the age of 19.

We estimate the following two regression models separately for males and females:

$$(1)\,\log(age\ 26\ earnings) = \alpha + \beta'Qualification + X'\gamma + \epsilon$$

$$(2)\,\log(age\ 30\ earnings) = \alpha + \beta'Qualification + X'\gamma + \epsilon$$

Dependent variables – We estimate our model using log-earnings at age 26 for all five GCSE cohorts and log-earnings at age 30 for just the 2001/02 GCSE cohort (this is the only cohort for which we have age 30 earnings available).

Variable of interest (*Qualification*) – We include 10 dummy variables for the highest qualification level achieved by age 25 for each individual:

1. Level 4 only
2. Level 4 and Level 5 (excluding foundation degrees)
3. Level 4 and a foundation degree
4. Level 4 and Level 6
5. Level 5 only
6. Level 5 and a foundation degree
7. Level 5 and Level 6
8. foundation degree only
9. foundation degree and Level 6
10. Level 6 only

The omitted dummy in our model is Level 3 only, which means <u>the reference/baseline group for the regression results is individuals whose highest qualification level at age 25 is Level 3</u>.

Independent variables (*X*) – We estimate five specifications of our model, with each specification containing an additional set of control variables. The sets of controls, which we indicate at the bottom of the results tables in Appendix A4, are as follows:

- We include a variety of measures of **background characteristics**, including free school meal (FSM) eligibility, English as an additional language (EAL) status, ethnicity, and a measure of socio-economic status calculated using local-area deprivation statistics.

- We control for **previous attainment** at both Key Stage 2 (KS2) and Key Stage 4 (KS4). We measure KS2 attainment using performance on English and Maths tests at the end of KS2; KS4 attainment is captured by an individual's total KS4 points score.

- We include a simple measure of **labour market attachment** that records whether we observe the individual in paid employment in the previous period (i.e. whether or not we observe positive employment earnings at age 25 or age 29).

- Lastly, we include controls for two sets of **fixed effects** – (GCSE) cohort fixed effects and (secondary) school fixed effects.

A4: Regression results

Table A4.1: The effect of completing qualifications (relative to finishing at Level 3) on earnings at 26 for the 2002 to 2006 GCSE cohorts

Women	Dep. variable: ln earnings age 26					Men	Dep. variable: ln earnings age 26				
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
Level 4	0.267***	0.259***	0.227***	0.208***	0.222***	Level 4	0.386***	0.376***	0.365***	0.346***	0.354***
	(0.0110)	(0.0110)	(0.0109)	(0.0106)	(0.0105)		(0.00910)	(0.00908)	(0.00902)	(0.00866)	(0.00867)
Level 4 plus Level 5	0.356***	0.354***	0.340***	0.317***	0.338***	Level 4 plus Level 5	0.509***	0.498***	0.490***	0.463***	0.475***
	(0.0554)	(0.0551)	(0.0547)	(0.0530)	(0.0528)		(0.0286)	(0.0285)	(0.0284)	(0.0272)	(0.0272)
Level 4 plus FD	/	/	/	/	/	Level 4 plus FD	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.177***	0.165***	0.101***	0.0902***	0.104***	Level 4 plus Level 6	0.285***	0.271***	0.228***	0.215***	0.216***
	(0.0158)	(0.0158)	(0.0157)	(0.0152)	(0.0151)		(0.0146)	(0.0146)	(0.0145)	(0.0139)	(0.0139)
Level 5	0.441***	0.439***	0.450***	0.430***	0.452***	Level 5	0.112***	0.108***	0.119***	0.115***	0.128***
	(0.00764)	(0.00761)	(0.00755)	(0.00731)	(0.00729)		(0.0141)	(0.0141)	(0.0140)	(0.0134)	(0.0134)
Level 5 plus FD	/	/	/	/	/	Level 5 plus FD	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.277***	0.271***	0.264***	0.248***	0.267***	Level 5 plus Level 6	0.0971***	0.0928***	0.0990***	0.0903***	0.101***
	(0.0131)	(0.0131)	(0.0130)	(0.0126)	(0.0125)		(0.0141)	(0.0141)	(0.0140)	(0.0134)	(0.0134)
Foundation degree (FD)	-0.0293**	-0.0336***	-0.0306**	-0.0323***	-0.0125	Foundation degree (FD)	0.0406***	0.0349**	0.0367***	0.0359***	0.0547***
	(0.0102)	(0.0101)	(0.0101)	(0.00974)	(0.00971)		(0.0111)	(0.0110)	(0.0110)	(0.0105)	(0.0105)
FD plus Level 6	0.0700***	0.0629***	0.0521***	0.0440***	0.0624***	FD plus Level 6	0.0381***	0.0308**	0.0261**	0.0227*	0.0374***
	(0.00931)	(0.00926)	(0.00919)	(0.00890)	(0.00888)		(0.0101)	(0.0100)	(0.00998)	(0.00958)	(0.00958)
Level 6	0.287***	0.272***	0.196***	0.184***	0.186***	Level 6	0.156***	0.146***	0.0828***	0.0788***	0.0811***
	(0.00231)	(0.00233)	(0.00249)	(0.00241)	(0.00242)		(0.00260)	(0.00263)	(0.00280)	(0.00269)	(0.00271)

	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
Background characteristics		✓	✓	✓	✓	Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓	Previous attainment			✓	✓	✓
Labour market attachment				✓	✓	Labour market attachment				✓	✓
Fixed effects					✓	Fixed effects					✓
N[17]	444,307	444,307	444,307	444,307	444,307	N	355,797	355,797	355,797	355,797	355,797
Adjusted R-squared	0.038	0.048	0.063	0.121	0.136	Adjusted R-squared	0.016	0.022	0.033	0.109	0.120

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001.

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[17] The size of the final regression sample (800,104 observations) is smaller than the final earnings sample reported in Table 1 (959,329 observations) for three reasons: (i) only individuals with positive reported earnings at age 26 are included in the regression sample; (ii) individuals with key missing variables are omitted from the regression sample; and (iii) we exclude individuals with extreme earnings (i.e. below the 1st percentile and above the 99th percentile) from the regression sample.

Table A4.2: The effect of completing qualifications (relative to finishing at Level 3) on earnings at 30 for the 2002 cohort

Women	Dep. variable: ln earnings age 30					Men	Dep. variable: ln earnings age 30				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**		**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Level 4	0.259***	0.258***	0.223***	0.194***	0.214***	**Level 4**	0.330***	0.319***	0.305***	0.268***	0.281***
	(0.0239)	(0.0238)	(0.0235)	(0.0229)	(0.0232)		(0.0201)	(0.0200)	(0.0199)	(0.0191)	(0.0195)
Level 4 plus Level 5	0.197	0.193	0.232	0.203	0.225	**Level 4 plus Level 5**	0.284***	0.271***	0.261***	0.217***	0.241***
	(0.137)	(0.136)	(0.135)	(0.131)	(0.135)		(0.0664)	(0.0662)	(0.0656)	(0.0630)	(0.0644)
Level 4 plus FD	/	/	/	/	/	**Level 4 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.222***	0.205***	0.118**	0.0847*	0.0875*	**Level 4 plus Level 6**	0.341***	0.327***	0.261***	0.234***	0.226***
	(0.0370)	(0.0369)	(0.0365)	(0.0355)	(0.0358)		(0.0373)	(0.0371)	(0.0369)	(0.0354)	(0.0361)
Level 5	0.331***	0.331***	0.349***	0.311***	0.328***	**Level 5**	0.0863**	0.0809**	0.0995***	0.0829**	0.0995***
	(0.0186)	(0.0185)	(0.0183)	(0.0178)	(0.0181)		(0.0291)	(0.0290)	(0.0287)	(0.0276)	(0.0283)
Level 5 plus FD	/	/	/	/	/	**Level 5 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.178***	0.171***	0.165***	0.131***	0.137***	**Level 5 plus Level 6**	0.0875*	0.0877*	0.102**	0.0806*	0.0767*
	(0.0330)	(0.0329)	(0.0325)	(0.0317)	(0.0321)		(0.0379)	(0.0377)	(0.0374)	(0.0359)	(0.0366)
Foundation degree (FD)	-0.00393	-0.00144	0.000344	-0.00106	0.0180	**Foundation degree (FD)**	0.0410	0.0382	0.0430	0.0529	0.0787**
	(0.0306)	(0.0305)	(0.0302)	(0.0294)	(0.0298)		(0.0314)	(0.0313)	(0.0310)	(0.0298)	(0.0304)
FD plus Level 6	0.133***	0.129***	0.118***	0.0968**	0.112***	**FD plus Level 6**	0.0940**	0.0848**	0.0694*	0.0621*	0.0907**
	(0.0335)	(0.0334)	(0.0330)	(0.0321)	(0.0326)		(0.0326)	(0.0325)	(0.0322)	(0.0309)	(0.0315)
Level 6	0.358***	0.341***	0.248***	0.228***	0.222***	**Level 6**	0.219***	0.212***	0.137***	0.130***	0.132***
	(0.00545)	(0.00552)	(0.00589)	(0.00575)	(0.00587)		(0.00568)	(0.00575)	(0.00613)	(0.00589)	(0.00605)

	(1)	(2)	(3)	(4)	(5)
Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓
Labour market attachment				✓	✓
Fixed effects					✓
N	75,404	75,404	75,404	75,404	75,404
Adjusted R-squared	0.055	0.062	0.084	0.132	0.149

	(1)	(2)	(3)	(4)	(5)
Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓
Labour market attachment				✓	✓
Fixed effects					✓
N	62,152	62,152	62,152	62,152	62,152
Adjusted R-squared	0.026	0.034	0.051	0.123	0.135

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001

Table A4.3: The effect of completing qualifications (relative to finishing at Level 3) on employment earnings and total (including self-employment) earnings at age 30 for women in the 2002 cohort

	Dep. variable: ln (employment) earnings age 30						Dep. variable: ln (total) earnings age 30				
Women	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**Women**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Level 4	0.259***	0.258***	0.223***	0.194***	0.214***	**Level 4**	0.260***	0.259***	0.224***	0.195***	0.216***
	(0.0239)	(0.0238)	(0.0235)	(0.0229)	(0.0232)		(0.0227)	(0.0226)	(0.0223)	(0.0217)	(0.022)
Level 4 plus Level 5	0.197	0.193	0.232	0.203	0.225	**Level 4 plus Level 5**	0.209	0.205	0.246	0.211	0.23
	(0.137)	(0.136)	(0.135)	(0.131)	(0.135)		(0.132)	(0.131)	(0.129)	(0.126)	(0.129)
Level 4 plus FD	/	/	/	/	/	**Level 4 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.222***	0.205***	0.118**	0.0847*	0.0875*	**Level 4 plus Level 6**	0.217***	0.199***	0.109**	0.0764*	0.0817*
	(0.0370)	(0.0369)	(0.0365)	(0.0355)	(0.0358)		(0.0351)	(0.035)	(0.0346)	(0.0336)	(0.0339)
Level 5	0.331***	0.331***	0.349***	0.311***	0.328***	**Level 5**	0.325***	0.324***	0.344***	0.305***	0.323***
	(0.0186)	(0.0185)	(0.0183)	(0.0178)	(0.0181)		(0.0178)	(0.0177)	(0.0175)	(0.017)	(0.0172)
Level 5 plus FD	/	/	/	/	/	**Level 5 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.178***	0.171***	0.165***	0.131***	0.137***	**Level 5 plus Level 6**	0.191***	0.185***	0.178***	0.142***	0.147***
	(0.0330)	(0.0329)	(0.0325)	(0.0317)	(0.0321)		(0.0316)	(0.0315)	(0.031)	(0.0302)	(0.0306)
Foundation degree (FD)	-0.00393	-0.00144	0.000344	-0.00106	0.0180	**Foundation degree (FD)**	-0.0064	-0.0037	-0.0022	-0.0066	0.0131
	(0.0306)	(0.0305)	(0.0302)	(0.0294)	(0.0298)		(0.0292)	(0.0291)	(0.0287)	(0.0279)	(0.0283)
FD plus Level 6	0.133***	0.129***	0.118***	0.0968**	0.112***	**FD plus Level 6**	0.134***	0.131***	0.120***	0.104***	0.118***
	(0.0335)	(0.0334)	(0.0330)	(0.0321)	(0.0326)		(0.0316)	(0.0315)	(0.031)	(0.0302)	(0.0306)
Level 6	0.358***	0.341***	0.248***	0.228***	0.222***	**Level 6**	0.361***	0.343***	0.246***	0.226***	0.220***
	(0.00545)	(0.00552)	(0.00589)	(0.00575)	(0.00587)		(0.0052)	(0.0053)	(0.0056)	(0.0054)	(0.0056)

	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
Background characteristics		✓	✓	✓	✓	Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓	Previous attainment			✓	✓	✓
Labour market attachment				✓	✓	Labour market attachment				✓	✓
Fixed effects					✓	Fixed effects					✓
N	75,404	75,404	75,404	75,404	75,404	N	77,129	77,129	77,129	77,129	77,129
Adjusted R-squared	0.055	0.062	0.084	0.132	0.149	Adjusted R-squared	0.060	0.068	0.094	0.143	0.161

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001

Table A4.4: The effect of completing qualifications (relative to finishing at Level 3) on employment earnings and total (including self-employment) earnings at age 30 for men in the 2002 cohort

	Dep. variable: ln (employment) earnings age 30						Dep. variable: ln (total) earnings age 30				
Men	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**Men**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Level 4	0.330***	0.319***	0.305***	0.268***	0.281***	**Level 4**	0.327***	0.316***	0.302***	0.261***	0.273***
	(0.0201)	(0.0200)	(0.0199)	(0.0191)	(0.0195)		(0.0191)	(0.019)	(0.0189)	(0.0181)	(0.0185)
Level 4 plus Level 5	0.284***	0.271***	0.261***	0.217***	0.241***	**Level 4 plus Level 5**	0.273***	0.260***	0.249***	0.200***	0.229***
	(0.0664)	(0.0662)	(0.0656)	(0.0630)	(0.0644)		(0.0634)	(0.0631)	(0.0625)	(0.06)	(0.0612)
Level 4 plus FD	/	/	/	/	/	**Level 4 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.341***	0.327***	0.261***	0.234***	0.226***	**Level 4 plus Level 6**	0.331***	0.316***	0.248***	0.223***	0.217***
	(0.0373)	(0.0371)	(0.0369)	(0.0354)	(0.0361)		(0.0352)	(0.035)	(0.0347)	(0.0333)	(0.0339)
Level 5	0.0863**	0.0809**	0.0995***	0.0829**	0.0995***	**Level 5**	0.0915***	0.0861**	0.103***	0.0859***	0.107***
	(0.0291)	(0.0290)	(0.0287)	(0.0276)	(0.0283)		(0.0275)	(0.0274)	(0.0271)	(0.026)	(0.0266)
Level 5 plus FD	/	/	/	/	/	**Level 5 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.0875*	0.0877*	0.102**	0.0806*	0.0767*	**Level 5 plus Level 6**	0.0778*	0.0775*	0.0914**	0.0687*	0.0659
	(0.0379)	(0.0377)	(0.0374)	(0.0359)	(0.0366)		(0.0359)	(0.0357)	(0.0353)	(0.0339)	(0.0345)
Foundation degree (FD)	0.0410	0.0382	0.0430	0.0529	0.0787**	**Foundation degree (FD)**	0.0450	0.0423	0.0470	0.0607*	0.0869**
	(0.0314)	(0.0313)	(0.0310)	(0.0298)	(0.0304)		(0.0295)	(0.0293)	(0.029)	(0.0279)	(0.0284)
FD plus Level 6	0.0940**	0.0848**	0.0694*	0.0621*	0.0907**	**FD plus Level 6**	0.0810**	0.0711*	0.0565	0.0530	0.0780**
	(0.0326)	(0.0325)	(0.0322)	(0.0309)	(0.0315)		(0.0305)	(0.0303)	(0.03)	(0.0288)	(0.0293)
Level 6	0.219***	0.212***	0.137***	0.130***	0.132***	**Level 6**	0.217***	0.209***	0.133***	0.124***	0.126***
	(0.00568)	(0.00575)	(0.00613)	(0.00589)	(0.00605)		(0.0054)	(0.0054)	(0.0058)	(0.0055)	(0.0057)

	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
Background characteristics		✓	✓	✓	✓	Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓	Previous attainment			✓	✓	✓
Work experience				✓	✓	Work experience				✓	✓
Fixed effects					✓	Fixed effects					✓
N	62,152	62,152	62,152	62,152	62,152	N	64,049	64,049	64,049	64,049	64,049
Adjusted R-squared	0.026	0.034	0.051	0.123	0.135	Adjusted R-squared	0.027	0.036	0.055	0.13	0.143

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001

Table A4.5: Conditional probability of being employed at age 26 for the 2002 to 2006 GCSE cohorts based on education attainment (relative to finishing at Level 3)

Marginal effects

	Dep. binary variable: *Employed* (1 if in employment, 0 otherwise)						Dep. binary variable: *Employed* (1 if in employment, 0 otherwise)				
Women	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**Men**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Level 4	0.068***	0.068***	0.071***	0.022***	0.021***	**Level 4**	0.074***	0.073***	0.075***	0.028***	0.027***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Level 4 plus Level 5	0.060**	0.059**	0.062**	0.031	0.032*	**Level 4 plus Level 5**	0.084***	0.084***	0.086***	0.031***	0.029**
	(0.020)	(0.020)	(0.021)	(0.016)	(0.016)		(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
Level 4 plus FD	/	/	/	/	/	**Level 4 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.043***	0.045***	0.051***	0.012*	0.013**	**Level 4 plus Level 6**	0.048***	0.049***	0.053***	0.009	0.010*
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)		(0.006)	(0.006)	(0.006)	(0.005)	(0.005)
Level 5	0.089***	0.089***	0.092***	0.036***	0.036***	**Level 5**	0.044***	0.044***	0.044***	0.016***	0.016***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)		(0.005)	(0.006)	(0.006)	(0.004)	(0.004)
Level 5 plus FD	/	/	/	/	/	**Level 5 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.072***	0.073***	0.076***	0.027***	0.026***	**Level 5 plus Level 6**	0.058***	0.059***	0.060***	0.017***	0.016***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)		(0.005)	(0.005)	(0.005)	(0.004)	(0.005)
Foundation degree (FD)	0.037***	0.036***	0.037***	0.009**	0.010**	**Foundation degree (FD)**	0.015**	0.014**	0.014**	-0.001	-0.000
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)		(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
FD plus Level 6	0.049***	0.048***	0.051***	0.014***	0.014***	**FD plus Level 6**	0.031***	0.032***	0.033***	0.005	0.005
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)		(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
Level 6	0.048***	0.050***	0.057***	0.016***	0.016***	**Level 6**	0.030***	0.032***	0.038***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Background characteristics		✓	✓	✓	✓	Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓	Previous attainment			✓	✓	✓
Labour market attachment				✓	✓	Labour market attachment				✓	✓
Fixed effects					✓	Fixed effects					✓
N	500,549	500,549	500,549	500,549	500,549	*N*	413,120	413,120	413,120	413,120	413,120

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001

Table A4.5 shows the conditional probability of being employed at age 26 for the 2002 to 2006 GCSE cohorts based on educational attainment (relative to finishing at Level 3). The binary dependent variable *Employed* is defined by observing (or not) positive income at age 26 in the HMRC data. In the context of a probit model, the marginal effects show how the conditional probability of employment changes by qualification types compared with finishing at Level 3, holding all other regressors constant.[18] Overall, we find that men and women achieving higher-level qualifications are 1–3% more likely to be employed, compared with the reference group. High employment ratios are observed in all cases (i.e. above Level 3), ranging from 86% to 90%.

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[18] To be consistent with the multiple regression analysis, here we use the same set of covariates.

Table A4.6: Conditional probability of being employed at age 30 for the 2002 GCSE cohort based on education attainment (relative to finishing at Level 3)

Marginal effects

	Dep. binary variable: *Employed* (1 if in employment, 0 otherwise)						Dep. binary variable: *Employed* (1 if in employment, 0 otherwise)				
Women	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**Men**	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Level 4	0.034***	0.033***	0.035***	0.031**	0.029**	**Level 4**	0.054***	0.053***	0.054***	0.051***	0.047***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)		(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Level 4 plus Level 5	0.077	0.075	0.076	0.074	0.068	**Level 4 plus Level 5**	0.089***	0.089***	0.090***	0.087***	0.090***
	(0.043)	(0.045)	(0.046)	(0.047)	(0.049)		(0.015)	(0.015)	(0.015)	(0.016)	(0.015)
Level 4 plus FD	/	/	/	/	/	**Level 4 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 4 plus Level 6	0.050***	0.050***	0.054***	0.051***	0.052***	**Level 4 plus Level 6**	0.025	0.023	0.026	0.021	0.024
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)		(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Level 5	0.062***	0.061***	0.062***	0.059***	0.058***	**Level 5**	-0.010	-0.011	-0.011	-0.012	-0.011
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)		(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Level 5 plus FD	/	/	/	/	/	**Level 5 plus FD**	/	/	/	/	/
	/	/	/	/	/		/	/	/	/	/
Level 5 plus Level 6	0.037**	0.038**	0.040**	0.037**	0.031*	**Level 5 plus Level 6**	0.006	0.005	0.005	0.005	0.003
	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)		(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Foundation degree (FD)	0.033**	0.032*	0.033**	0.032*	0.036**	**Foundation degree (FD)**	0.003	0.003	0.003	0.003	0.006
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)		(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
FD plus Level 6	0.002	0.000	0.001	-0.002	0.005	**FD plus Level 6**	-0.011	-0.011	-0.011	-0.015	-0.017
	(0.015)	(0.015)	(0.016)	(0.016)	(0.015)		(0.015)	(0.015)	(0.015)	(0.016)	(0.016)
Level 6	0.022***	0.024***	0.029***	0.026***	0.026***	**Level 6**	-0.003	-0.003	-0.000	-0.002	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Background characteristics		✓	✓	✓	✓	Background characteristics		✓	✓	✓	✓
Previous attainment			✓	✓	✓	Previous attainment			✓	✓	✓
Labour market attachment				✓	✓	Labour market attachment				✓	✓
Fixed effects					✓	Fixed effects					✓
N	79,285	79,285	79,285	79,285	79,285	*N*	64,843	64,843	64,843	64,843	64,843

Standard errors in parentheses, * p<0.05, ** p<0.01, *** p<0.001

Table A4.6 shows the conditional probability of being employed at age 30 for the 2002 GCSE cohort based on educational attainment (relative to finishing at Level 3). The binary dependent variable *Employed* is defined by observing (or not) positive income at age 30 in the HMRC data.[19] Amongst women, those with higher-level qualifications are still 2–5% more likely to be employed at age 30, compared with the reference group. For men, there are no differences between qualifications in most cases (the exception is Level 4, which is around 5% more likely to be employed compared with Level 3). It is worth noting that the employment ratios for both males and females are around 90% for those finishing at Level 3.

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[19] To be consistent with the multiple regression analysis, here we use the same set of covariates.

Table A4.7: Sample size at ages 26 and 30 by qualifications obtained

	Age 26 regression sample		Age 30 regression sample	
	Women	Men	Women	Men
Level 3	140,544	121,214	25,571	23,235
Level 4	4,172	6,617	883	1,177
Level 4 plus Level 5	161	638	26	103
Level 4 plus FD	107	258	/	/
Level 4 plus Level 6	1,996	2,480	361	330
Level 5	8,994	2,659	1,490	547
Level 5 plus FD	29	22	/	/
Level 5 plus Level 6	2,927	2,671	455	320
Foundation degree (FD)	4,926	4,397	530	468
FD plus Level 6	5,950	5,369	441	434
Level 6	274,501	209,472	45,627	35,502
Total	444,307	355,797	75,404	62,152

Source: Linked NPD-ILR-HESA-HMRC data

Note: this table shows the cell sizes used in the above regression analysis.