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How much does it pay to get good grades at university?

Research report

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Executive summary

We investigate variation in early-career earnings by degree class outcome using the Department for Education's Longitudinal Education Outcomes (LEO) dataset. The LEO dataset links school records, university records and tax records for everyone who took GCSEs in England since 2002. Using these data, we can estimate degree class earnings premiums up to age 30, controlling for a large array of background characteristics including detailed measures of school attainment. Our main findings are:

- **The share of university students obtaining different degree classes varies substantially by subject studied and institution attended.** Among the 2012–2015 cohorts of graduates, around 20% obtained first class degrees; just over half received upper second class degrees; around 20% received lower second degrees; and around 5% received lower class degrees. Subjects involving maths have a more even spread of awards across degree classes than other subjects. More selective universities tend to award higher class degrees.

- **There has been a long-term trend towards higher degree classes awarded in all subjects and at all levels of university selectivity, which accelerated around the 2010 graduation year.** The share of people getting first class degrees more than trebled between the 1999 and 2015 graduating cohorts. Meanwhile, the share of 2.1s remained fairly flat; the biggest declines were in the share of people getting 2.2s.

- **Earnings differences between those graduating with different degree classes are large.** Five years after graduation, median annual pre-tax earnings for both women and men who obtained a lower second class degree in 2013 were around £3,800 lower than for those who received an upper second class degree (or around 15% lower for women and around 13% for men). Women who obtained first class degrees earned around £2,200 (8%) more than women with upper second class degrees, and men with first class degrees earned £4,100 (14%) more than men who obtained upper second class degrees.

- **Even after controlling for other observable characteristics, earnings differences between degree classes are substantial for both women and men.** Conditional on observable characteristics, the premium of gaining a first class degree over an upper second is 3.5% for women and 7.0% for men. A lower second class degree is associated with 6.9% lower earnings compared with an upper second for women and 10.9% lower earnings for

men. Obtaining a lower class degree is associated with 14.7% lower earnings for women and 18.3% lower earnings for men, again compared with a 2.1.

- **Payoffs for a higher degree class vary hugely by subject. For some subjects, degree class matters a lot for earnings, while for others it does not matter at all.** For men and women studying law or economics, getting a lower second class degree rather than an upper second is associated with more than 15% lower earnings, whereas there is no significant difference for those studying education or English. Subjects with high labour market returns tend to have high degree class premiums and subjects with low labour market returns tend to have low degree class premiums. This suggests that even students of high-return subjects typically need to get at least a 2.1 in order to access highly paid jobs (a notable exception is medicine, a high-return subject which does not usually award degree classifications).

- **Achieving at least a 2.1 has a much bigger payoff at more selective universities.** Controlling for observable characteristics, both men and women who obtain a lower second class degree from the most selective universities earn 20% less on average at age 30 than those who achieve an upper second class degree, compared with around 6% for women and 8% for men who got lower second class degrees from the least selective universities.

- **There are stark gender differences in the payoff to achieving a first class degree at a very selective university.** At the most selective universities (Oxford, Cambridge, Imperial College London and the London School of Economics), the average payoff to a first class degree versus a 2.1 is near zero for women, but very large at around 14% for men.

- **Despite substantial increases in the average grades of graduates during the period we study, there are no large changes in raw or conditional degree class premiums over time.** Median graduate earnings five years after graduation fell by more than £5,000 between the 2002 and 2009 graduation cohorts in all degree classes for both women and men. Yet earnings gaps between degree classes have been constant throughout the period we study. This is consistent both with improvements in overall student attainment and with lower academic standards, as lower standards would likely have affected all degree classes, potentially leaving gaps in attainment and thus earnings between degree classes roughly unchanged.

1 Introduction

Understanding the drivers of differences in earnings among graduates is of significant academic and policy interest. Substantial improvements in the availability of administrative data have resulted in numerous recent papers investigating variation in returns to different types of university degree.[1] A much smaller literature – based largely on survey data – has studied variation in the returns to different degrees depending on performance at university (Walker and Zhu, 2013; Naylor, Smith and Telhaj, 2016; Boero et al., 2021). Quantifying this variation is important for understanding the incentives for students to put in effort while at university. It also helps to shed light on the question of whether universities are teaching their students skills that are useful in the labour market: if the skills taught at university and those required in the labour market were well matched, we would expect to see higher returns for those graduating with higher class degrees, as degree class would be an indicator of labour market productivity.[2]

Walker and Zhu (2013) estimate the lifetime impact of a 'good' degree (i.e. a 'first' or an 'upper second class' degree) on wages to be around 8% higher than that of a lower class degree for both men and women using UK Labour Force Survey data from 1993 to 2010, covering all cohorts in the labour market at that time. Naylor, Smith and Telhaj (2016) estimate a very similar figure of around 7% for people from the 1970 birth cohort at age 30 (using the 1970 British Cohort Study). They provide suggestive, but less robust, evidence of a higher premium for later cohorts. Boero et al. (2021) find a premium of 10% for a 'good' degree for the 1989/90 birth cohort at age 26 (using the Next Steps cohort study) and compare this with an equivalent age 26 estimate for the 1970 birth cohort of 6% (using the 1970 British Cohort Study).

In this report, we provide more detailed evidence on how returns to undergraduate degrees vary by degree classification for recent cohorts of UK university students. In line with the previous literature, we approximate differences in the return to degrees by degree class with conditional earnings premiums: we compare the later-life earnings of graduates obtaining degrees of different classes, controlling for a large set of other explanatory variables.[3] Using a newly

[1] See Britton et al. (2016), Belfield et al. (2018) and Britton et al. (2020*b*) from the UK; Cunha and Miller (2014) and Mountjoy and Hickman (2020) from the US; Bhuller, Mogstad and Salvanes (2017) from Norway; and Anelli (2020) from Italy.

[2] A competing theory is that higher class degrees do not reflect useful skills obtained at university but are merely a signal of prior ability. Feng and Graetz (2017) provide evidence to suggest that the signalling value of a higher degree classification is positive, but fairly small.

[3] For details on how conditional earnings premiums relate to differences in returns, see Section 4.

linked administrative dataset enables us to control for very rich measures of prior attainment and to look at specific degree classifications (rather than simply 'good' versus 'lower').

Our main estimates are based on graduates born between 1985/86 and 1987/88 who started university by age 21 (2007–09) and graduated by age 27 (2013–15). Our main estimates are all relative to an upper second class degree (2.1), the most common degree class, which is often used as a minimum requirement in graduate recruitment. With all available control variables, we estimate an average conditional earnings premium of a first class degree over an upper second of around 3.5% for women and 7.0% for men, measured at age 30. The conditional earnings loss from obtaining a lower second class degree (2.2) rather than an upper second is 6.9% of upper second class earnings for women and 10.9% for men.

These earnings premiums are large. For men at age 30, both the first class premium and the upper second class premium are considerably greater than the average overall return of going to university, which Britton et al. (2020*b*) estimated to be 4%. The differences we find are also larger than the higher class premiums from Walker and Zhu (2013), Naylor, Smith and Telhaj (2016) and Boero et al. (2021): we find a conditional premium for a 'good' (first *or* upper second class) degree over a lower class degree of 9.0% for women and 15.3% for men. The most likely explanations for these larger premiums compared with the previous literature are that we study later cohorts than Walker and Zhu (2013) and Naylor, Smith and Telhaj (2016) and look at a later age than Boero et al. (2021).

We further add to the previous evidence in two important ways. First, the large sample sizes in our data enable us to robustly investigate how conditional degree class premiums vary with subject studied and university attended. We find very large variation in degree class premiums by subject that correlate closely with subject-specific returns: subjects with high labour market returns tend to have high degree class premiums and subjects with low labour market returns tend to have low degree class premiums. For both men and women studying law or economics, getting a 2.2 rather than a 2.1 is associated with more than 15% lower earnings, whereas there is no significant difference for those studying education or English. There are also substantial differences by university type: the premium from getting an upper second class degree instead of a lower second class degree is much higher for the most selective universities.

Second, we investigate whether there is evidence of any change in degree class premiums associated with a strong upward drift in the distribution of degree classifications during our

period of study. This upward drift had been highly publicised before the COVID-19 pandemic (see, for example, OfS (2019)). There was a further jump in the number of students awarded first class degrees – and a corresponding fall in the number of people awarded 2.2s and lower class degrees – for the first cohort to graduate during the pandemic in 2020 (Perrott, 2022). There has been much concern that this trend has diminished the labour market value of higher class degrees.

We show that despite the large shift in degree classes awarded, there were no corresponding large changes in degree class earnings premiums during the period we study. Raw earnings premiums were remarkably stable even as median graduate earnings in all degree classes declined substantially during the period of low earnings growth between 2009 and 2015. Using data from the 1985/86 to 1991/92 birth cohorts, for which rich controls from the National Pupil Database are available, we show that degree class premiums were also stable after controlling for prior attainment and other observable characteristics. The only trend we find is a small increase of around 0.2 percentage points per year in the premium for getting a 2.1 over a 2.2 for women, bringing the estimates for women more in line with those for men for the 1991/92 birth cohort.[4]

While these results may seem surprising, they are consistent with *both* of the possible explanations of why this upward drift in degree classifications has been observed. If the drift represents a genuine improvement in student attainment, the persistence in the first class premium may reflect the economy's capacity to absorb high-skilled workers.[5] If it reflects lower assessment standards, the average skill level in *all* degree classes will have fallen, so it is plausible that skill *differences* between degree classes and thus earnings premiums should have stayed roughly constant.

The rest of the report is set out as follows. In Section 2 we introduce our administrative dataset. Section 3 describes the degree classification system in detail, showing how the degree class distribution varies by gender, subject, university and prior GCSE attainment. Section 4 outlines our methodology, and Section 5 estimates overall premiums for different degree classes and then breaks these down by subject and university type. Section 6 highlights the extent of changes in degree classification during our period of study and investigates whether

[4]These results are broadly consistent with indicative evidence presented in Boero et al. (2021) on trends in degree class premiums for recent cohorts based on survey data. However, as described in more detail in Section 6, their study is limited by data quality and sample size issues.

[5]This would be consistent with leading theories of endogenous technological change (see, for example, Blundell, Green and Jin (2022)).

the first class premium changed over this period. Section 7 concludes.

2 Data

We use the newly created Longitudinal Education Outcomes (LEO) dataset. This links school records from the National Pupil Database (NPD), higher education records from the Higher Education Statistics Agency (HESA) and tax records from Her Majesty's Revenue and Customs (HMRC). We summarise the dataset in Table 1, although we also refer the reader to our previous work, Belfield et al. (2018) and Britton et al. (2020*b*), for more detail on the background variables and the quality of the data linkage. Importantly, the HESA data include all UK students, while the NPD linkage is only possible for those who took their GCSEs in England from 2002 onwards. We therefore observe university graduates going back to the late 1990s, but we lack NPD data – and hence detailed control variables – for individuals graduating before around 2007. We also have Scottish, Welsh and Northern Irish students in the HESA data for whom we have no NPD data.

Table 1: Data summary

Birth cohort	GCSE year	Typical graduation years	NPD record	HESA record	HMRC age range
1976/77	1993	1998–1999	x	up to age 38	28–41
1977/78	1994	1999–2000	x	up to age 37	27–40
1978/79	1995	2000–2001	x	up to age 36	26–39
1979/80	1996	2001–2002	x	up to age 35	25–38
1980/81	1997	2002–2003	x	up to age 34	24–37
1981/82	1998	2003–2004	x	up to age 33	23–36
1982/83	1999	2004–2005	x	up to age 32	22–35
1983/84	2000	2005–2006	x	up to age 31	21–34
1984/85	2001	2006–2007	x	up to age 30	20–33
1985/86	2002	2007–2008	✓	up to age 29	19–32
1986/87	2003	2008–2009	✓	up to age 28	18–31
1987/88	2004	2009–2010	✓	up to age 27	17–30
1988/89	2005	2010–2011	✓	up to age 26	16–29
1989/90	2006	2011–2012	✓	up to age 25	16–28
1990/91	2007	2012–2013	✓	up to age 24	16–27
1991/92	2008	2013–2014	✓	up to age 23	16–26
1992/93	2009	2014–2015	✓	up to age 22	16–25

Note: HMRC age is based on the most common age midway through the tax year. Degree class data are available between the 1999 and 2015 graduation years. The NPD record is for those who went to school in England only.

Our tax records are for every year from 2005/06 to 2018/19 and include everyone filing in the UK. The tax records are unusable unless they are linked to the HESA or NPD records. They include Pay As You Earn (PAYE) income in every year and Self Assessment (SA) income in the

last six years (2013/14 to 2018/19). The results in this study only rely on years of earnings data for which the SA data are available except where otherwise indicated. All earnings are adjusted to the 2018/19 price level using the Consumer Prices Index (CPI).

A key feature of the dataset is the information on subject studied and higher education institution attended from the HESA data. Table 2 summarises the sample sizes we have for a subset of our graduation cohorts from the HESA data and the broad subject distribution within each cohort. The overall sample sizes include domestic (UK) students graduating from UK universities. They are smaller for each graduation cohort than official statistics on university entrants. This is largely due to the exclusion of dropouts and mature students (people starting their degree aged 22 or older).

We group subjects into three broad groups, following previous work. These are 'science, technology, engineering and mathematics' (STEM), 'law, economics and management' (LEM)[6] and 'other'.[7] The table shows that the broad subject distribution is 40% STEM, 20% LEM and 40% other. This distribution has been roughly stable over time. (Table A6 in the appendix shows that the subject distribution has been fairly stable even across the narrower CAH2 subject categories.)

Table 2: HESA data by subject group

Graduation year	**1999**	**2003**	**2007**	**2011**	**2015**
STEM	39.7%	42.1%	40.6%	40.6%	43.1%
LEM	17.4%	20.7%	19.7%	19.0%	18.0%
Other	40.9%	37.2%	39.7%	40.4%	38.9%
Unknown	2.0%	.	.	.	.
Total	126,668	184,022	201,635	231,868	247,333

Note: Includes UK-domiciled graduates from standard full-time undergraduate degrees at UK universities. Only includes students who started the course from which they graduated between ages 17 and 21 inclusive. Students whose courses span multiple subject groups are counted according to the proportion of their course that falls into each subject group. A dot indicates that the sample size is too small to be shown for statistical disclosure purposes.

Table 3 shows that there are roughly 30% of students in the Russell Group (with less than 5% at the four most selective institutions), 20% in the 'old' universities, 30% in the more selective other institutions and 20% in the less selective other institutions. This distribution changes over time, with the share in the Russell Group declining and the share in more selective other institutions growing. The decline in the Russell Group share is driven by more rapid expansion

[6]This consists of law, economics and business/management courses. The 'LEM' acronym follows previous work.

[7]More detailed subject information is provided in Table A6 in the appendix.

elsewhere rather than by an absolute decline in student numbers at Russell Group universities.

Table 3: HESA data by university group

Graduation year	**1999**	**2003**	**2007**	**2011**	**2015**
Most selective Russell Group	4.5%	3.9%	3.5%	3.1%	2.8%
Other Russell Group	30.0%	28.2%	28.9%	27.0%	24.8%
Old universities	19.6%	20.4%	21.0%	20.9%	19.4%
Other universities (more selective)	23.0%	25.6%	26.3%	28.4%	29.6%
Other universities (least selective)	22.9%	21.9%	20.3%	20.5%	23.4%
Total	126,668	184,022	201,635	231,868	247,333

Note: Includes UK-domiciled graduates from standard full-time undergraduate degrees at UK universities. Only includes students who started the course from which they graduated between ages 17 and 21 inclusive. 'Other universities (least selective)' contains the 40 least selective universities by total GCSE score of students from the 2004 to 2007 GCSE cohorts. 'Most selective Russell Group' contains the four most selective institutions by the same metric: Oxford, Cambridge, Imperial College London and the London School of Economics.

3 The degree classification system

This section documents the key features of the degree classification system for the most recent cohorts in our data. Table 4 shows the degree class distribution for women and men, pooling across four graduation cohorts from 2012 to 2015. We observe that just under 20% of students graduated with a first class degree, the highest grade, during this period. The next-highest grade, upper second (or 2.1), then captures around half of graduates. The grades below this are lower second (or 2.2), awarded to just over 20% of graduates, and lower class, which groups together third class and ordinary degrees and accounts for around 5% of male graduates and 3% of female graduates. 'Unclassified' means that someone has technically graduated, but without a grade. This accounts for only around 2% of graduates outside a small group of subjects – medicine, nursing and veterinary science – which commonly do not award classified degrees.[8]

[8]These subjects are excluded from all of our analysis below. We also generally exclude graduates of 'combined studies', as this is an obsolete subject category ('combined studies' only accounted for 0.2% of graduates in 2015).

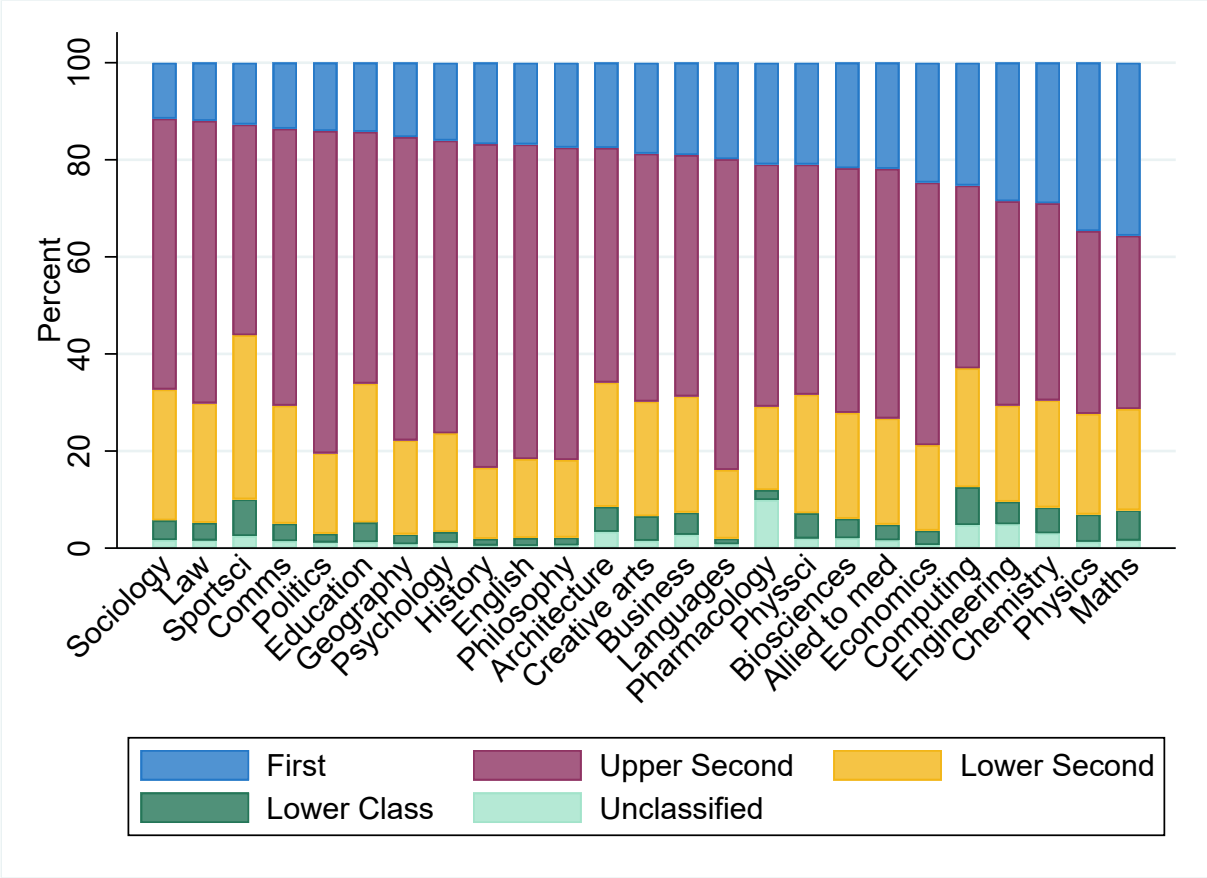
Table 4: Degree class distribution by gender (2012–2015 graduates)

	Unclassified	Lower class	Lower second	Upper second	First
Women	1.7%	3.2%	20.9%	55.5%	18.6%
Men	2.4%	5.1%	24.4%	48.9%	19.1%

Note: Includes UK-domiciled graduates from standard full-time undergraduate degrees at UK universities, pooling across the 2012–2015 graduation years. Only includes students who started the course from which they graduated between ages 17 and 21 inclusive. Excludes medicine, nursing and veterinary science, as it is common in these subject areas not to classify degrees, as well as the obsolete subject category 'combined studies'. Lower class combines 'third class' and 'ordinary' degrees. The number of observations is 646,659 for women and 525,996 for men.

We see some differences by gender, with slightly more women getting upper second class degrees and more men receiving firsts and lower grades. These small distributional differences are likely to be affected by differences in the subjects that men and women choose to study at university. Figure 1 shows the degree classification distribution by degree subject for the same set of graduating cohorts, highlighting that there is considerable variation across the different disciplines. For maths and physics, around 35% of students graduate with first class degrees, while in sociology the figure is less than 12%. In general, more maths-based courses tend to have higher first class shares: maths, physics, chemistry, engineering and economics all have first class shares well above 20%, while those with the lowest shares include sociology, law, sports science, communications and politics. Essay-based courses often have very large shares of people getting upper second class degrees: for languages, history, philosophy, English and politics, more than 80% of students get at least a 2.1, even though first class shares are not particularly high in these subjects.

Figure 1: Degree class distribution by subject (2012–2015 graduates)



Note: See note for Table 4. Also excludes subjects with small sample sizes (agriculture, Celtic studies, humanities not further specified, social care and technology).

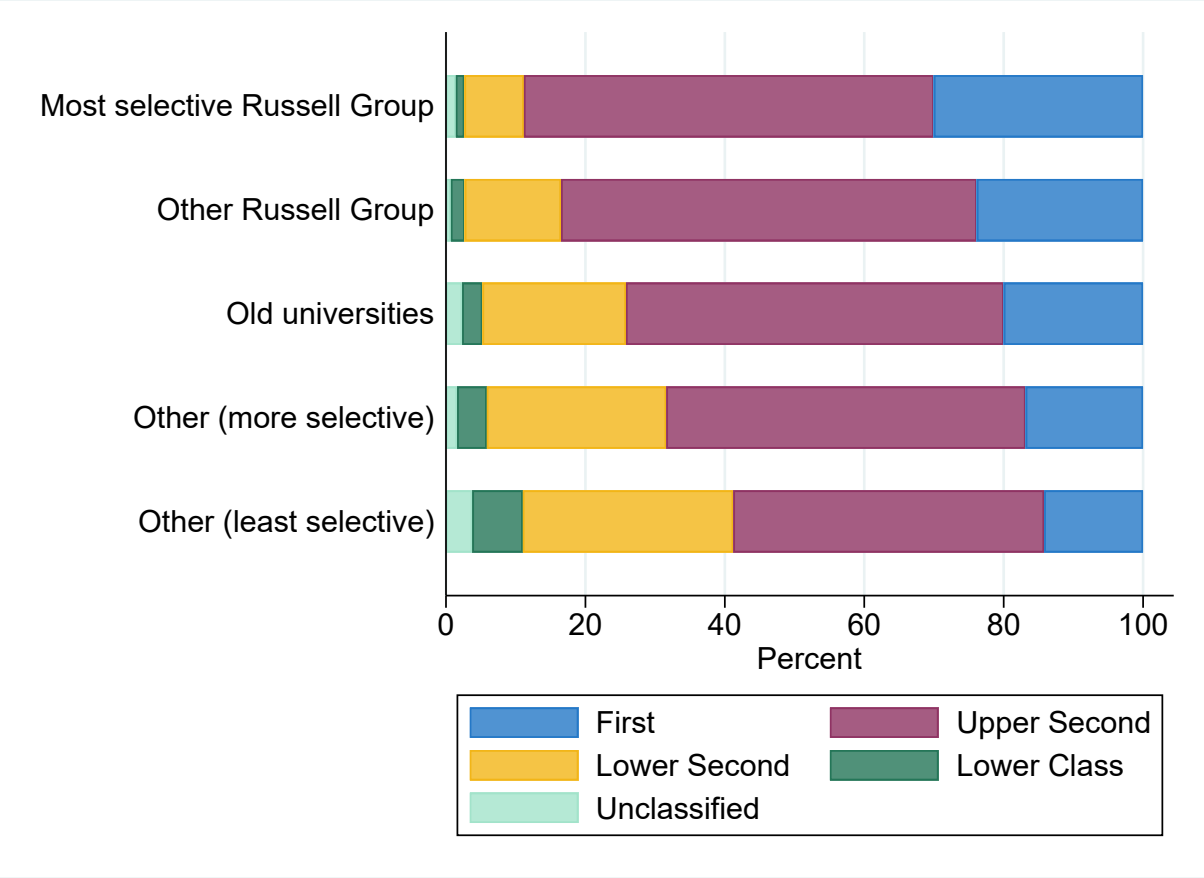
Figure 2 shows the degree class distribution by type of university attended (as introduced in the previous section). Most notably, we observe a positive relationship between university selectivity and the share of first class degrees. The most selective group awards the most firsts and 2.1s: nearly 90% of graduates from this group get at least a 2.1, while less than 60% of those from the least selective group do.[9]

However, this positive relationship should not be interpreted as causal. Students at more selective universities by definition have higher prior attainment, and students with higher prior attainment are more likely to receive higher class degrees. In fact, the true causal relationship may well go in the opposite direction: for a given student, getting a higher class degree may be *less* likely at a more selective institution due to higher academic standards.[10]

[9]Figure A4 in the appendix shows how the share of first class degrees varies across individual institutions. We see significant variation, with first class shares of below 10% at one end of the scale and above 30% at the other. The highest is Imperial College, where the share of first class degrees is 36%. Almost all Russell Group institutions have first class shares of more than 20%.

[10]Some tentative evidence that this is true at least in the top half of the university selectivity distribution is

Figure 2: Degree class distribution by university group (2012–2015 graduates)



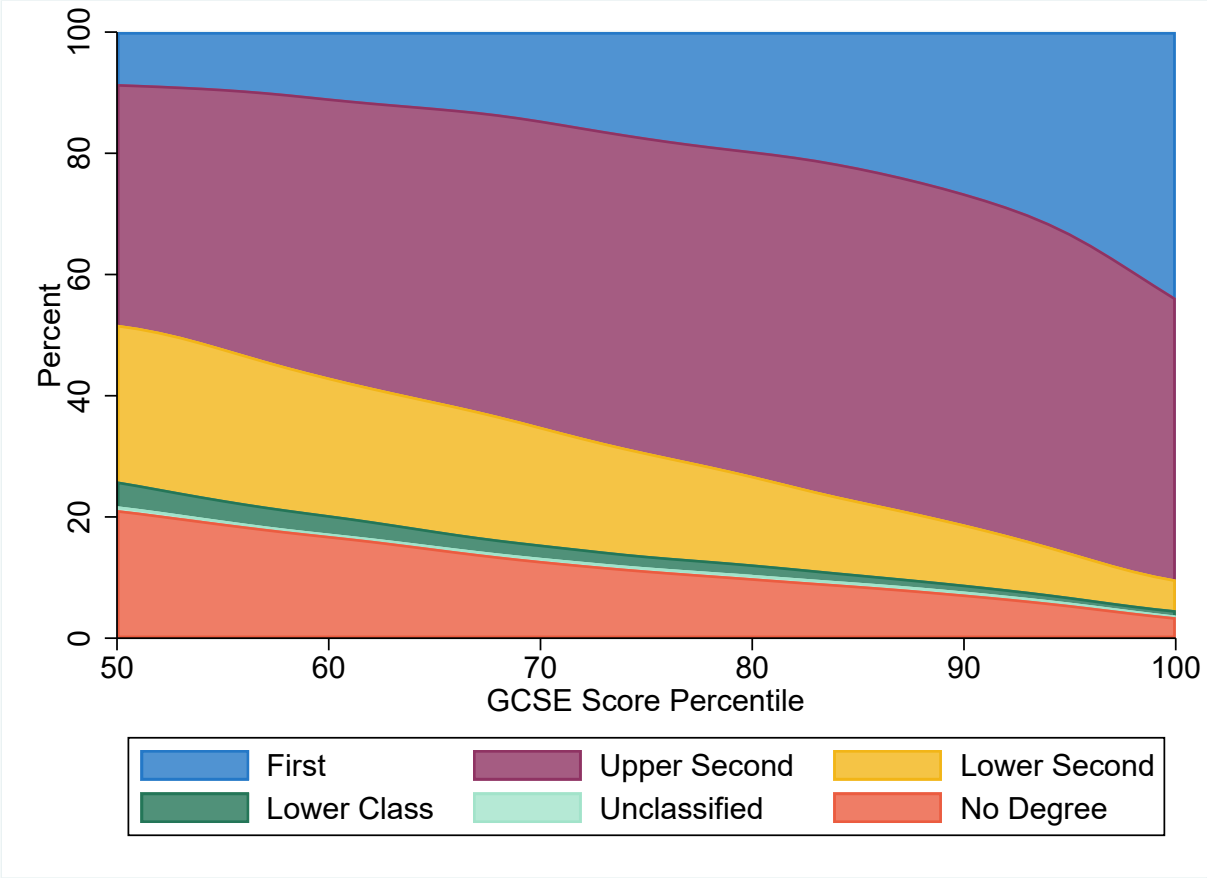
Note: See note for Table 4.

The relationship between prior attainment and degree class is illustrated in Figure 3. Specifically, the graph shows how degree class changes with GCSE attainment for the cohort of students who took their GCSEs in 2009 (the relationship is smoothed for clarity). It only includes people who started a degree in 2011 and only those in the top half of the GCSE score distribution (because there are not many students with GCSE scores below this point).

As expected, we see that achieving high grades at university is very clearly related to GCSE attainment. At one end of the scale, around 20% of students with middling GCSE attainment (compared with the whole cohort) who go to university at age 18 fail to complete a degree within four years, while less than 10% graduate with a first class degree within that time frame. At the other end of the scale, less than 5% of students with the highest GCSE attainment do not complete their degrees within four years, around 90% are awarded at least a 2.1 and more than 40% graduate with a first class degree.

presented in Figure A7.

Figure 3: Degree class distribution by GCSE attainment (2009 GCSEs)



Note: The graph shows degree class distribution by GCSE percentile for the 2009 GCSE cohort, smoothed using a first-degree polynomial, a Gaussian smoothing kernel, and a bandwidth of 5. Only the top 50 percentiles of the GCSE score distribution are shown, as students in the bottom half have low rates of university attendance. Only includes students who started university in 2011 (two years after their GCSEs). 'No Degree' means no degree observed within four years of entering university. Includes 186,260 observations.

4 Methods

4.1 Conceptual framework

We are looking to answer the question 'How much does it pay to get good grades at university?'. More precisely, we are interested in the expected difference, in log points, between individuals' earnings if they had obtained a degree of each class compared with if they had obtained an upper second class degree. Formally, we want to estimate

$$\Delta_D = E(\log y_i^D - \log y_i^2) \tag{1}$$

where y_i^D denotes person i's earnings had they received degree class D, the expectations operator E ranges across individuals, and $d = 2$ denotes an upper second class degree. The coun-

terfactual scenarios where individuals receive different degree classes should be understood to represent not only different degree awards themselves, but also different levels of human capital accumulation at university corresponding to these degree awards.[11] Denoting $D = 0$ as not attending university at all, the return to a degree with degree class D is $E(\log y_i^D - \log y_i^0)$. Hence the difference in returns between a degree of class D and an upper second class degree is also Δ_D, since

$$\Delta_D = E(\log y_i^D - \log y_i^0) - E(\log y_i^2 - \log y_i^0) = E(\log y_i^D - \log y_i^2). \tag{2}$$

To illustrate why the conditional earnings premium is a reasonable estimator for the (unknown) quantity Δ_D, we now outline a simple model where it is consistent and unbiased. Assume that individual i's earnings are given by the 'Mincerian' earnings function

$$\log(y_i^D) = \beta_0 + \sum_{d \neq 2} \beta_d I[D_i = d] + \gamma' X_i + \epsilon_i. \tag{3}$$

I is the indicator function.

Substituting equation 3 into equation 1 shows that in this model, $\Delta_D = \beta_D$. Assume further that the degree class individual i obtains is an unknown deterministic function Ψ of X_i and an error term u_i, so $D_i = \Psi(X_i, u_i)$.[12] Then, provided that u_i and ϵ_i are uncorrelated, the parameters of (3) can be estimated using ordinary least squares (OLS) regression given data on actual earnings y_i, degree class D_i and background characteristics X_i. In particular, the conditional earnings premium $\hat{\beta}_D$ will be a consistent and unbiased estimator of Δ_D.

Importantly, the *raw* earnings premium will not be a consistent estimator of Δ_D in this model. The reason is that if X_i were excluded from the earnings regression, $\gamma' X_i$ would be included in the error term, which would be correlated with D_i by construction. Intuitively, without controlling for background characteristics, we would mistake the earnings effects of other factors that are correlated with academic performance for the effects of academic performance itself.

Figure 3 in the previous section provides a clear illustration of this issue. As it is typically those with higher prior attainment who get good degrees, and high prior attainment has an independent positive effect on earnings, those who get good degrees would likely have

[11] Like the rest of the literature, we do not attempt to disentangle these two factors.

[12] For instance, u_i might be thought to contain the effects of teaching quality or transitory health shocks.

earned more than those without good degrees even if they had not obtained good degrees. In order to estimate conditional differences in expected earnings, we control for prior attainment in a regression model that also accounts for other factors that are likely to be correlated with degree class and influence subsequent earnings, such as socio-economic background and demographic variables.

4.2 Overall estimates

To obtain overall conditional earnings premiums, we estimate

$$\log(y_i^{30}) = \beta_0 + \sum_{d=1,d=2}^{4} \beta_d I[D = d] + \sum_{c=2003}^{2004} \delta_c I[C = c] + \gamma' X_i + \epsilon_i \tag{4}$$

where y_i^{30} is the earnings of individual i at age 30. We include graduates from the 2002 to 2004 GCSE cohorts. I is the indicator function and D indicates degree classification, where $D \in \{1, 2, 3, 4\}$. Let 1 indicate a first class degree, 2 an upper second, 3 a lower second and 4 a third or ordinary degree. We exclude people who did not obtain a degree or whose degree was not classified. The omitted category is $D = 2$, so our estimates are relative to this base: e.g. β_1 is the premium of getting a first class degree over an upper second (2.1).

X_i is a vector of observable characteristics that include background, prior attainment and university controls. The background controls include a socio-economic indicator (following that used in Belfield et al. (2018)), region, ethnicity and school type (state or independent school). The prior attainment controls include Key Stage 2 (age 11), Key Stage 4 (age 16) and Key Stage 5 (age 18) test scores by subject. The university controls include indicator variables for university group and subject studied at university, as well as for whether a student entered university at age 19 or older. We sequentially add these sets of controls in Table 5 in Section 5. Each student with positive earnings is included as many times in the model as the number of subjects he or she studied at university. The model is estimated by weighted OLS, weighting each observation depending on the share of a given subject in an individual's course.

Throughout this report, we estimate completely separate models for men and women so as to allow different earnings premiums by gender and different effects of the X variables on earnings. In our main specification, we use earnings at age 30 as the dependent variable. We use this age as we consider it to be the best balance of pooling across cohorts and leaving sufficient time after university to experience the benefit (penalty) of a higher-(lower-)class degree.

We include separate dummies for being in the 2003 and 2004 GCSE cohorts (denoted c) to allow for real earnings growth (as we are observing these cohorts at the same age and therefore at a different time).

4.3 Subject and university estimates

We estimate how degree class premiums vary by subject ($s \in \{1, 2, ..., \bar{S}\}$) via the following:

$$\log(y_i^{30}) = \beta_0 + \sum_{s=1}^{\bar{S}} \sum_{d=1,d=2}^{4} \beta_{ds} I[D = d, S = s] + \sum_{s=2}^{\bar{S}} \delta_s I[S = s] + \sum_{c=2003}^{2004} \delta_c I[C = c] + \gamma' X_i + \epsilon_i \tag{5}$$

That is, we hold the effect of the background characteristics constant, but allow each of the different subjects to have a different degree class premium. For every subject, we again use $D = 2$ as the omitted category so that each of the subject estimates is relative to the baseline of a 2.1 in that subject.[13] We also do the equivalent by university group, as follows:

$$\log(y_i^{30}) = \beta_0 + \sum_{u=1}^{\bar{U}} \sum_{d=1,d=2}^{4} \beta_{du} I[D = d, U = u] + \sum_{u=2}^{\bar{U}} \delta_u I[U = u] + \sum_{c=2003}^{2004} \delta_c I[C = c] + \gamma' X_i + \epsilon_i \tag{6}$$

We use the five university groups introduced previously, so $\bar{U} = 5$. Again the interpretation of the β_{du} coefficients is the earnings premium from getting that degree classification within that univerisity group, relative to a 2.1 from that university group.[14] For Figures 4, 5 and 6 in Section 5, we re-parameterise equations 5 and 6 so that the omitted categories are a 2.1 in creative arts and a 2.1 from an 'other (least selective)' university, respectively. The parameters of the re-parameterised regressions are given by $\beta^*_{ds} = \beta_{ds} + \delta_s$ for the subject regression and $\beta^*_{du} = \beta_{du} + \delta_u$ for the university group regression.

4.4 Changing premiums over time

In Section 6, we turn to consider how degree class premiums have changed over time. To do this with the same set of control variables in X, which relies on the NPD, we have to use an earlier age than 30 to be able to look at multiple cohorts. We therefore use earnings at age 26,

[13] As the subject indicators are now included separately, they are not part of X_i for equation 5 (but university group indicators are).

[14] As the university group indicators are now included separately, they are not part of X_i for equation 6 (but subject indicators are).

which allows us to include seven cohorts. We start by running the following model:

$$\log(y_i^{26}) = \beta_0 + \sum_{c=2003}^{2008} \sum_{d=1,d=2}^{4} \beta_{dc} I[C = c, D = d] + \sum_{c=2003}^{2008} \delta_c I[C = c] + \gamma' X_i + \epsilon_i \quad (7)$$

This is analogous to equations 5 and 6, allowing separate degree class premiums for each cohort. However, we then restrict this model as follows:

$$\log(y_i^{26}) = \beta_0 + \sum_{d=1,d=2}^{4} \beta_d^1 I[D = d] + \sum_{d=1,d=2}^{4} \beta_d^2 I[D = d]t + \sum_{c=2003}^{2008} \delta_c I[C = c] + \gamma' X_i + \epsilon_i \quad (8)$$

where $t = c - 2005$. That is, we interact cohort with degree class, allowing each degree class to have a linear trend over time, with the non-interacted effects corresponding to the year 2005. This is somewhat restrictive, but it has the advantage of being easy to interpret, avoids over-fitting and lends itself well to looking at trends over time for subgroups.[15]

5 Conditional degree class premiums

Table 5 shows our estimates of β_1, β_3 and β_4 from equation 4, separately by gender. The sample consists of all full-time English-domiciled graduates from the 2002–2004 GCSE cohorts who started a standard undergraduate course at a UK university within 5 years of their GCSE exams and graduated within 11 years. The estimates exclude those whose degree class was not recorded or was not classified, graduates with earnings of less than £3,000 at the given age and graduates from the subjects excluded from Table 4. The sample includes both students who get postgraduate degrees and students who do not; separate results for these two groups are given in Appendix A1.

[15] Subgroup analysis is presented in Appendix A3.2.

Table 5: Degree class premiums at age 30 by gender (in logs)

Specification	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Women						
First	0.083***	0.078***	0.070***	0.024***	0.019***	0.034***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Lower second	-0.164***	-0.139***	-0.132***	-0.073***	-0.064***	-0.071***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Lower class	-0.309***	-0.267***	-0.257***	-0.161***	-0.150***	-0.159***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	279,176	277,899	277,899	277,899	263,511	263,511
Men						
First	0.119***	0.117***	0.110***	0.066***	0.059***	0.068***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Lower second	-0.181***	-0.156***	-0.153***	-0.105***	-0.103***	-0.115***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Lower class	-0.302***	-0.259***	-0.256***	-0.188***	-0.187***	-0.202***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	224,383	223,424	223,424	223,424	210,052	210,052
Controls						
Background	No	Yes	Yes	Yes	Yes	Yes
Key Stage 2	No	No	Yes	Yes	Yes	Yes
Key Stage 4	No	No	No	Yes	Yes	Yes
Key Stage 5	No	No	No	No	Yes	Yes
University	No	No	No	No	No	Yes

Note: Includes full-time English-domiciled graduates from the 2002–2004 GCSE cohorts who started a standard undergraduate course at a UK university within 5 years of their GCSE exams and graduated within 11 years. The estimates exclude those whose degree class was not recorded or was not classified, graduates with earnings of less than £3,000 at the given age and graduates from the subjects excluded from Table 4. The base category is an upper second class degree. 'Observations' refers to individual/degree subject combinations. The sample size drops substantially between columns 4 and 5 as we do not observe a Key Stage 5 record for all individuals in our data. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

Column 1 gives the raw or unconditional earnings premiums for the different degree classes relative to the omitted category, an upper second (2.1). For example, the top left-hand estimate in the table shows that women in our sample with a first earned 8.3 log points (8.7%) more than women with a 2.1. For men, the equivalent figure is 11.9 log points (12.6%). The earnings of women with a lower second (2.2) or a lower class than this are 16.4 log points (15.1%) and 30.9 log points (26.6%) lower than those of women with a 2.1, respectively. The figures for men for a 2.2 or lower class degree relative to a 2.1 are similar.

The table shows that as control variables are sequentially included, the differences in earnings between degree classes mostly decline. This is particularly true when GCSE (Key Stage

4) controls are included: the first class premium drops from 7.0 to 2.4 log points (7.3% to 2.4%) for women and from 11.0 to 6.6 log points (11.6% to 6.8%) for men. The only exception to this story is the inclusion of university controls, which comprise indicator variables for university subject, institution type, and the timing of university entry. Adding these controls *increases* the degree class differences slightly. This partly reflects the fact that *conditional on prior attainment*, first class degrees are more likely at less selective universities,[16] which also offer lower returns.It also partly reflects the positive association (conditional on prior attainment) between late university entry and degree performance and its negative association with earnings.

Column 6 shows our main estimates. The premium from gaining a first class degree over an upper second is 3.4 log points (3.5%) for women and 6.8 log points (7.0%) for men. A lower second class degree is associated with 7.1 log points (6.9%) lower earnings compared with an upper second for women and 11.5 log points (10.9%) lower earnings for men. Obtaining a lower class degree is associated with 15.9 log points (14.7%) lower earnings compared with an upper second for women and 20.2 log points (18.3%) lower earnings for men.

These estimates are quite large, especially for men: based on the estimates from Belfield et al. (2018), the estimated difference in returns between an upper second and a lower second class degree for men is around three times as large as the average return of going to university at the same age, which was estimated as 4% in Britton et al. (2020*b*).[17] The estimates are also quite a lot bigger than those found in previous studies. For example, Naylor, Smith and Telhaj (2016) estimate a 'higher class' premium (i.e. a first or a 2.1) of around 7 log points over a lower class degree at approximately age 30, with no significant gender differences. Our estimates (at age 30) equate to a 'higher class' premium of 8.6 log points (9.0%) for women and 14.2 log points (15.3%) for men (we show this in Table A7 in the appendix). Also, unlike Naylor, Smith and Telhaj (2016), we find that control variables have a very large impact on the estimated premium from a higher class degree, highlighting that our raw differences are much larger than theirs.[18]

[16] See Figure A7 for evidence of this.

[17] As documented in Appendix A1, we find even larger earnings premiums – especially for first class degrees – when we exclude graduates who pursue postgraduate degrees.

[18] A potentially important difference between the two studies is that Naylor, Smith and Telhaj (2016) use hourly earnings while we use annual earnings.

Table 6: Conditional degree class premiums at age 30 by university subject (in logs)

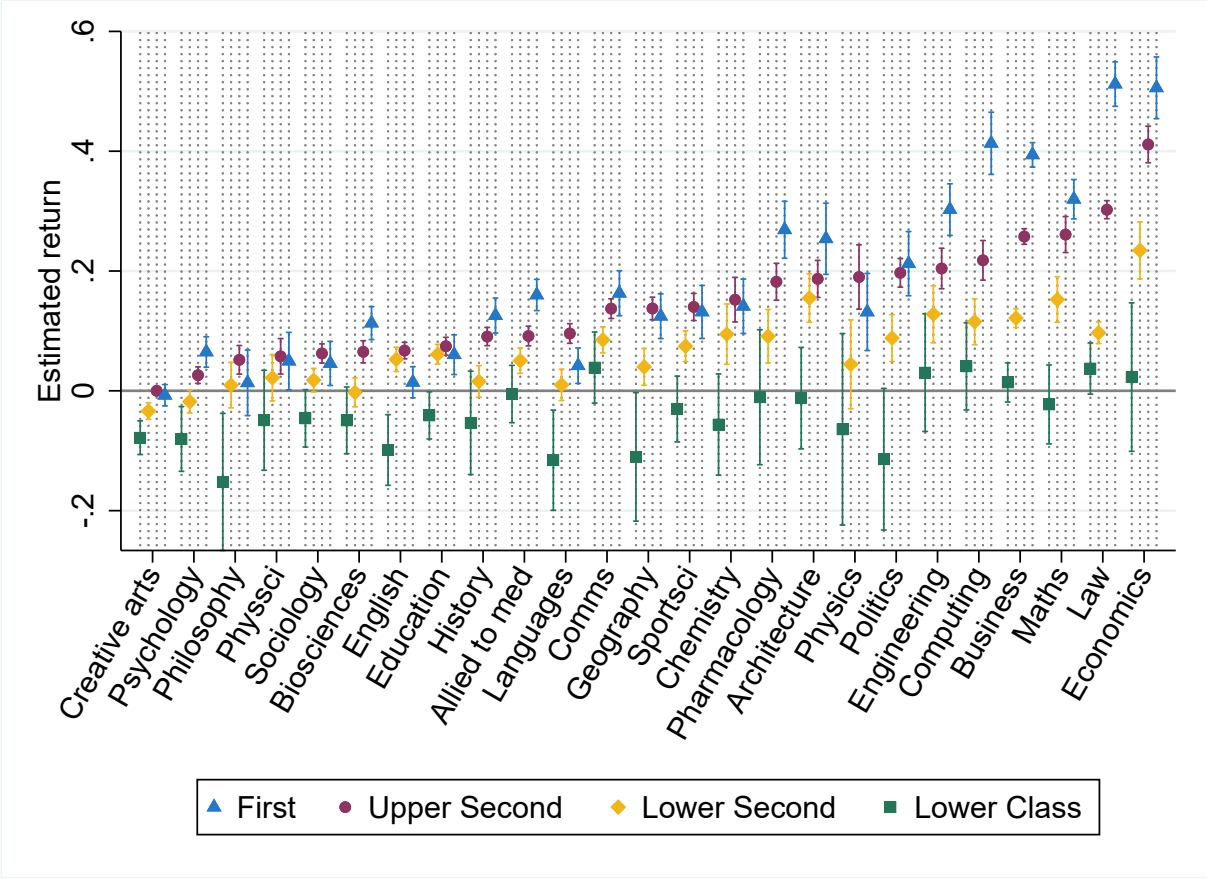
	Women			Men		
Subject	**First**	**2.2**	**Lower**	**First**	**2.2**	**Lower**
Allied to med	0.068***	-0.041***	-0.097***	0.060*	-0.153***	-0.179***
	(0.014)	(0.012)	(0.025)	(0.025)	(0.020)	(0.039)
Architecture	0.067*	-0.032	-0.199***	0.026	-0.150***	-0.222***
	(0.034)	(0.025)	(0.046)	(0.022)	(0.016)	(0.030)
Biosciences	0.048**	-0.068***	-0.114***	0.046*	-0.083***	-0.178***
	(0.015)	(0.014)	(0.029)	(0.021)	(0.016)	(0.027)
Business	0.136***	-0.136***	-0.244***	0.175***	-0.186***	-0.274***
	(0.011)	(0.008)	(0.017)	(0.012)	(0.008)	(0.014)
Chemistry	-0.011	-0.057	-0.208***	0.078**	-0.076**	-0.159***
	(0.029)	(0.031)	(0.046)	(0.028)	(0.027)	(0.036)
Comms	0.026	-0.052***	-0.098**	-0.003	-0.046**	-0.152***
	(0.020)	(0.013)	(0.031)	(0.024)	(0.015)	(0.031)
Computing	0.195***	-0.102***	-0.177***	0.108***	-0.107***	-0.215***
	(0.031)	(0.025)	(0.040)	(0.013)	(0.012)	(0.017)
Creative arts	-0.007	-0.034***	-0.078***	-0.010	-0.018	-0.065***
	(0.009)	(0.007)	(0.014)	(0.012)	(0.010)	(0.017)
Economics	0.095**	-0.177***	-0.388***	0.212***	-0.274***	-0.433***
	(0.030)	(0.028)	(0.065)	(0.020)	(0.017)	(0.035)
Education	-0.014	-0.014	-0.115***	-0.007	-0.036	-0.182***
	(0.018)	(0.010)	(0.021)	(0.045)	(0.025)	(0.043)
Engineering	0.098***	-0.076**	-0.174***	0.091***	-0.095***	-0.199***
	(0.027)	(0.029)	(0.053)	(0.012)	(0.012)	(0.020)
English	-0.053***	-0.015	-0.166***	-0.042*	-0.023	-0.112*
	(0.014)	(0.011)	(0.030)	(0.021)	(0.019)	(0.046)
Geography	-0.013	-0.097***	-0.248***	-0.036	-0.130***	-0.238***
	(0.020)	(0.017)	(0.055)	(0.025)	(0.016)	(0.034)
History	0.035*	-0.075***	-0.144**	0.034	-0.130***	-0.281***
	(0.015)	(0.014)	(0.044)	(0.018)	(0.014)	(0.036)
Languages	-0.054***	-0.086***	-0.212***	-0.047	-0.119***	-0.296***
	(0.016)	(0.014)	(0.043)	(0.025)	(0.022)	(0.058)
Law	0.210***	-0.205***	-0.265***	0.314***	-0.237***	-0.365***
	(0.019)	(0.010)	(0.022)	(0.027)	(0.014)	(0.030)
Maths	0.059**	-0.108***	-0.284***	0.088***	-0.172***	-0.288***
	(0.021)	(0.023)	(0.036)	(0.019)	(0.020)	(0.027)
Pharmacology	0.087**	-0.091***	-0.193**	0.127**	-0.102***	-0.165**
	(0.028)	(0.026)	(0.059)	(0.040)	(0.031)	(0.059)
Philosophy	-0.038	-0.042	-0.204***	0.005	-0.096***	-0.120*
	(0.030)	(0.022)	(0.059)	(0.030)	(0.026)	(0.061)
Physics	-0.058	-0.146**	-0.254**	0.085***	-0.077**	-0.196***
	(0.042)	(0.046)	(0.086)	(0.023)	(0.025)	(0.036)
Physsci	-0.008	-0.036	-0.107*	-0.003	-0.089***	-0.125**
	(0.028)	(0.024)	(0.045)	(0.034)	(0.026)	(0.043)
Politics	0.015	-0.109***	-0.311***	0.050	-0.081***	-0.158***
	(0.029)	(0.022)	(0.061)	(0.027)	(0.019)	(0.047)
Psychology	0.039**	-0.044***	-0.106***	0.061	-0.074***	-0.142**
	(0.013)	(0.010)	(0.028)	(0.033)	(0.022)	(0.049)
Sociology	-0.017	-0.045***	-0.108***	-0.035	-0.052*	-0.140***
	(0.019)	(0.011)	(0.025)	(0.036)	(0.020)	(0.039)
Sportsci	-0.008	-0.066***	-0.170***	0.037	-0.052***	-0.098***
	(0.024)	(0.016)	(0.030)	(0.027)	(0.014)	(0.021)

Note: Sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category in each subject is an upper second class degree. Results for agriculture, Celtic studies, humanities not further specified, social care and technology are suppressed due to small sample sizes. Overall sample sizes are as given in column 6 of Table 5. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

We now turn to investigate how degree class premiums vary by subject studied at university. The results are shown in Table 6. We saw in Figure 1 that the distribution of degree classifications differs considerably across different subjects, so it is important to keep this in mind when interpreting the results. The table shows the equivalent estimates to the final column in Table 5 only (i.e. the conditional degree class premiums), with the full specification outlined in equation 5 in Section 4.

We see a lot of variation by subject. For men studying economics, the first class premium is 21.2 log points (23.6%), while the earnings loss from a lower second class degree is 27.4 log points (24.0%) and from a lower class degree is 43.3 log points (35.1%). For law, the first class premium is 21.0 log points (23.4%) for women and 31.4 log points (36.9%) for men; getting a lower second class degree is associated with 20.5 log points (18.5%) lower earnings for women and 23.7 log points (21.1%) lower earnings for men, compared with an upper second.

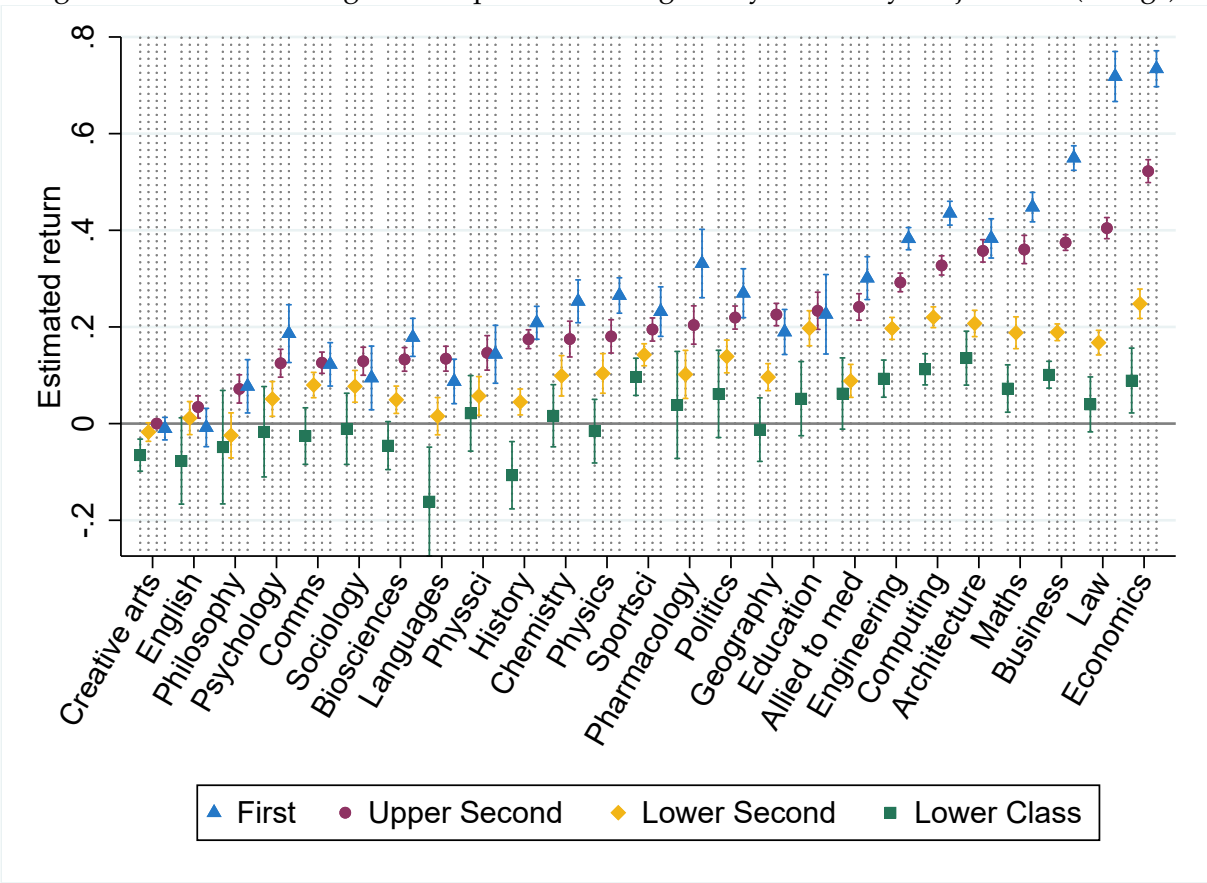
Figure 4: Conditional degree class premiums at age 30 by university subject *women* (in logs)



Note: Sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category is an upper second class degree in creative arts. Results for agriculture, Celtic studies, humanities not further specified, social care and technology are suppressed due to small sample sizes. Subjects are sorted by estimated return with an upper second class degree. Overall sample sizes are as given in column 6 of Table 5.

On the other hand, there are several subjects where the benefits from a good grade appear to be minimal in terms of earnings at age 30. For education and English, there is no significant difference in earnings associated with getting a 2.1 instead of a 2.2 for either men or women. The first class premium is small or even negative for these and many other subjects. However, the earnings hit associated with a lower class degree in English and education is still large, suggesting that doing worse than a 2.2 can still result in significantly lower earnings in these subjects.

Figure 5: Conditional degree class premiums at age 30 by university subject: *men* (in logs)



Note: Sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category is an upper second class degree in creative arts. Results for agriculture, Celtic studies, humanities not further specified, social care and technology are suppressed due to small sample sizes. Subjects are sorted by estimated return with an upper second class degree. Overall sample sizes are as given in column 6 of Table 5.

Figures 4 and 5 put these results in perspective. Instead of using an upper second *in each subject* as the base category, we use an upper second class in creative arts as the base category for all results.[19] This allows us to compare degree class premiums within subjects and returns

[19] We choose creative arts as the base category because it is a large subject that has consistently been identified as the subject with the lowest returns in previous work (Belfield et al., 2018; Britton et al., 2020*b*).

differences across subjects.

A striking pattern emerges from these graphs. Among low-return subjects such as creative arts, English or philosophy, differences between degree classes are small. At the other end of the scale, differences between degree classes are very large in high-return subjects such as economics, law or business. This is consistent with the higher within-subject variance in earnings and returns among graduates of higher-return subjects, which we highlighted in Britton et al. (2020*b*).[20] It also implies that differences in returns between subjects within the same degree class are larger for people awarded higher class degrees. For instance, the results suggest that men who receive a 2.2 in English would not have earned significantly more had they got a 2.2 in law, but those who got a first class degree in English would have earned more than twice as much on average had they got a first in law.

Table 7: Conditional degree class premiums at age 30 by university group (in logs)

	Women			Men		
University group	**First**	**2.2**	**Lower**	**First**	**2.2**	**Lower**
Most selective Russell Group	0.017	-0.219***	-0.307***	0.133***	-0.222***	-0.278***
	(0.017)	(0.025)	(0.068)	(0.015)	(0.022)	(0.043)
Other Russell Group	0.033***	-0.104***	-0.225***	0.054***	-0.164***	-0.281***
	(0.006)	(0.006)	(0.019)	(0.007)	(0.006)	(0.013)
Old universities	0.035***	-0.076***	-0.189***	0.067***	-0.131***	-0.233***
	(0.008)	(0.007)	(0.017)	(0.009)	(0.007)	(0.014)
Other (more selective)	0.036***	-0.053***	-0.139***	0.064***	-0.081***	-0.159***
	(0.007)	(0.005)	(0.010)	(0.008)	(0.006)	(0.010)
Other (least selective)	0.048***	-0.063***	-0.143***	0.073***	-0.079***	-0.164***
	(0.009)	(0.005)	(0.009)	(0.011)	(0.007)	(0.010)

Note: Sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category in each university group is an upper second class degree. Overall sample sizes are as given in column 6 of Table 5. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

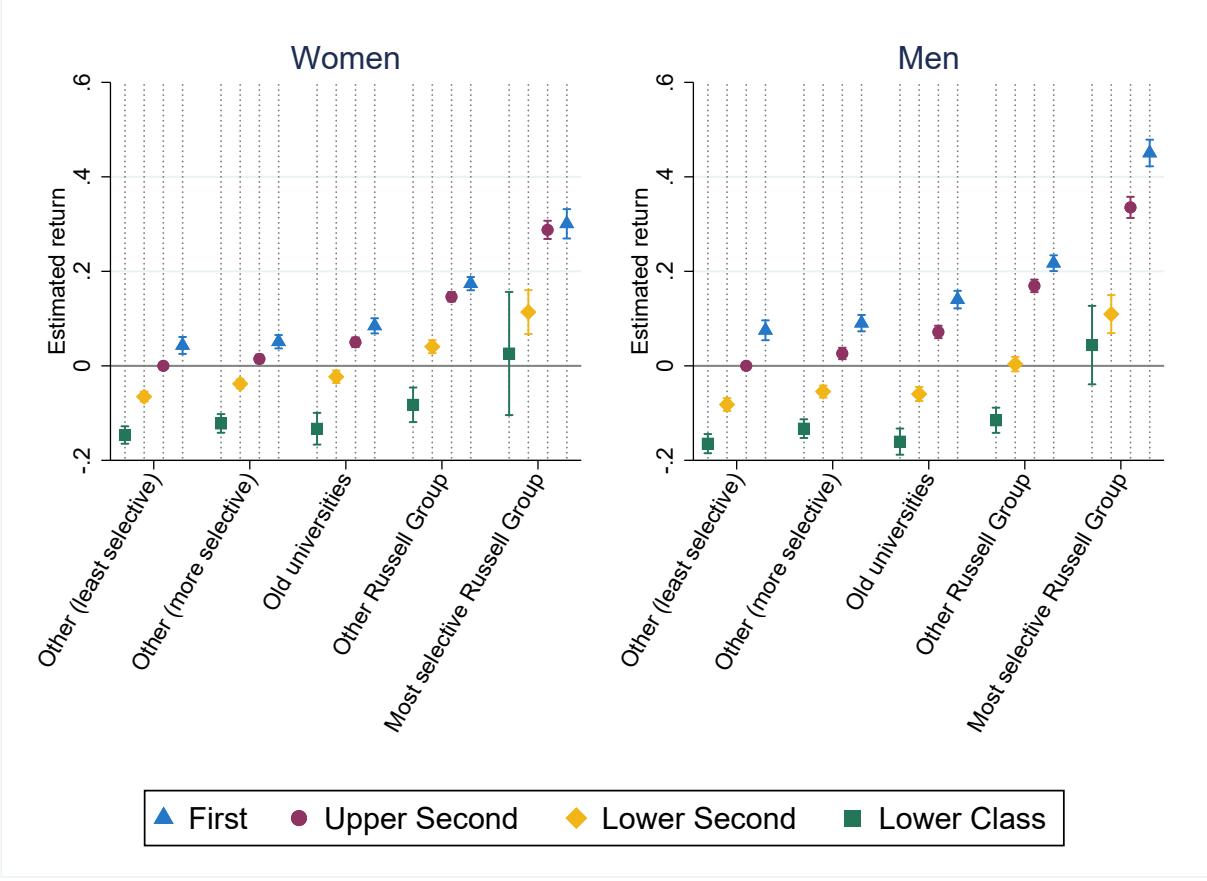
Table 7 then considers how returns to different degree classifications differ by university group, showing estimates from equation 6, again with the full set of control variables. For both men and women, the estimated earnings hit from getting a 2.2 rather than a 2.1 mostly rises with selectivity, from 6.3 log points (6.1%) at the least selective universities to 21.9 log points (19.7%) at the most selective ones for women, and from 7.9 log points (7.6%) to 22.2 log points (19.9%) for men. The pattern is mostly the opposite for the first class premium, which declines from 4.8 log points (4.9%) at the least selective universities to 1.7 log points (1.7%) at the most selective ones for women. For men the first class premium also broadly declines with

[20] Direct evidence of the correlation between overall returns and degree class premiums is presented in Figure A8.

selectivity, but the striking exception is the most selective Russell Group universities: men who graduate with a first class degree from these universities enjoy the highest first class premium, at 13.3 log points (14.2%). The penalty from lower class degrees follows a similar pattern to that for getting a 2.2.

Figure 6 puts these premiums into perspective by using a 2.1 at the 'other (least selective)' category as the reference category. Differences between degree classes are larger at more selective universities. Degree class premiums are in many cases bigger than differences in returns between university types. The results suggest that those who get a 2.2 from a selective university would mostly have been better off with a 2.1 from a less selective one.

Figure 6: Conditional degree class premiums at age 30 by university group (in logs)



Note: Sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category is an upper second class degree from an 'other (least selective)' university. Overall sample sizes are as given in column 6 of Table 5.

6 The impact of rising graduate attainment

We now turn to consider the impact of the well-documented trend of increases in the proportion of higher degree classifications awarded over time.[21] We start by documenting these trends, highlighting variation by subject studied and type of university attended. We then investigate how these trends have affected early-career earnings returns.

6.1 Changes in degree classification

Figure 7 shows the overall distribution of degree classifications for every graduating cohort between 1999 and 2015. There is a very clear pattern over this period of increases in the share of first class degrees, which more than trebled during this period. Interestingly, the 2.1 share has remained fairly stable, meaning it is the share of 2.2s and lower class degrees that has declined substantially over the period. The trends have been remarkably consistent, with the first class share increasing in every year since 1999. This trend accelerates mildly from around 2010.[22]

The latest HESA data show that the trend towards higher degree classifications has continued since 2015. Before the pandemic, the growth in the share of first class degrees awarded had begun to slow. However, the proportion of firsts jumped by 7 percentage points in 2020 (from 28% in 2019 to 35% in 2020).[23] In 2021, the proportion of students awarded a first rose further to 36% (Perrott, 2022).

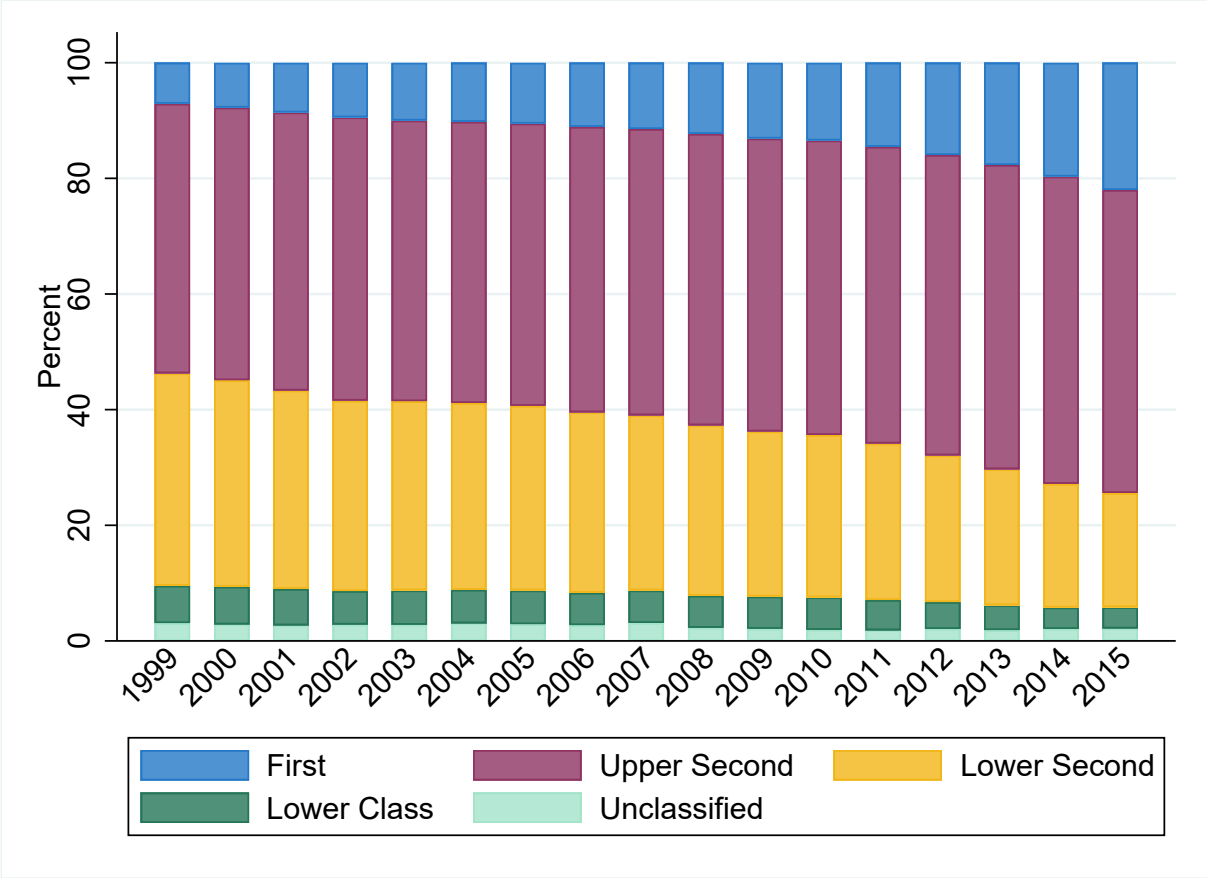
Naylor, Smith and Telhaj (2016) highlighted substantial increases in the share of 'good degrees' awarded (firsts and 2.1s) even before 1999 – from 38% in 1985 to 47% in 1993 to 54% in 1998. We show that this share is 60% by 2006, 70% by 2013 and 74% in 2015, our last year of degree class data. According to the latest HESA data, this share was 82% in 2021 (Perrott, 2022).

[21] See, for example, the recent report by the Office for Students, a regulator of the sector (OfS, 2020).

[22] Our data include all UK higher education institutions. Figure A5 in the appendix shows that big increases in the share of first class degrees occurred in Wales, Scotland and Northern Ireland as well as in England.

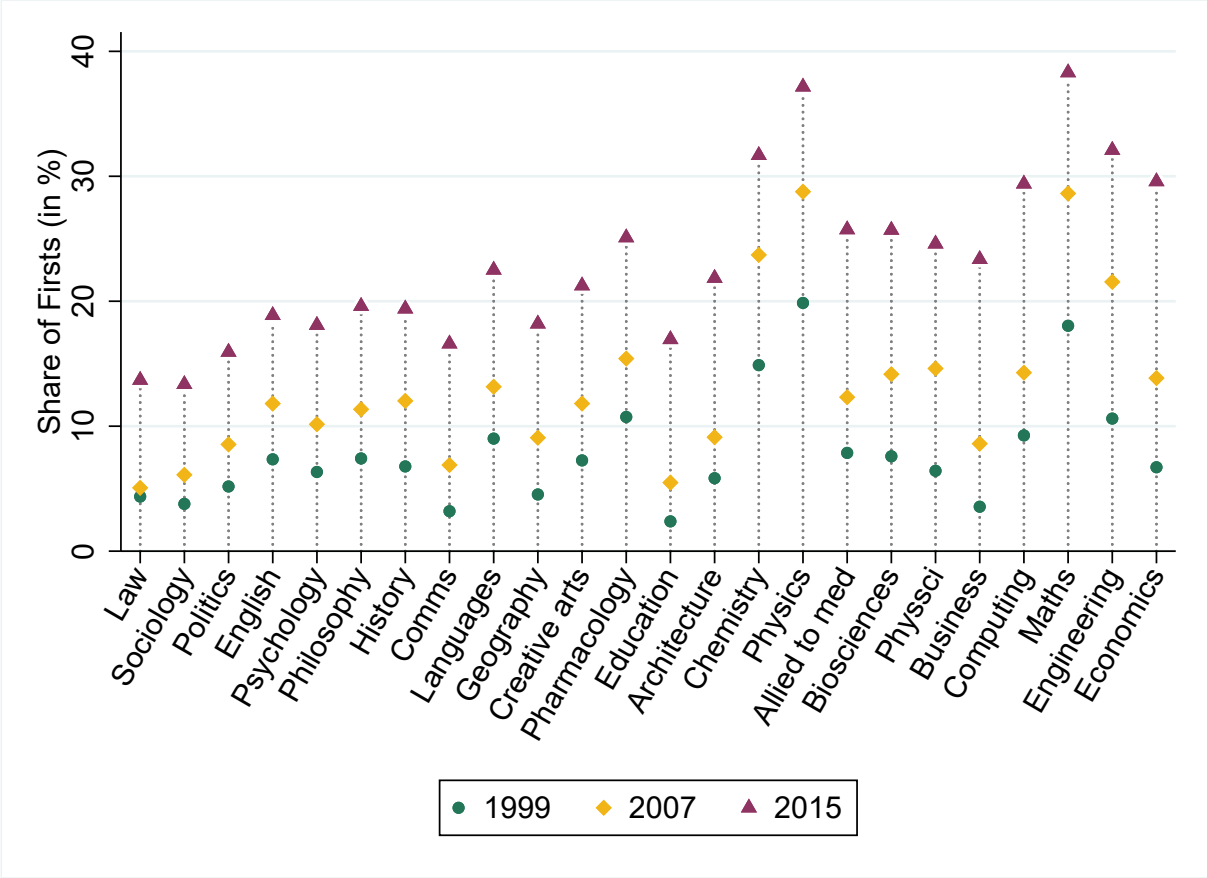
[23] HESA speculate that this increase is related to measures universities took in response to the pandemic.

Figure 7: Degree class distribution by graduation year



Note: See note for Table 4.

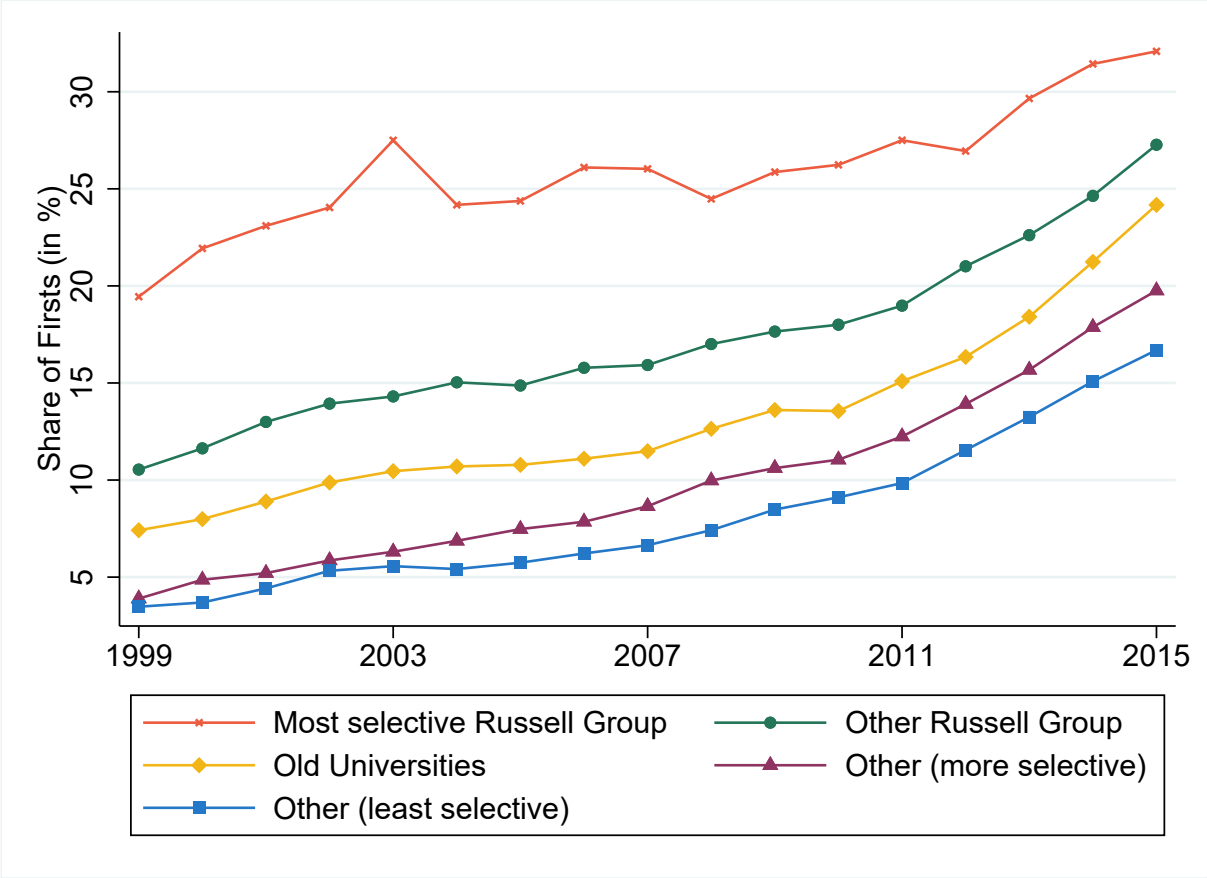
Figure 8: Share of firsts amongst university graduates, by subject over time



Note: Sample selection as described in the note for Table 4.

We now turn to how these increases in degree classifications vary by subject and institution type. We use the first class share as a proxy for the overall trend in degree classification. Figure 8 shows the share of first class degrees by subject in 1999, 2007 and 2015 (sorted by the change in the first class share between 1999 and 2015). We observe substantial increases over this period in all subjects, although there is quite a lot of variation in growth: for example, the first class share in economics grew from around 7% in 1999 to just under 30% in 2015; computing, maths and engineering saw similar (if slightly smaller) increases. In contrast, less mathematical courses such as law, sociology, politics and English saw much lower growth in first class shares.

Figure 9: Firsts by university type over time



Note: Sample selection as described in the note for Table 4.

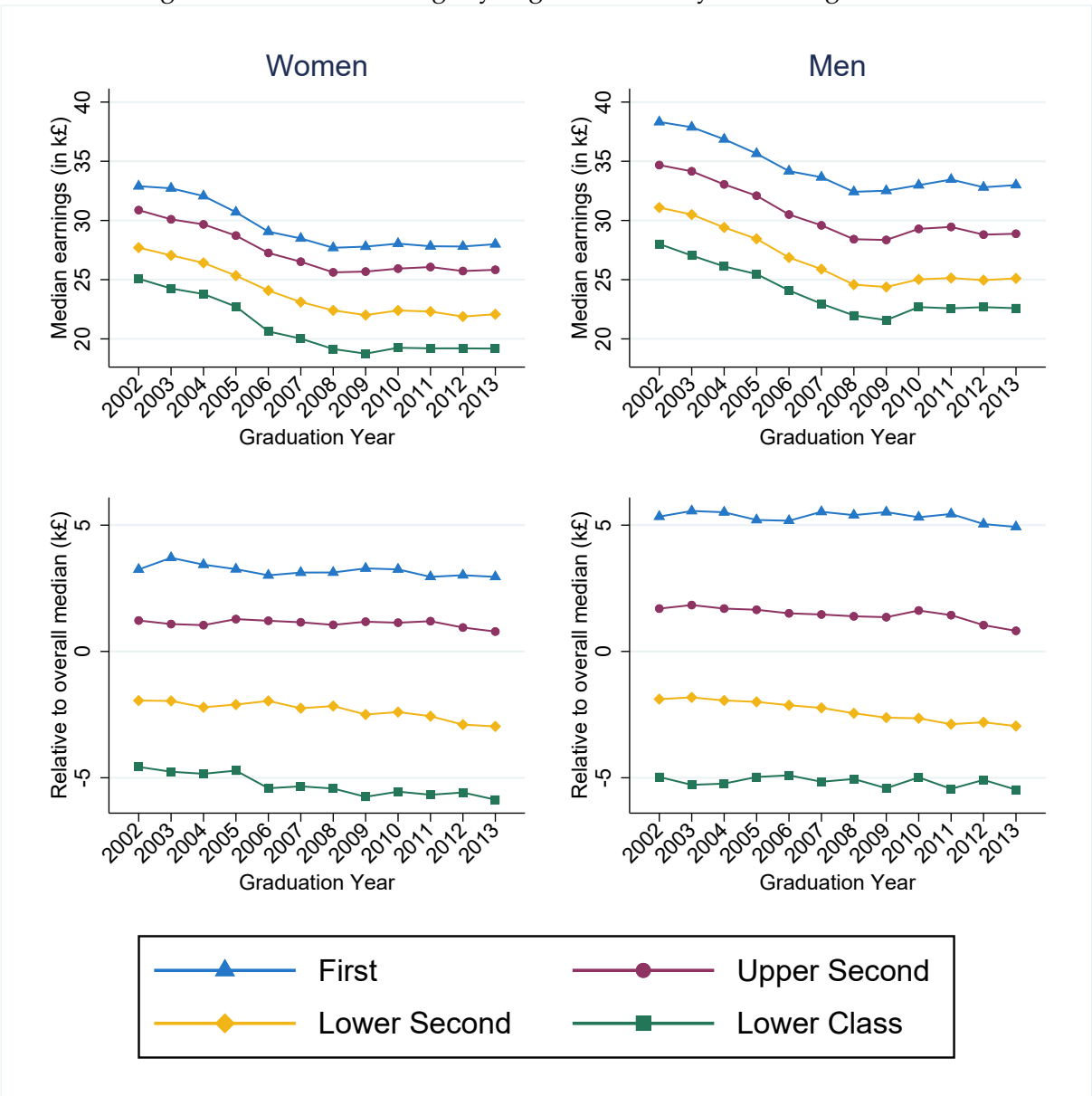
Figure 9 shows trends in the first class shares for our five university groups. Throughout our sample period, the most selective Russell Group universities awarded the highest share of firsts and the 'other (least selective)' universities awarded the lowest share. Again, we see that increases over time are present for all groups. The trends are roughly parallel over time for all groups except the most selective Russell Group universities, which have seen slower growth in the first class share over our sample period. Again, we see evidence of the growth in first class shares accelerating towards the end of the period.

6.2 Trends in degree class premiums over time

While the recent increases in higher degree classifications have been well documented, there has been very little investigation of what these have meant for earnings outcomes. A notable exception is Boero et al. (2021), who find tentative evidence that degree class premiums have been roughly constant between the 1982 and 1992 birth cohorts. However, the robustness of their results is unclear due to imperfect data. Their analysis using the Longitudinal Destina-

tions of Leavers from Higher Education (LDLHE) survey is limited by the very low response rate of less than 30% and the changing methodology of the LDLHE survey, which may have led to bias.[24] Their Labour Force Survey (LFS) analysis is limited by low statistical power given the small sample sizes available from the LFS. As we use administrative LEO data, our analysis does not suffer from either problem.

Figure 10: Median earnings by degree class five years after graduation



Note: Sample selection as described in the note for Table 4. In addition, graduates with no recorded earnings five years after graduation are also excluded. Overall median includes graduates only.

From a theoretical perspective, the effect of higher degree classifications on degree class

[24]See, for example, IFF Research (2017) for details on the LDLHE survey methodology.

premiums is ambiguous. Consistent with the idea that grade inflation has 'devalued' higher degree classifications, one might expect lower earnings premiums for more recent cohorts. However, this need not follow even if the recent increases in the share of higher degree classifications were entirely driven by lower assessment standards, as lower average skill levels and thus earnings could be expected for *all* degree classes. As a result, degree class premiums, which represent *differences* between degree classes, may stay constant or even increase.[25]

We now turn to the evidence on raw degree class premiums. Although we cannot investigate the consequences of very recent changes in degree class shares (as there are not yet enough earnings data to do so), we are able to look at earnings five years after graduation for those graduating up to 2013. We do this descriptively in Figure 10, which shows median earnings by degree classification in the top two panels (with women on the left and men on the right), and earnings relative to the overall median (of graduates) in the bottom two panels.

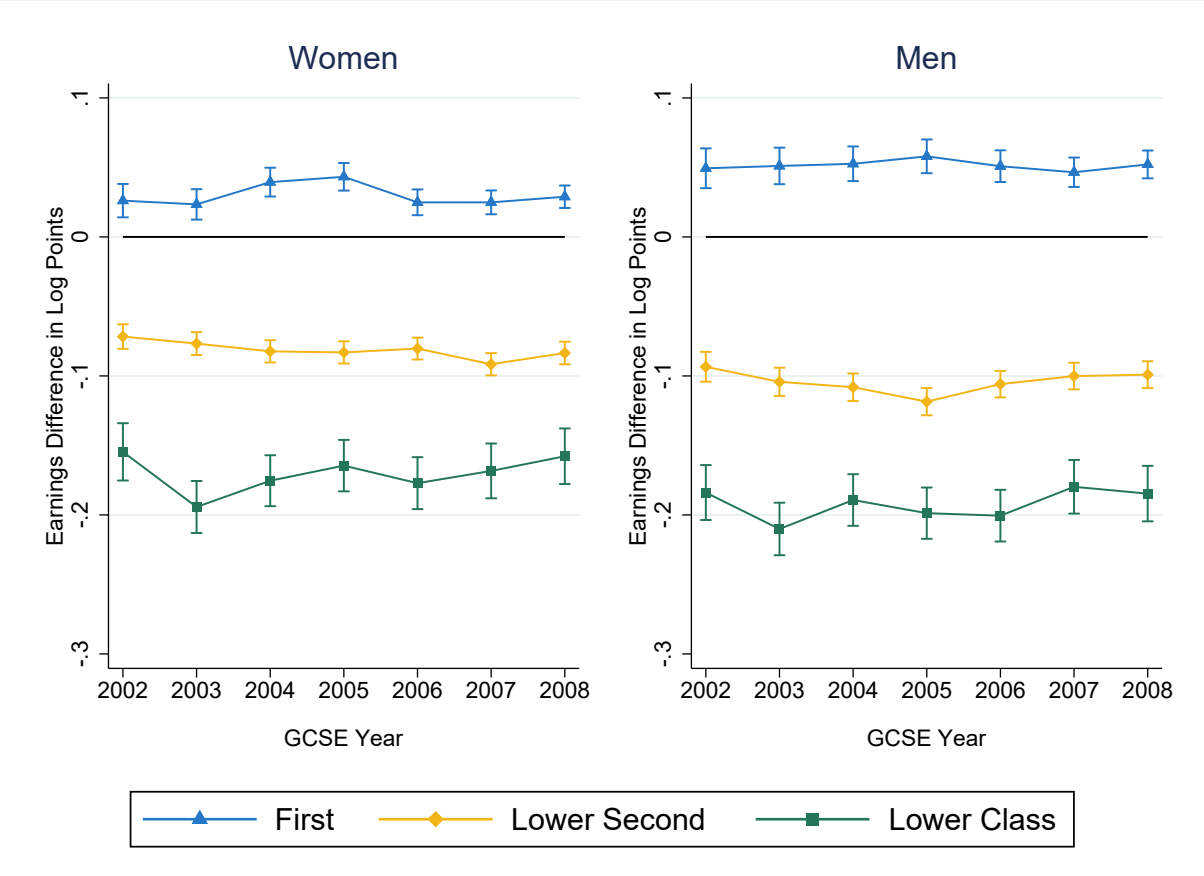
In the top two panels, the most notable feature of the data is the large dip in median earnings for all groups following the 2008 recession, which has never reversed. Five years after graduation, the median within-degree-class earnings of those who graduated in 2013 were around £5,000 a year lower than the median earnings of 2002 graduates within the same degree class. (For the 2013 graduation cohort, we are looking at earnings in 2018/19, roughly ten years after the recession first hit.) It is also notable that the lines appear to follow similar trends, and that the gaps between them are relatively stable.

This point is emphasised in the bottom two panels, which show differences relative to the median of all graduates for that year, effectively removing the macroeconomic trends. We see that there is some evidence of declines relative to the median, but that these are fairly small, both relative to the changes in the overall median and relative to the within-class variation of earnings.[26] The raw difference in median earnings for both women and men between those who obtained an upper second class degree and those who obtained a lower second was roughly constant at £4,000. Men who achieved a first have consistently had median earnings around £4,000 higher than those who got a 2.1, and women who achieved a first have consistently had around £2,000 higher earnings.

[25] For a graphical illustration of this point, see Appendix A2.

[26] See Figure A6 in the appendix for other percentiles of the distribution of earnings five years after graduation for the 2002 and 2013 graduation cohorts.

Figure 11: Relative earnings returns at age 26 over time



Note: Includes graduates from the 2002–2008 GCSE cohorts who started their course within three years of their GCSEs and graduated within seven years of their GCSEs. Other sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. Whiskers indicate 95% confidence intervals.

In Figure 11, we look at conditional degree class premiums, obtained using the regression model outlined in equation 7. The key distinction here from the bottom panel of Figure 10 is that we estimate conditional degree class premiums by including background, attainment and university controls, which account for any changes over time in the characteristics of students achieving different degree classes. Because these are only available for a subset of our sample, we show the results by GCSE cohort (i.e. the year people took their GCSEs) rather than by university graduation cohort. We condition on people entering university within three years of their GCSEs and graduating within seven years of their GCSEs in order to ensure that full university records are available for all cohorts.

The figure shows that in line with the results in Boero et al. (2021), there was little change in conditional degree class premiums over time, with only a small increase in the premium for getting a 2.1 over a 2.2 for women. We confirm this in Table 8, which estimates the more

restricted version of this model with a simple linear time trend, as outlined in equation 8. We see that of all the trend variables, only the trend for a lower second for women is significantly negative (relative to the omitted category, an upper second). This effect implies that the estimated earnings loss associated with a lower second for women has increased by roughly 1.5 percentage points over the seven-year period; for the 2005 cohort, the estimated earnings loss is around 8%. This trend brings the estimates for women more in line with those for men for the 2008 GCSE cohort.

Table 8: Relative earnings returns at age 26 over time

	Women	**Men**
First	0.030***	0.052***
	(0.002)	(0.002)
First x Time	-0.001	-0.000
	(0.001)	(0.001)
Lower second	-0.081***	-0.104***
	(0.002)	(0.002)
Lower second x Time	-0.002**	0.000
	(0.001)	(0.001)
Lower class	-0.171***	-0.193***
	(0.004)	(0.004)
Lower class x Time	0.002	0.002
	(0.002)	(0.002)
Observations	614,686	466,942

Note: Includes graduates from the 2002–2008 GCSE cohorts who started their course within three years of their GCSEs and graduated within seven years of their GCSEs. Other sample selection as described in the note for Table 5. Estimates are from a model that includes the full set of background, attainment and university controls. The base category for the time trend is the 2005 GCSE cohort (for details, see Section 4). Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

7 Conclusion

This report investigates how the early-career returns to degrees vary by degree classification. We find a large conditional earnings premium for first class degrees, especially for men, and also large earnings penalties from lower class degrees. Conditional earnings premiums vary a lot by subject – for example, economics, law and business have very large premiums. For many other subjects, the first class versus 2.1 differential is quite small, but in many cases there is still a large penalty for not achieving at least a 2.1. There is less variation in the first class premium by institution group – it is slightly higher at more selective universities for men – but there is a lot of variation in the penalty from not getting at least a 2.1. This penalty is much

more substantial at the Russell Group universities than at less selective institutions. Taken at face value, these results suggest that putting in effort at university pays off financially in most subject areas.

We also document and explore the effect of the rapid improvements in average degree classifications amongst graduates over the past 20 years. These improvements are very large and seen throughout higher education in the UK, across all countries, universities and subjects. Nonetheless, we find fairly limited evidence of changes in raw or conditional degree class premiums during this period. Instead, the only substantial change we see is that median earnings within each degree class have fallen relative to the overall median for graduates. The very large increases in the proportion of higher degree classifications we have observed in the most recent years – especially for those graduating during the COVID-19 pandemic – suggest that larger changes may be ahead.

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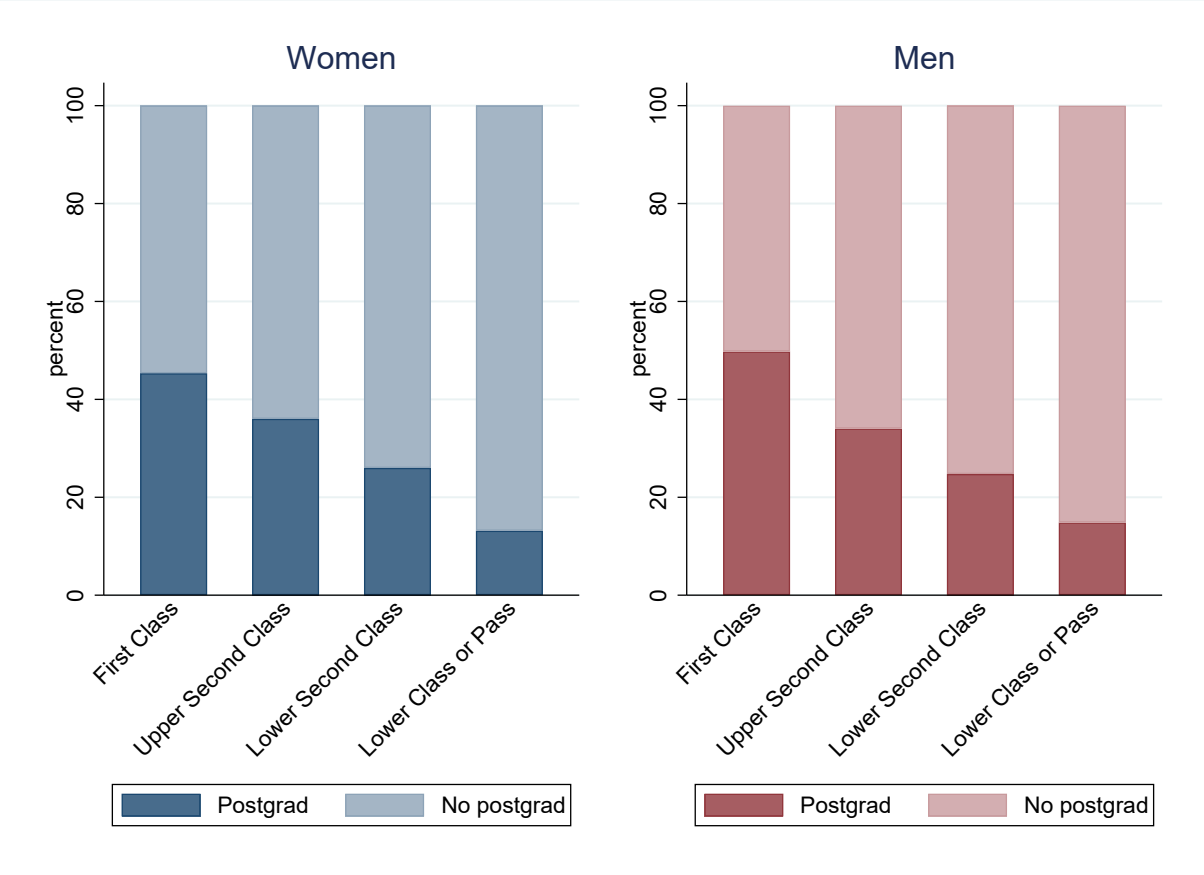
Appendix

A1 Postgraduate study and degree class premiums

Figure A1: Degree class and postgraduate participation



Note: Sample selection as described in the note for Table 5. Graduates are classed as 'postgrad' if and only if they were enrolled on a postgraduate degree in the UK within 11 years of their GCSE exams (i.e. by age 27).

A large share of each cohort of graduates pursue postgraduate degrees. The share is relatively similar for women and men but varies greatly between degree classes. Around 45% of women and half of all men in our sample who were awarded a first class degree pursued graduate study in the UK, whereas only about 13% of women and 15% of men awarded a lower class or pass degree did (Figure A1).

This appendix investigates the influence of postgraduate study on conditional degree class premiums. Table A1 repeats our main analysis on the sub-sample of graduates for whom we observe no postgraduate enrolment by age 27. Comparing these results with those reported in Table 5 reveals that both raw and conditional earnings premiums are substantially larger

when those who ever pursue postgraduate study are excluded. The differences are especially large for the first class premium: we find large conditional earnings premiums of 7.4 log points (7.7%) for women and 10.9 log points (11.5%) for men, compared with 3.4 log points (3.5%) for women and 6.8 log points (7.0%) for men in our main specification.

Table A1: Relative degree class premiums at age 30 by gender (excluding postgraduates)

Specification	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Women						
First	0.124***	0.118***	0.110***	0.062***	0.059***	0.074***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Lower second	-0.197***	-0.166***	-0.157***	-0.090***	-0.080***	-0.081***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
Lower class	-0.335***	-0.282***	-0.269***	-0.162***	-0.149***	-0.150***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Observations	183,674	182,798	182,798	182,798	172,215	172,215
Men						
First	0.141***	0.141***	0.137***	0.099***	0.099***	0.109***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Lower second	-0.210***	-0.182***	-0.178***	-0.127***	-0.122***	-0.131***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Lower class	-0.335***	-0.286***	-0.281***	-0.206***	-0.204***	-0.216***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
Observations	152,280	151,610	151,610	151,610	141,443	141,443
Controls						
Background	No	Yes	Yes	Yes	Yes	Yes
Key Stage 2	No	No	Yes	Yes	Yes	Yes
Key Stage 4	No	No	No	Yes	Yes	Yes
Key Stage 5	No	No	No	No	Yes	Yes
University	No	No	No	No	No	Yes

Note: Sample selection as described in the note for Table 5, except that those who were enrolled on a postgraduate degree in the UK within 11 years of their GCSE exams are excluded. The base category is an upper second class degree. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

Table A2 instead repeats the analysis for graduates for whom we do observe postgraduate study by age 27. Conditional degree class premiums are much smaller than in our main analysis. Among postgraduates, the penalty for getting a 2.2 rather than a 2.1 in their undergraduate degree is 3.3 log points (3.2%) for women and 7.8 log points (7.5%) for men, rather than 7.1 and 11.5 log points (6.9% and 10.9%) as in our main analysis. The first class premium is zero for women (instead of 3.4 log points or 3.5%) and 4.7 log points or 4.8% for men (instead of 6.8 log points or 7.0%).

Table A2: Relative degree class premiums at age 30 by gender (postgraduates only)

Specification	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Women						
First	0.036***	0.031***	0.024***	-0.009	-0.016**	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Lower second	-0.072***	-0.058***	-0.055***	-0.020***	-0.015**	-0.033***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Lower class	-0.145***	-0.126***	-0.125***	-0.086***	-0.092***	-0.128***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)
Observations	95,502	95,101	95,101	95,101	91,296	91,296
Men						
First	0.106***	0.102***	0.095***	0.054***	0.042***	0.047***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Lower second	-0.103***	-0.085***	-0.086***	-0.054***	-0.059***	-0.078***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Lower class	-0.152***	-0.130***	-0.137***	-0.122***	-0.131***	-0.164***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Observations	72,103	71,814	71,814	71,814	68,609	68,609
Controls						
Background	No	Yes	Yes	Yes	Yes	Yes
Key Stage 2	No	No	Yes	Yes	Yes	Yes
Key Stage 4	No	No	No	Yes	Yes	Yes
Key Stage 5	No	No	No	No	Yes	Yes
University	No	No	No	No	No	Yes

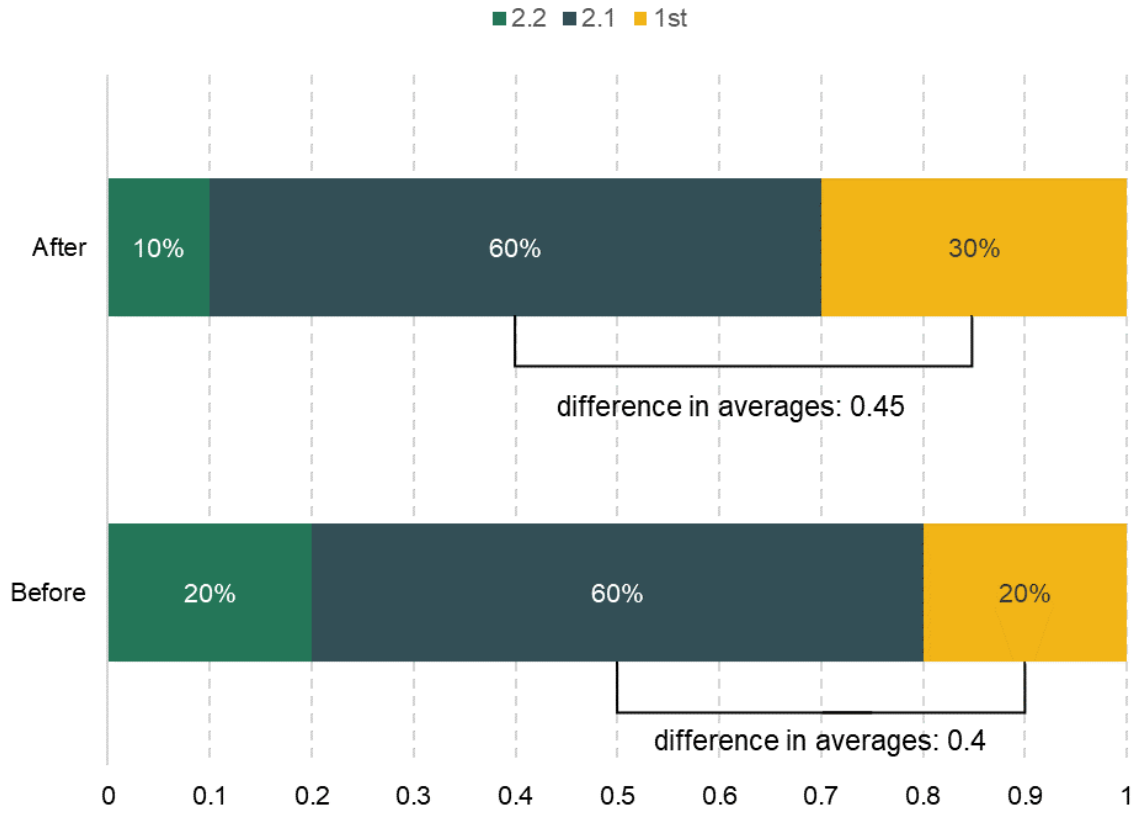
Note: Sample selection as described in the note for Table 5, except that those who were not enrolled on a postgraduate degree in the UK in the first 11 years after their GCSE exams are excluded. The base category is an upper second class degree. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

One possible explanation for these results is that postgraduate degrees are less valuable for first class graduates, because they already have an excellent command of their subject of study, whereas postgraduate degrees are very valuable for those who got 2.2 or lower class degrees. Another is that postgraduate degrees in general rarely pay off by age 30, as the additional human capital acquired while studying is outweighed by the effect of reduced work experience. This would be consistent with results in Britton et al. (2020*a*), who find low returns for most postgraduate courses even in graduates' mid 30s. A third possible explanation is that one of the most common postgraduate qualifications is a PGCE teaching qualification, and teachers are paid according to national pay scales that leave relatively little room for pay differentiation. A more detailed investigation of this phenomenon will be a fruitful subject for further

research.[27]

A2 Grade inflation and degree class premiums: theoretical illustration

Figure A2: Grade inflation and earnings premiums: stylised setting



Note: Illustration of the effect of grade inflation on earnings premiums in a highly stylised setting.

As noted in the main text, 'grade inflation' due to lower assessment standards need not decrease degree class premiums, and – somewhat counter-intuitively – may even raise them. Figure A2 illustrates this point in a highly stylised setting. Assume students' skills are one-dimensional and uniformly distributed between 0 and 1. Suppose that these skills are perfectly measured by the degree classification system. Further assume that earnings purely reflect the average skill level of a degree class group, so differences in earnings between degree classes directly reflect earnings premiums. Suppose that initially, the degree class distribution in this stylised setting is 20% of students getting 2.2s, 60% of students getting 2.1s and 20% getting

[27] A potential fourth explanation is that a larger proportion of those for whom we observe any postgraduate study by age 27 will still be in full-time education by age 30. However, it seems unlikely that this is a major factor, as the number of graduates in full-time education at age 30 is very small.

firsts. Then the average skill difference and hence the earnings premium of a first would be 0.4.

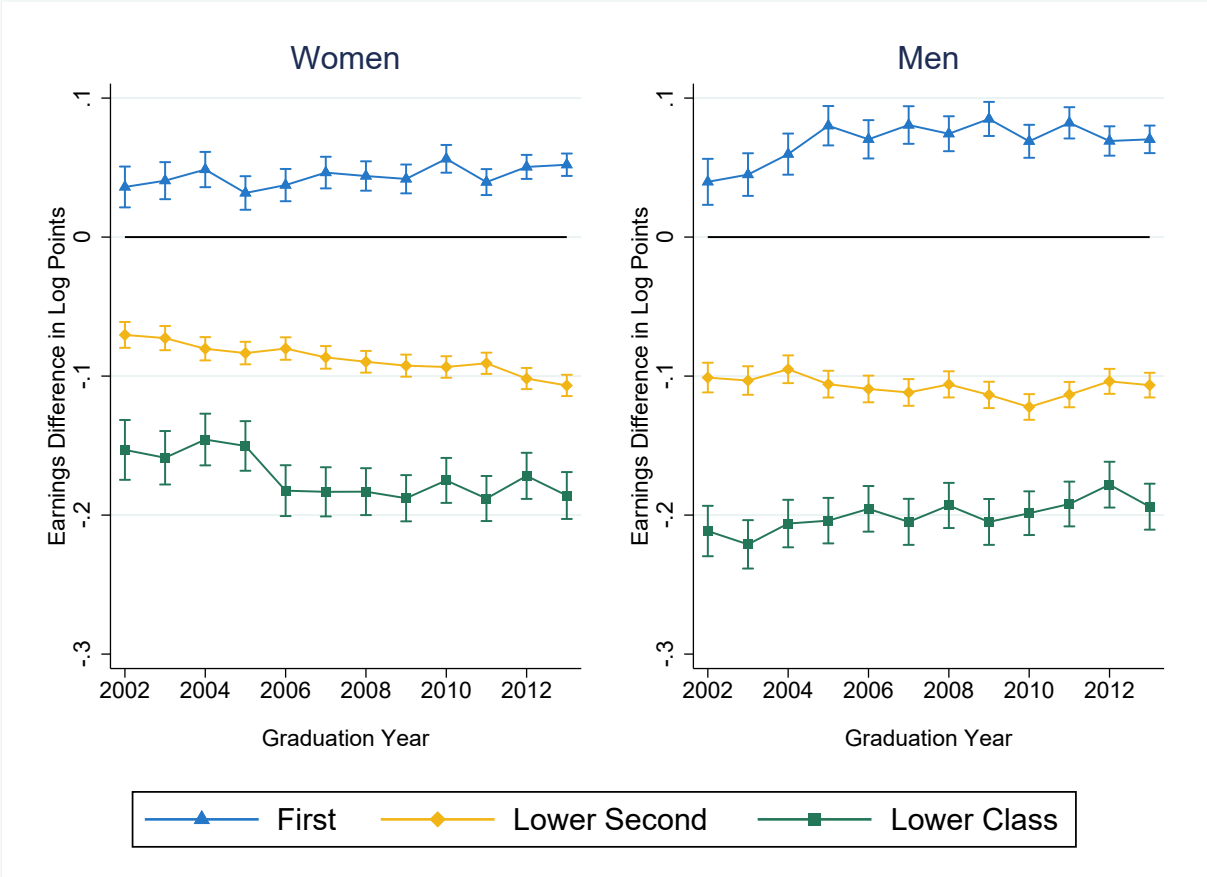
Suppose then that due to grade inflation, the share of firsts rises to 30% and the share of 2.2s declines to 10%. As a result, the average earnings premium from a first would *rise* to 0.45 in this model, because the average skill level of first class graduates would have declined less than that of 2.1 graduates. While many aspects of this highly stylised model do not reflect reality, it illustrates why lower assessment standards need not lead to lower earnings premiums.

A3 Further investigation of trends in degree class premiums

In this appendix, we present some explorative analysis of the trends in our estimates over a longer time horizon and by subject and university. These results should be taken as tentative rather than conclusive. Further research may confirm or reject the robustness of these results to alternative empirical specifications.

A3.1 Trends over a longer time horizon

Figure A3: Conditional degree class premiums five years after graduation over time, HESA controls



Note: Those still at university five years after graduation are excluded, as are those with 'unclassified' degrees and with earnings of less than £3,000 in the tax year. Other sample selection as described in the note for Table 4. Estimates are from a model that includes the more limited set of control variables from the HESA dataset, including a third-degree polynomial in UCAS tariff, as well as POLAR (a measure of the participation rate of young people from a local area in higher education, which can serve as a proxy measure for socio-economic disadvantage), ethnicity and university controls. The base category is an upper second class degree. Whiskers indicate 95% confidence intervals.

Figure A3 investigates trends in conditional degree class premiums over a longer time horizon than presented in Figure 11 in the main text. For this, we follow equation 7 but we have to use a more restricted set of control variables from the HESA data. Although not directly equivalent (because here we are using graduation cohort rather than GCSE cohort), the final estimates to the right of the graphs suggest that the estimates using only the HESA controls are similar to, but generally somewhat larger than, the estimates with the full set of NPD controls. This is as expected – the HESA ability controls only include tariff score on entry, rather than the complete set of qualifications information from Key Stage 2, Key Stage 4 and Key Stage 5 tests. However, with this kept in mind, the results here are revealing: the first class premium appears largely

stable for both men and women over a 12-year period. If anything, conditional degree class premiums seem to have risen slightly over this period.

A3.2 Trends by subject and university

In order to investigate differential trends by subject and university group, we extend upon the more restricted specification in equation 8 and return to the set of cohorts where we are able to include NPD controls. Again, the tables only show results with the full set of controls included.

Table A3: Conditional degree class premiums at age 26 over time by subject group

	Women			Men		
	STEM	**LEM**	**Other**	**STEM**	**LEM**	**Other**
First	0.031***	0.135***	-0.014***	0.040***	0.164***	-0.003
	(0.003)	(0.005)	(0.003)	(0.003)	(0.005)	(0.004)
First x Time	-0.003	-0.008***	0.004*	0.000	-0.010***	-0.001
	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)
Lower second	-0.069***	-0.142***	-0.066***	-0.092***	-0.182***	-0.059***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.004)	(0.003)
Lower second x Time	0.001	0.004	-0.006***	0.000	0.002	-0.003
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Lower class	-0.166***	-0.232***	-0.150***	-0.190***	-0.288***	-0.109***
	(0.006)	(0.008)	(0.005)	(0.005)	(0.008)	(0.008)
Lower class x Time	0.003	0.005	-0.000	0.002	0.006	-0.005
	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)

Note: Sample selection as described in the note for Table 8. Estimates are from a model that includes the full set of background, attainment and university controls. The base category for the time trend is the 2005 GCSE cohort (for details, see Section 4). Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

We start in Table A3 by investigating evidence of degree class premiums changing by subject group (we do not do this by individual subject as we start to run into power issues – the estimates on the individual trends become very noisy). Aligning with the results from Table 6, we see that degree class premiums are largest for 'LEM' graduates and smallest for 'other' (i.e. non-STEM, non-LEM) graduates. The first class premium for women is slightly negative for 'other' subjects, which is likely related to the influence of postgraduate study (see Appendix A1). (The main effects are not directly comparable to Table 6 because here we look at a younger age and pool across more cohorts.)

Table A3 also reports the estimates from the interacted time trends for the different subject groups. The table suggests that for LEM courses, the first class premium has declined over time – by around 1 percentage point per year. Over a seven-year period, this is quite a substantial decline. Most of the other time trend coefficients are insignificantly different from zero,

although there is some evidence of widening degree class premiums in 'other' subjects.

Table A4: Conditional degree class premiums at age 26 by growth in first class share of subject

	Women			Men		
	Low	**Medium**	**High**	**Low**	**Medium**	**High**
First	-0.003	0.020***	0.111***	-0.015***	0.035***	0.139***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.005)
First x Time	0.000	-0.002	-0.002	-0.006**	-0.000	0.001
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Lower second	-0.072***	-0.071***	-0.117***	-0.086***	-0.077***	-0.164***
	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)	(0.004)
Lower second x Time	-0.002	-0.001	-0.004*	-0.002	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Lower class	-0.162***	-0.140***	-0.245***	-0.189***	-0.141***	-0.277***
	(0.007)	(0.005)	(0.008)	(0.008)	(0.005)	(0.007)
Lower class x Time	-0.002	0.007**	-0.003	-0.006	0.003	0.005
	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)

Note: Sample selection as described in the note for Table 8. High, medium and low growth are based on absolute (rather than relative) growth in the share of first class degrees between the 2002 and 2008 GCSE cohorts. The numbers of subjects in each group are roughly equal. Estimates are from a model that includes the full set of background, attainment and university controls. The base category for the time trend is the 2005 GCSE cohort (for details, see Section 4). Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

In Table A4, we investigate whether changes in degree class premiums are related to the changes in the degree class distribution by subject that we documented in Figure 8. We find no evidence of this. Subjects with high growth in the first class share have the *highest* degree class premiums, and there is no evidence that they are falling.

Table A5: Conditional degree class premiums at age 26 over time by university type

	Most sel. Russell	**Other Russell**	**Old**	**Other (more sel.)**	**Other (least sel.)**
Women					
First	-0.015	0.009**	0.033***	0.048***	0.049***
	(0.010)	(0.003)	(0.004)	(0.004)	(0.005)
First x Time	0.003	-0.002	-0.001	0.001	-0.004
	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
Lower second	-0.105***	-0.099***	-0.084***	-0.071***	-0.077***
	(0.015)	(0.004)	(0.004)	(0.003)	(0.003)
Lower second x Time	-0.001	0.001	-0.007***	-0.001	-0.002
	(0.008)	(0.002)	(0.002)	(0.001)	(0.002)
Lower class	-0.324***	-0.212***	-0.183***	-0.158***	-0.162***
	(0.048)	(0.012)	(0.011)	(0.006)	(0.006)
Lower class x Time	0.021	-0.013*	0.001	-0.001	0.008**
	(0.023)	(0.006)	(0.006)	(0.003)	(0.003)
Men					
First	-0.058***	0.030***	0.051***	0.082***	0.088***
	(0.010)	(0.004)	(0.005)	(0.005)	(0.006)
First x Time	-0.007	-0.006**	0.003	0.001	0.001
	(0.005)	(0.002)	(0.002)	(0.002)	(0.003)
Lower second	-0.162***	-0.134***	-0.107***	-0.084***	-0.083***
	(0.014)	(0.004)	(0.004)	(0.003)	(0.004)
Lower second x Time	0.001	-0.000	-0.003	-0.000	0.001
	(0.007)	(0.002)	(0.002)	(0.002)	(0.002)
Lower class	-0.321***	-0.248***	-0.215***	-0.162***	-0.158***
	(0.030)	(0.008)	(0.009)	(0.006)	(0.007)
Lower class x Time	-0.021	0.002	-0.004	0.000	0.005
	(0.015)	(0.004)	(0.005)	(0.003)	(0.004)

Note: Sample selection as described in the note for Table 8. Estimates are from a model that includes the full set of background, attainment and university controls. The base category for the time trend is the 2005 GCSE cohort (for details, see Section 4). Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

Finally, in Table A5, we show the results of estimating the analogous models by university group. Again, most of the interaction terms are insignificantly different from zero and no meaningful patterns emerge from the results. Notably, the point estimate for the first class premium for both women and men who graduated from the most selective Russell Group universities is negative. Again this is likely related to the influence of postgraduate study (see Appendix A1).

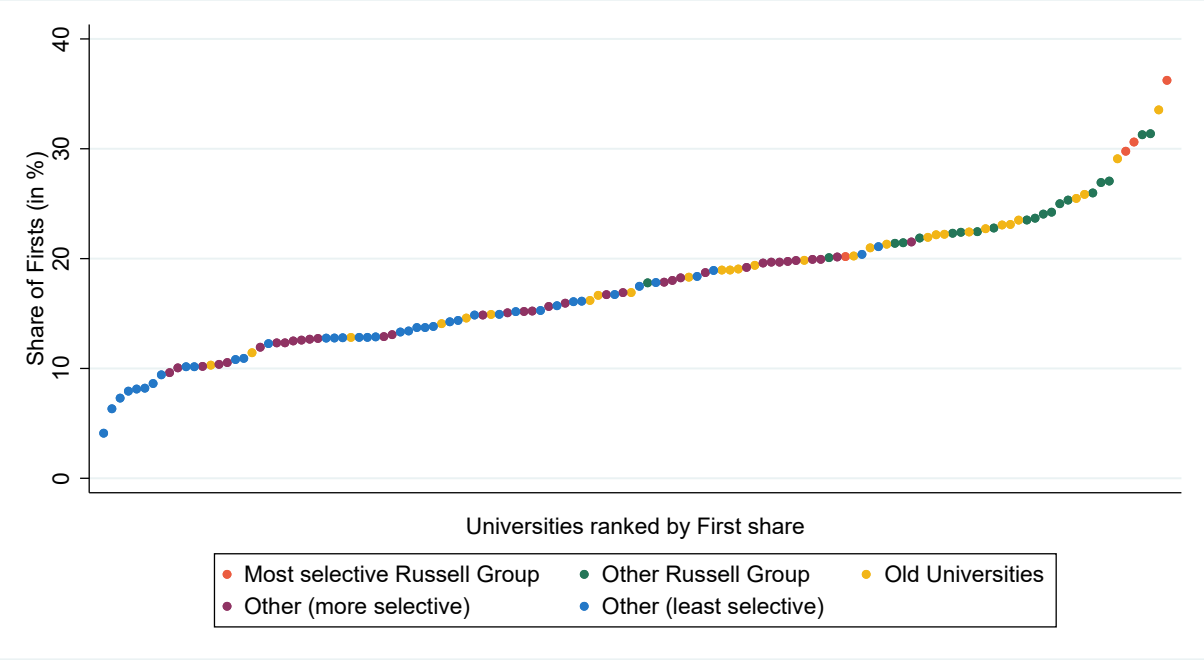
A4 Supplementary graphs and tables

Table A6: HESA data by subject

Graduation year	1999	2003	2007	2011	2015
Agriculture	0.9%	0.8%	0.7%	0.7%	0.7%
Allied to med	3.7%	3.8%	3.6%	3.6%	3.6%
Architecture	1.9%	1.7%	1.9%	2.4%	1.7%
Biosciences	6.3%	4.9%	3.8%	3.6%	4.3%
Business	10.5%	13.9%	12.2%	12.0%	11.7%
Celtic	0.2%	0.1%	0.1%	0.1%	0.1%
Chemistry	1.6%	1.3%	1.1%	1.2%	1.4%
Combined	3.4%	0.6%	0.5%	0.3%	0.2%
Comms	2.0%	3.1%	3.5%	3.6%	3.2%
Computing	3.1%	6.4%	5.1%	3.7%	4.0%
Creative arts	11.5%	10.4%	11.5%	12.1%	11.4%
Economics	2.4%	2.3%	2.1%	2.1%	2.1%
Education	1.6%	3.2%	3.8%	4.2%	4.8%
Engineering	4.7%	5.2%	4.5%	4.3%	4.9%
English	4.8%	4.3%	4.4%	4.6%	4.2%
Geography	3.6%	3.5%	2.9%	2.7%	2.5%
History	5.0%	4.2%	4.5%	4.3%	3.9%
Hum non spec	0.1%	0.1%	0.1%	0.1%	0.0%
Languages	3.8%	4.2%	3.6%	3.2%	3.3%
Law	4.6%	4.5%	5.4%	4.9%	4.2%
Maths	2.8%	2.3%	2.1%	2.2%	2.4%
Medicine	1.3%	1.8%	2.0%	2.1%	2.0%
Nursing	0.5%	0.8%	1.3%	1.7%	3.1%
Pharmacology	1.2%	1.0%	1.0%	1.2%	1.2%
Philosophy	1.7%	1.4%	1.4%	1.4%	1.2%
Physics	1.3%	1.1%	1.1%	1.0%	1.3%
Physsci	2.2%	1.0%	1.4%	1.3%	1.2%
Politics	2.1%	1.8%	2.1%	2.0%	1.9%
Psychology	3.7%	3.7%	4.6%	4.4%	4.5%
Social care	0.3%	0.5%	0.7%	1.1%	1.0%
Sociology	4.4%	3.5%	3.5%	3.5%	3.5%
Sportsci	.	1.7%	2.7%	3.4%	3.5%
Technology	0.7%	0.6%	0.8%	0.7%	0.5%
Vetsci	0.1%	0.2%	0.2%	0.3%	0.3%
Unknown	2.0%	.	.	.	.
Total	126,668	184,022	201,635	231,868	247,333

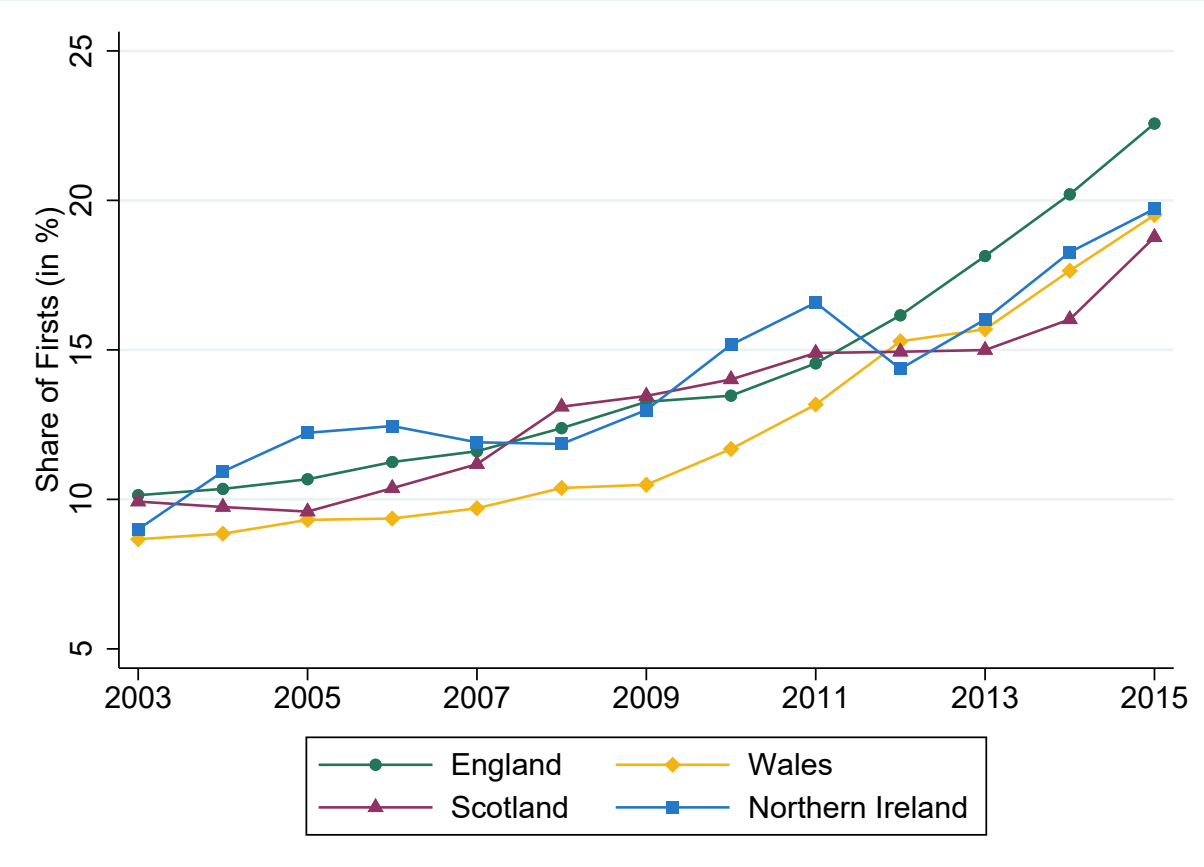
Note: Percentage of graduating students studying each subject. Sample selection as described in the note for Table 2. Students whose courses span multiple subjects are counted according to the proportion of their course in each subject. A dot indicates that the sample size is too small to be shown for statistical disclosure purposes.

Figure A4: First class degree shares by university (2012–2015)



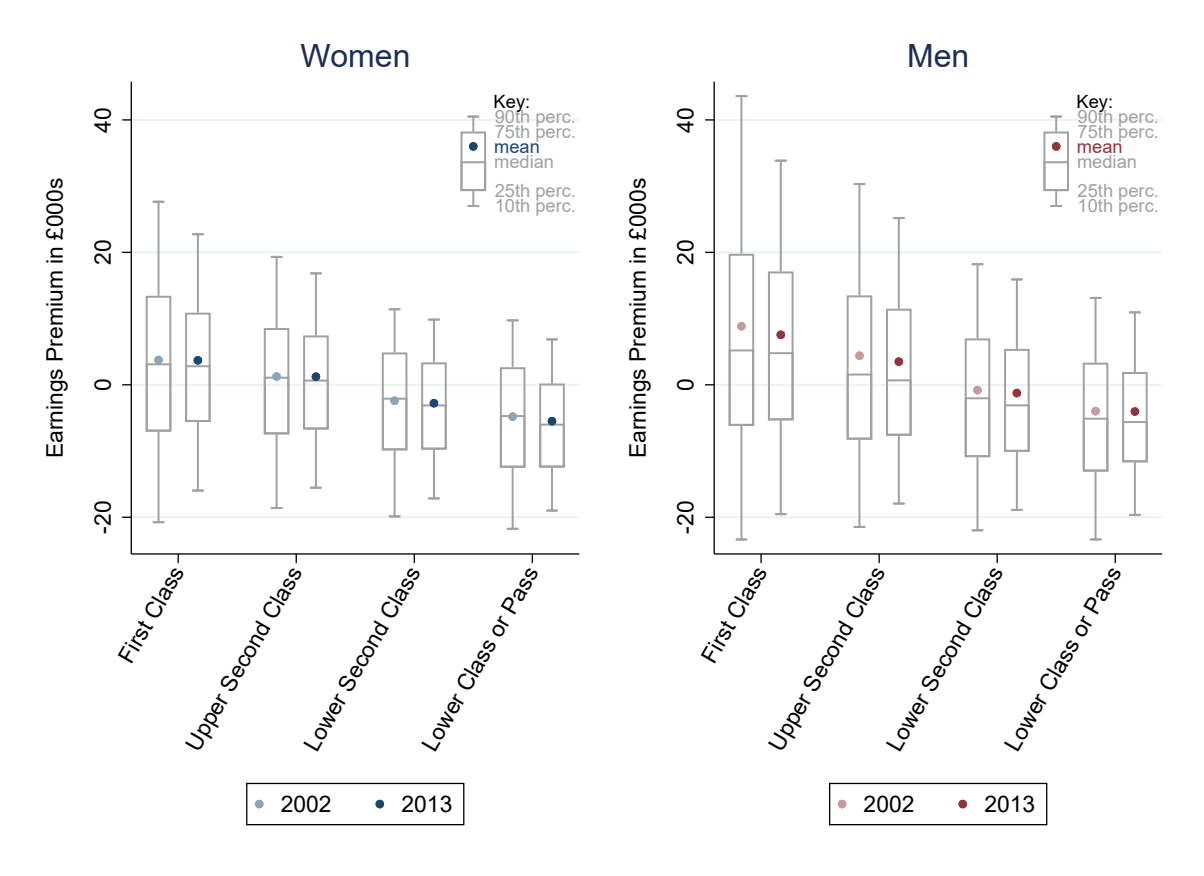
Note: Sample selection as described in the note for Table 4. Includes institutions with at least 1,000 graduates between 2012 and 2015.

Figure A5: First class degree shares by country of university over time



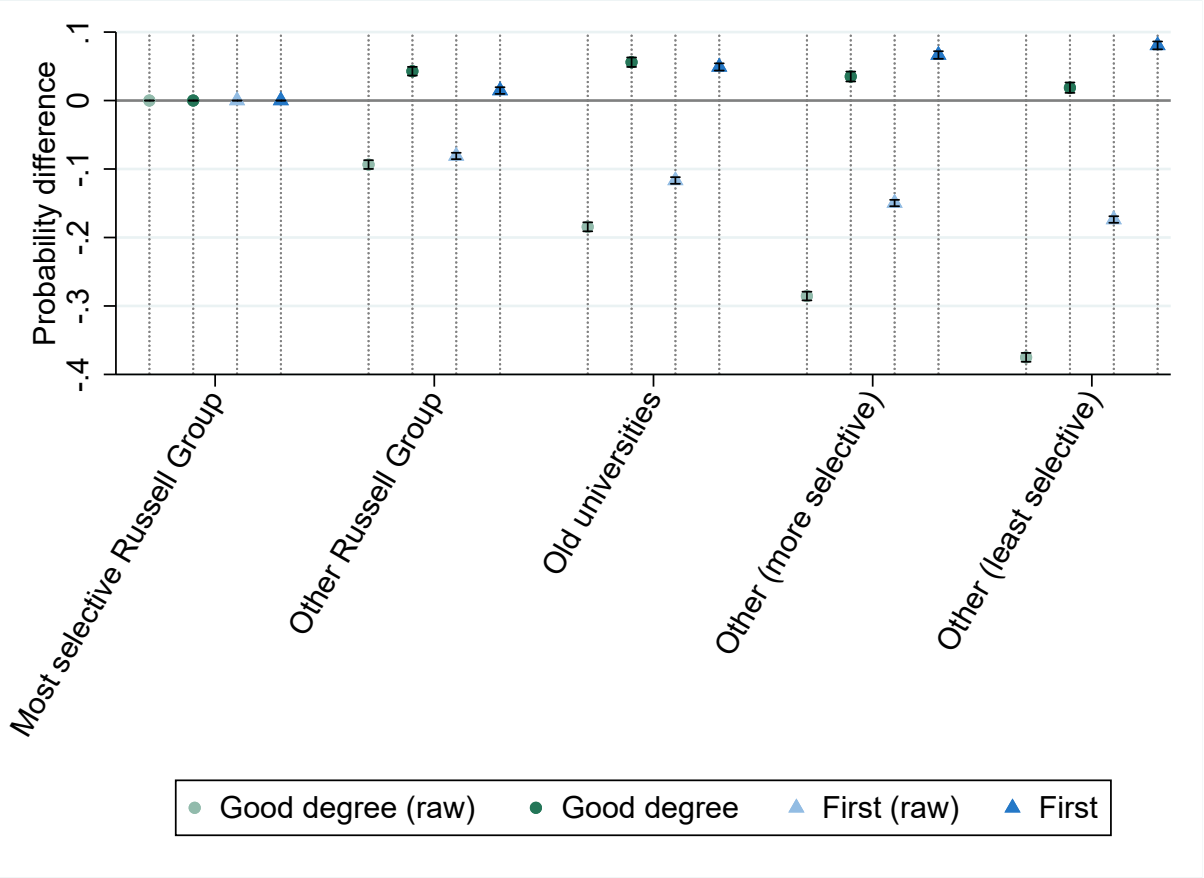
Note: Sample selection as described in the note for Table 4.

Figure A6: Earnings distribution relative to overall median by degree class, five years after graduation



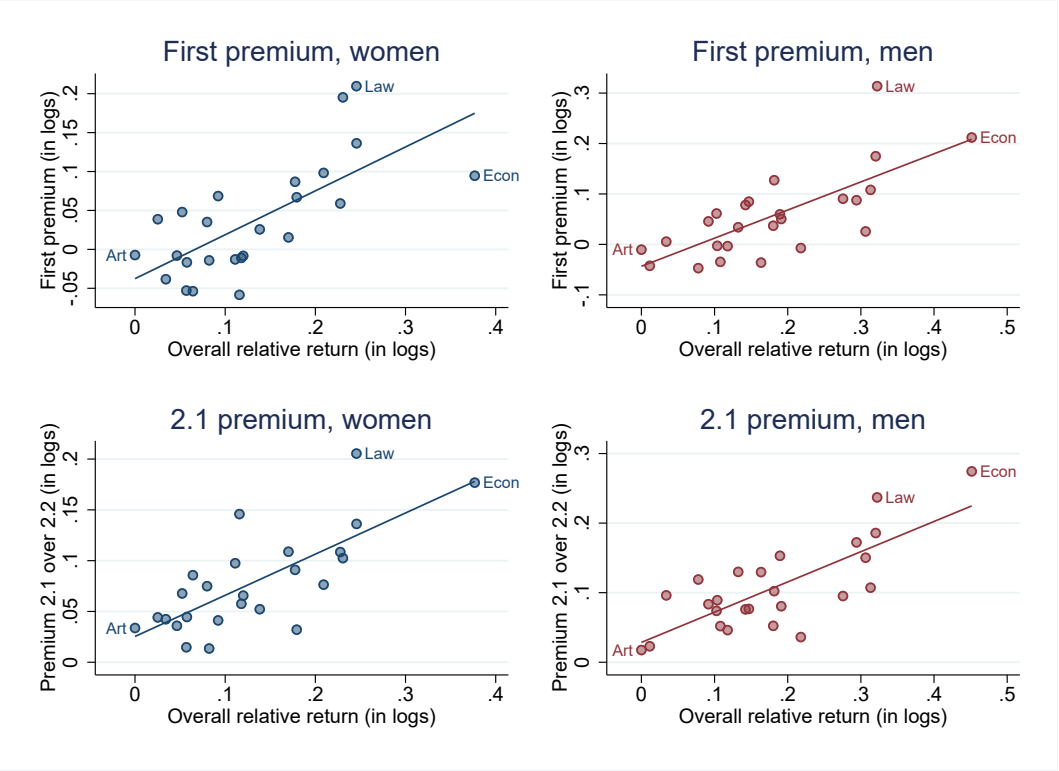
Note: Sample selection as described in the note for Table 4. In addition, graduates with no recorded earnings five years after graduation are also excluded. Overall median only includes graduates.

Figure A7: Degree class and university group (estimated effects)



Note: The figure shows estimates from four separate linear probability models. 'Good degree (raw)' refers to the estimated effect of graduating from an institution in a given university group on the probability of being awarded a good degree (first or upper second), controlling only for GCSE cohort. 'Good degree' refers to the estimated effect of graduating from an institution in a given university group on the probability of being awarded a good degree, controlling for the full set of background variables as in column 6 of Table 5. 'First (raw)' and 'First' are the analogous effects from models where the dependent variable is an indicator for whether a graduate was awarded a first. Sample selection is as described in the note for Table 5. All estimates are relative to the base category, 'most selective Russell Group'. Whiskers indicate 95% confidence intervals.

Figure A8: Age 30 degree class premiums vs overall returns



Note: Overall relative returns are estimated using the same model except that we do not allow for differential returns by degree class. 'Econ' is short for economics and 'Art' is short for creative arts.

Table A7: Relative returns to a 'good' degree at age 30 by gender

Specification	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Women						
Good degree	0.199***	0.170***	0.161***	0.087***	0.076***	0.086***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	279,176	277,899	277,899	277,899	263,511	263,511
Men						
Good degree	0.231***	0.202***	0.197***	0.133***	0.129***	0.142***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Observations	224,383	223,424	223,424	223,424	210,052	210,052
Controls						
Background	No	Yes	Yes	Yes	Yes	Yes
Key Stage 2	No	No	Yes	Yes	Yes	Yes
Key Stage 4	No	No	No	Yes	Yes	Yes
Key Stage 5	No	No	No	No	Yes	Yes
University	No	No	No	No	No	Yes

Note: Sample selection as described in the note for Table 5. 'Good' degree is first and 2.1 combined; the base category is 2.2 and lower class combined. Standard errors are given in parentheses. * indicates $p < 0.05$, ** indicates $p < 0.01$ and *** indicates $p < 0.001$.

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