DISCUSSION PAPER SERIES

Access to and Returns from Unpaid Graduate Internships

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ABSTRACT

Access to and Returns from Unpaid Graduate Internships*

We use the Destination of Leavers from Higher Education Survey (DLHE) to estimate the socio-economic gradient in access to unpaid internships among English and Welsh graduates six months after completing their first degree, and the return to this internship experience 3 years later in terms of salary, occupation, contract type and career satisfaction. We show a significant salary penalty at 3.5 years after graduation compared with those going straight into paid work or further study, but also that graduates from higher socio-economic status have an advantage in accessing internships while being significantly insulated from their negative effects.

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NON-TECHNICAL SUMMARY

The rising prevalence of unpaid internships as a gateway to highly competitive careers in law, politics, creative industries, media and publishing, and the sciences, has raised concerns about diminishing social mobility, and raised questions about whether and how interns benefit from the experience.

In this paper we use the Destination of Leavers from Higher Education (DLHE) survey on graduates from English and Welsh universities between 2005 and 2011, to study the returns to taking an unpaid internship 6 months after graduating from a first degree, on labour market outcomes a further 3 years later. We compare interns with individuals who went straight into paid work, into further study, or something else, by pairing them each one with a 'matched' individual, according to their demographic characteristics and their reported motivations for taking the job or internship they are in.

We show that, on average, former interns face a salary penalty of approximately £3500 per year compared with those who went straight into paid work, and £1500 compared with those who went into further study. Only compared with those doing 'something else' (including travelling or remaining unemployed) do interns gain any significant benefit on average, being 6.4 percentage points more likely to be 'very satisfied' with their career.

We also analyse access to and returns from unpaid internships by demographic characteristics. We find that there are both advantaged and disadvantaged groups (in terms of expected labour market outcomes after university) who are more likely to be taking an internship. Among the former group are those with parents in professional or managerial jobs, those who went to private schools or 'elite' universities, and those graduating with a first or upper second class degree. Among the latter group are Black and ethnic minority graduates, those with disabilities, and from areas with a higher unemployment rate. We also find the negative returns to taking an internship to be significantly smaller for graduates who were privately schooled or with parents in professional occupations. This suggests a segregated market in which the social and financial capital that graduates from higher socio-economic backgrounds can access gives them an advantage in accessing the 'good' internships, with a relatively high labour market return.

Our results argue for improving access to and reducing the opportunity cost for low SES students of taking relevant experience for ambitious careers during undergraduate degrees, and improving provision of information to students and early graduates about the likelihood of different outcomes from internships in key fields.

1 Introduction

The rising prevalence of unpaid internships as a gateway to highly competitive careers in law, politics, creative industries, media and publishing, and the sciences, has raised concerns about diminishing social mobility. This affects the present cohorts of labour market entrants, but the powerful role internships play in determining access to elite or 'agenda-setting' professions may contribute to a policy environment or consensus that is still more restrictive for future generations (*The Economist*, 2014; Sutton Trust, 2014: Panel on Fair Access to the Professions, 2009; Curiale, 2010; Bond and Fournier, 2015, Yamada, 2002).

However, despite the growing relevance of unpaid internships to human capital accumulation and job transitions, signalling and screening, and a weight of policy-orientated studies from government, think-tanks and pressure groups (*ops. cit.*), there has been little work in the economics literature exploring either the private or social returns to unpaid internships. There are several competing mechanisms potentially at play.

Firstly, for employers, unpaid internships can act as a screening device, wherein the intern absorbs the cost and risk of being hired while enabling his ability to be observed 'on-the-job' (Stiglitz, 1975). For the individual intern the position can signal human capital accumulation (Spence, 1973) and motivation with respect to the specific industry, setting them apart from a field of 'lemons' with a common degree class (Akerlof, 1970). Such a 'sheepskin effect' (Trostel and Walker, 2004, for example) of documenting this experience on a CV or Résumé (Nunley et al., 2016) should earn a positive private labour market return. In many fields the intern, in common with fixed-term or temporary employees, is also likely genuinely to accumulate human capital, through on-the-job training or observation of industry practices (Try, 2004). It is likely to be those internships for which competition is most intensive.

There is evidence that although workers on temporary contracts receive lower wages and job satisfaction, and less on-the-job training than those on permanent contracts, temporary contracts do act as a 'stepping stone' into permanent employment for university graduates (Bertrand-Cloodt et al., 2012). This makes it reasonable to argue that internship experience, if replacing an unemployment spell after graduation, will improve lifetime labour market outcomes. Moreover, conditioning on ability the significant initial wage penalty from a spell of temporary employment (Booth et al., 2002) or internship (Harms, 2015) experience (versus permanent-contract or paid work respectively) is closed within 10 or 5 years respectively. The fast wage

growth entailed in the latter result suggests that even if internship experience does not have a signalling or human capital value to employers, it does improve the quality of the subsequent job match.

Internships serve to connect graduates to existing professional networks. The ability to call upon referees or to observe other firms' employment of interns reduces employers' uncertainty about the productivity of prospective employees. This should result in ex-interns benefiting from higher starting salaries, and the wider economy from higher productivity in realized job matches (Simon and Warner, 1992; Nakajima et al, 2010). Internships may also serve to enhance graduates professional networks, which will improve match quality among graduates and employers later on.

However, if the graduate labour market can be characterised as a tournament among graduates, the 'micro' benefit of internships to individual graduates substantially lies in their acting as a route to accessing the best job matches with strongest potential wage-growth. If there is no genuine human capital accumulation associated with internships, or role in improving the average quality of job matches, this is not sufficient to translate into a 'macro' benefit at the level of the economy. Hence, although there is a private return to tournament 'winners' and in rents extracted by employers benefiting from free labour, internships are likely to prove socially costly.

Unpaid internships are liable to promote allocative inefficiency in the workforce, and hence lower average match quality and economic growth. Spence (1973) shows that a necessary condition for a signal effectively to distinguish among applicants is that the cost of the signal is negatively correlated with the individual's productivity. For internships, the opposite is likely to be true because the *opportunity* cost of taking an internship is lower (and bargaining power in relation to obtaining payment) for graduates with fewer outside options (Güell and Petrongolo, 2007). This suggests employers would instead believe interns to be negatively selected among graduates (Harms, 2015).

Instead, there are compelling reasons why the cost of taking an internship is driven predominantly by the individual's socio-economic background, regardless of ability to do the job well (Gregory, 1998). Firstly, the group of individuals postulated by Stiglitz (1975) to be willing to undertake or unpaid work experience in order to progress into desirable paid employment are (i) certain about their high ability and (ii) accepting of the risk of not being hired. This group

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is likely to consist primarily of individuals from higher income or socio-economic backgrounds who are likely both to be less risk averse (Checchi et al., 2014) and have a higher (Chevalier et al., 2009) and more certain view of their industry-specific ability. In the latter case this will be because their pre-internship social and professional network will be more representative of the industry.

Secondly, there will be financial costs to taking an internship. It is estimated that taking a six-month internship in London while living independently typically incurs costs of £5500 (mostly in accommodation rents) not incurred by those able to live with their parents (Sutton Trust, 2014), with comparable or marginally lower figures to be expected in other major cities in the UK, US and Europe[1] The probability of incurring this cost is likely to be negatively socially graded, particularly in the UK where internships (particularly those relevant for accessing the professions) are concentrated in London. Graduates from the highest socio-economic backgrounds are more likely to come from London and south-east England (and so to live within commuting distance of these opportunities from their parents' residence), and are also more likely to have access to free or cheap accommodation via contacts from their pre-existing or parents' social or professional network.

Higher socio-economic status graduates, especially those with parents in professional occupations, are also better able to access internships by exploiting the networks in which low-SES graduates are more likely to need to invest (MacMillan et al, 2014). Unpaid positions are also less likely to have a formal or accountable application process, raising the relative importance of personal contacts over academic ability or suitability for the position (Institute for Public Policy Research, 2010; Panel on Fair Access to the Professions, 2009). One can recognize all these mechanisms in driving the prevalence of the children of the political class in internships political internships in the United States, for example (The Economist, 2014). Finally, in addition to costs typically being higher for low-socioeconomic background graduates, the heterogeneity in internship quality and uncertainty about the returns (compared with, for example, undergraduate education, where in the absence of state-sponsored loans there are still many credit-constrained households - Carneiro and Heckman, 2002) mean there not well-developed credit markets for prospective interns. This means credit constraints will also present a barrier to participation.

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[1]Interns *are* typically reimbursed for travel expenses - IPPR, 2010

Of the work explicitly evaluating internships, most similar in context to our paper is Harms (2015), who estimates the effect of internships on early job market performance using data on German graduates similar to the DLHE. She shows that those entering their post-graduate full-time job after taking an internship initially earn 20-40% less than matched non-interns, but fully catch up within five years. This suggests that while internship experience does not have a signalling or human capital value to employers but does improve the quality of the job match (or "serve as a means of orientation"). However, former interns are shown not to be any more satisfied with their career. Evidence on a pure 'sheepskin' or signalling effect comes from Nunley et al. (2014), who conducted a randomized trial using fictional résumés (*curricula vitae*). Those with an internship during their studies were 14% more likely to receive an interview for the job applied for. Saniter and Siedler (2014) and Klein and Weiss (2011) also use data from Germany, but focus on internships *during* undergraduate study but not part of the university course. The opportunity cost in these cases relates to study time, rather than foregone paid employment experience. Klein and Weiss (2011) find no effect on wages. Saniter and Siedler (2014) find a higher propensity to work full-time and lower to be unemployed 5 years after graduation, but no evidence for improved job matching or heterogeneous effects by socio-economic background. The largest returns are for those studying subjects with 'weak labour market orientation' (promoting general skills rather than targeting specific professions), because here internships are more helpful in understanding the requirements of an occupation and to clarify the individual's own preferences.

In this paper we identify the factors determining *access to* and estimate the *returns from* unpaid internships for a sample of graduates from UK universities between 2003 and 2009, and document the inequality in these outcomes by socio-economic status (SES). We use the Destination of Leavers Survey from Higher Education (DLHE) survey, targeting the population of graduates from UK universities on a snapshot day 6 months after graduation, and followed-up for a sub-sample a further 3 years later. We recognize both that graduates' labour market objectives may vary; for some, job security or job satisfaction may take a relatively higher weight in their utility function compared with their salary; and that there may be salary differentials compensating for insecurity or tedium. We also note that, much as the over-supply of graduates to certain prestigious industries gives rise to the requirement for unpaid internship experience, it also suppresses wages, relative to jobs in other industries requiring similar skill and qualification levels, for those who do attain paid positions. For these reasons, we show results with

respect to six different outcome variables: Being in paid work at all, being in a professional job, having a permanent contract, their inflation-adjusted salary, and their regional wage level and inflation-adjusted salary. In addition, as well as first using use a propensity score matching estimator, we present results with *exact* matching on students' reported motivations for their initial labour market activity.

Our results reveal a large salary penalty associated with taking an unpaid internship, of around £3500 per year compared with those entering paid employment, and £1800 per year compared with those in further study. With this approach we also show that at least within 3.5 years of graduation, former interns gain no advantage in any other measure of job quality, except for a small benefit to career satisfaction compared with those who were out of the labour force 6 months after graduation. Moreover, as well as showing both strong positive and negative selection into unpaid internships on different dimensions of graduate characteristics, we find the negative returns to be significantly smaller for graduates who were privately schooled or with parents in professional occupations. This suggests a segregated market in which financial and social capital provides an advantage in accessing 'good' internships and capitalizing on the experience.

2 Data

We use data from the Higher Education Statistics Agency's (HESA) Destinations of Leavers survey for English and Welsh domiciled, young (21 or under when they started their course) students graduating from a full-time first degree (without a year abroad or in industry) from an English or Welsh institution in 2005-2011 inclusive. In principle the sample for these surveys was the population of Higher Education leavers, 6 months after graduation (i.e. in January of the following year). These surveys had a high response rate among this type of students, of approximately 80% (HESA, 2004-2013). We also use data from the Destination of Leavers Longitudinal survey, a follow-up survey for a sample of the 2005, 2007 and 2009 graduate populations responding to the 'first destination' survey. Although up to 77% of these respective sample frames were selected, these surveys had a very low response rate, of approximately 26%, 22% and 22% (HESA, 2010-2014).

2.1 Defining internships

The DLHE data for 2011/12 graduates and earlier do not contain explicit data on internships, and there is no widely agreed definition. Here we aim to capture three key characteristics emphasised by Lawton and Potter (2010): that internships are not training courses, that interns are expected to undertake work that would otherwise require a paid member of staff, and that interns are expected to keep the same full-time hours as paid staff.

In the UK the legal position on unpaid internships is very clear. If you "work set hours, do set tasks and contribute value to an organization", legally you are a worker, entitled to the minimum wage (Department for Business, Innovation and Skills, 2013).[2] Many positions advertised as internships are indeed in fact paid. We assume that these are captured by short-term contracts for paid workers. Since these roles cannot be differentiated in our data (and since payment for internships lessens the issues of credit constraints and the opportunity cost) we focus on unpaid positions only.

We therefore restrict the definition of "intern" firstly to roles in the 2nd, 3rd and 4th major groups for the Standard Occupational Classification (2000 categories), namely "Professional occupations", "Associated professional and technical occupations", and "Administrative and secretarial occupations". The 1st group "Managers, directors and senior officials" should not encompass interns, while the unpaid positions in the lower codes we believe are likely to be dominated by apprenticeships or volunteering.

We then manually excluded further roles, particularly relating to teaching and medical professionals, which we expect to represent compulsory training placements akin to apprenticeships, rather than internships. Our final definition is therefore dominated by (but is not limited to) administrative tasks, civil service or local government roles, legal or financial service positions, research posts, support staff such as laboratory technicians, and creative (but not sporting) occupations. This leaves 62 out of the 143 occupations in these three major groups, and out of 354 in total. These categories encompass approximately one-third of all unpaid workers observed in the data: Of approximately 1.3m valid cases for the employment circumstances of DLHE respondants who graduated between 2003 and 2012, there were 25,882 (1.99%) graduates in

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[2]Similarly, in the US, the key requirements are that an unpaid intern "does not displace regular employees" and slightly ambiguously "that the employer derives no *immediate* advantage" (emphasis added), noting that operations may actually be impeded by needing to supervise the intern, for example (United States Department of Labor, 2010).

voluntary or unpaid work, of which 9,637 (37%, or 0.74% of the total) were interns, according to our final definition. All other unpaid workers or volunteers are classified, along with those unemployed, travelling or out of the labour force, as doing 'Something Else' 6 months after graduation, as opposed to being "In Work" or "In Study". Since the DLHE asks respondents about their activity on a specified 'snapshot day' in January, approximately 6 months after graduation, and does not contain any retrospective or forward-looking questions, we expect this to understate the proportion of graduates participating in an unpaid graduate internships at some point.

2.2   Descriptive statistics

Table 1 shows the DLHE population's characteristics (population proportions of most variables, but also the mean of the unemployment rate in the individual's area of domicile) across our 7 graduating cohorts of data, divided by their labour market activity on the snapshot day 6 months after graduation. The categories are mutually exclusive. "In Work" relates to *paid* employment, including part-time. "In Study" includes those in part-time Study only if they are not also in paid Work, and the internship category does not include individuals also studying part-time. The "Something else" category consists of those declaring themselves unemployed, waiting to start work, 'taking time out', volunteering, and or being out of the labour force due to poor health or to caring responsibilities, as well as the plurality who do precisely report "Something else". This captures a body of individuals who are formally unemployed but, with this proximity to graduation, prefer not to label themselves as such.

The first thing to note is that across our 7 graduating cohorts, only 0.95% of graduates are identified as participation in internships at the snapshot date in January. Table 2 shows that this disguises a tripling of the rate of Internship participation between 2007 and 2011 graduates, from 0.5% to 1.5%. This change is large in relative terms but small in absolute terms, so cannot precisely be attributed to falls among specific other categories.

We show the other things equal associations between these characteristics and the relative risk of falling into each labour market category 6 months after graduation in Table 4. However, in the raw data we observe that those entering Internships are more likely to be of high socio-economic background, as measured by parental occupation, Higher Education participation rate of their local area, and private school attendance. They are also somewhat positively

Table 1: Explanatory variable means/proportions by activity 6 months after graduation

	Internship	In Work	In Study	Something else
% of Interns / In Work / In Study / Something else who are:				
High SES	53.5	47.3	53.0	46.7
Low par' neigh'	5.2	8.8	7.5	08.2
Private school	18.5	11.7	18.1	13.8
Oxbridge	6.5	2.1	6.5	2.8
Golden Triangle	4.3	2.7	4.6	2.4
Russell Group	21.8	19.9	28.9	20.4
1994 Group	14.7	11.3	16.8	12.4
Strong LM Orientation	33.3	58.3	60.3	55.3
Male	39.5	42.9	44.1	51.2
Black	4.2	2.1	1.9	2.7
South Asian	10.3	7.4	8.9	10.1
Other Asian	2.5	1.6	2.4	2.5
Other Non-white	6.4	4.2	5.2	5.4
Non A-level	8.6	7.8	4.8	8.2
First/2:1 class degree	74.6	62.8	77.8	61.1
Disability	12.2	8.4	8.9	10.7
Average of:				
Domicile unemployment rate, %	3.275	3.058	3.094	3.154
N	8,661	634,066	143,017	128,527

Notes: All control variables except the domicile unemployment rate (for the travel-to-work-area, measured at time the 6-month survey is taken) are as measured at university application, in university student records. High parental SES, is classes 1 and 2 (Higher and lower managerial or professional occupations).

selected (relative to those going into work though not study) according to graduation from the elite Oxbridge (Oxford and Cambridge) or 'Golden Triangle' London universities (The London School of Economics and Kings, Imperial and University Colleges London) or with a first or upper second class degree. Students from ethnic minorities, who entered university though a non-academic track, studied a subject with weak labour market orientation (not leading to a specific career), or have a self-declared disability are also relatively more likely to be in internships.[3]

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[3]Following Saniter and Siedler (2014), the subject areas documented in the DLHE are divided by labour market orientation as follows. Strong: Medicine and dentistry; subjects allied to medicine, biological sciences; veterinary science; agricultural and related subjects; physical sciences; mathematical sciences; computer sciences; engineering and technology; architecture, building and planning, law, business and adminstrative studies. Weak: Mass communications and documentation; languages; historical and philosophical sciences; creative arts and design; education. Social studies (which includes both economics and sociology) and 'combined degrees' are

Table 2: Activity 6 months after graduation, by year of graduation: Proportions

	2005	2006	2007	2008	2009	2010	2011
Internship	0.005	0.005	0.005	0.008	0.013	0.012	0.015
In Work	0.711	0.712	0.718	0.685	0.656	0.690	0.691
In Study	0.154	0.154	0.156	0.158	0.173	0.152	0.147
Something else	0.131	0.128	0.120	0.149	0.158	0.145	0.146
N	114,263	117,259	123,804	134,403	135,215	141,087	148,240

Table 3 then shows the mean salary or probability of various other labour market outcomes 3.5 years after graduation, according to the activity 6 months after graduation. This shows that by most measures those taking an internship subsequently experience significantly inferior labour market outcomes to those both in work and in further study, and comparable outcomes to those doing "Something else". Interns go on to receive lower salaries and lower career satisfaction, and are less likely to be in a professional job at this early career stage. The wage gap is approximately £3000 using either definition of salary.

On the remaining two measures; being in work at all, and having a permanent contract of employment; those taking an internship fare comparably or favourably with those who took further study, in the latter case especially when not conditioning on having a job at all. However, this may substantially be a function of reduced overall labour market experience as a necessary function of having spent more time in study.

3 Socio-economic gradients in access to internships

We now present other things equal estimates describing the socio-economic gradient in access to and returns from unpaid graduate internships. Table 4 first shows the relative risk ratios for selection into internship, employment, or further study, as opposed to 'something else', six months after graduation. These are estimated using a multinomial logistic regression. Six year fixed-effects and 18 subject fixed-effects are omitted for reasons of space, but the ratios for the characteristics shown all bear out the story told by the raw descriptive statistics.

classified as having "Either" labour market orientation.

Table 3: Labour market outcomes 42 months after graduation by activity 6 months after graduation

Outcome 3.5 years after graduation ↓	Acitivity 6 months after graduation			
	Internship	In Work	In Study	Something else
Salary (£) (no imputation)	23,776.54 (327)	26,890.25 (29,109)	26,064.56 (6,229)	24,173.28 (5,319)
Salary (£) (incl. imputed)	21,882.61 (382)	25,200.29 (32,592)	24,458.99 (6,925)	21,843.79 (5,986)
Very satisfied with career	0.276 (474)	0.356 (37,240)	0.412 (9,923)	0.253 (7,553)
In Work	0.812 (478)	0.886 (37,701)	0.695 (10,079)	0.795 (7,732)
Professional job | In Work	0.334 (395)	0.497 (32,844)	0.650 (7,070)	0.393 (6,104)
Professional job (all)	0.282 (468)	0.447 (36,521)	0.465 (9,882)	0.320 (7,511)
Permanent contract | In Work	0.668 (404)	0.786 (33,886)	0.691 (7,249)	0.738 (6,279)
Permanent contract (all)	0.567 (476)	0.709 (37,539)	0.498 (10,050)	0.602 (7,684)

Notes: Figure in parentheses is sample size from which is statistic is calculated.

Firstly, there is a demonstrable degree-class gradient in selection into all three of these 'productive' activities. Unsurprisingly, high academic performance has the strongest effect on continued academic study, but the relative risk is also increased by more for internships than employment. Interns and those in further study are also highly positively selected in terms of graduates coming from elite or research intensive universities, with selection into internships coming very strongly from the highest-ranking 'Oxbridge' or 'Golden Triangle' institutions. These positive gradients in the proxies for academic ability support the idea that at least some internships are desirable positions, competitive to attain, and leading to a superior job match. There is a smaller effect on internship participation from our two measures of high socio-economic status: the relative risk of entering an internship rather than 'something else' is increased by 14 and 20% if the graduate attended private school, or has parents in occupations with high socio-economic status. These relative risk ratios are even larger than the already significant effect for selection into further study, and for private schooling would be larger still against a base category of 'in work'.

However, unlike employment and further study, there is a positive effect of coming from an ethnic minority, entering university by a non-A-Level track, or having a disability. All these

Table 4: Multinomial Logit for selection into labour market activities 6 months after graduation (Relative Risk Ratios)

(*Base category: Something else*)	Internship	In Work	In Study
High parental SES	1.196***	1.006	1.088***
	(0.030)	(0.007)	(0.010)
Private School	1.135***	0.838***	1.060***
	(0.039)	(0.009)	(0.013)
Male	0.685***	0.757***	0.855***
	(0.018)	(0.005)	(0.008)
Black	1.998***	0.687***	0.910***
	(0.130)	(0.016)	(0.028)
South Asian	1.592***	0.591***	1.037**
	(0.070)	(0.007)	(0.017)
Other Asian	1.371***	0.527***	1.057*
	(0.108)	(0.013)	(0.031)
Other non-white	1.099*	0.741***	0.949***
	(0.058)	(0.012)	(0.019)
Non A Level	1.189***	0.942***	0.848***
	(0.058)	(0.014)	(0.018)
First class/2:1 degree	1.542***	1.175***	2.081***
	(0.045)	(0.009)	(0.021)
Disability	1.094**	0.776***	0.956***
	(0.041)	(0.009)	(0.014)
Domicile unemployment rate, %	0.933***	0.981***	1.021***
	(0.011)	(0.003)	(0.004)
Oxbridge	2.450***	0.636***	1.950***
	(0.141)	(0.014)	(0.046)
Golden Triangle	2.229***	0.908***	1.690***
	(0.146)	(0.021)	(0.044)
Russell Group	1.324***	0.830***	1.398***
	(0.045)	(0.008)	(0.016)
1994 Group	1.383***	0.891***	1.439***
	(0.054)	(0.010)	(0.020)
Year dummies		Yes	
Subject dummies		Yes	
N		747,533	

Notes: All control variables except the domicile unemployment rate (for the travel-to-work-area, measured at time the 6-month survey is taken) are as measured at university application, in university student records. High parental SES, is classes 1 and 2 (Higher and lower managerial or professional occupations). Additional controls: Six year fixed effects and 18 subject area fixed effects. *: $p < 0.1$; **: $p < 0.05$; ***: $p < 0.01$.

groups face disadvantage in the labour market due to either discrimination or productivity (Longhi and Zwysen, 2016; Dearden and Myck, 2002; Jones, Latreille and Sloane, 2006). This is indicative of, for some graduates, internships substituting for paid employment which has proven inaccessible.

4 Socio-economic gradients in returns to internships

4.1 Descriptive regressions

In Tables 5 and 6 we show the determinants of labour market outcomes 3.5 years after graduation, as a function of labour market activity at six months, of socio-economic background, and their interaction. Because the number of interns at six months who are observed again at 3.5 years, is small (478 cases), we show results measuring SES firstly by parental occupation and then by private schooling, in separate models.

Our measures of labour market outcomes are (i) being in paid employment, (ii) being in a professional job or (iii) with a permanent contract, (iv) being 'very satisfied' with their career (in each case *not* conditioning on being in work), and finally (v) their annual salary (conditioning on being in work).

Common to both specifications, there is a positive socio-economic gradient in all five measures, albeit not significant for the measure of high parental SES in gaining a permanent contract or in career satisfaction.

The baseline odds ratios or coefficients (the 'main effects' for low SES or state schooled graduates) show taking an internship to be modestly helpful in subsequently obtaining a paid job later, significantly so in the private schooling specification when compared against 'something else' at 6 months, and always when compared against further study. However, the odds are significantly lower than had the graduate been in a paid job from the start. This provides tentative evidence in favour of the stepping stone hypothesis -that internships provide a route into paid employment for those initially unable to obtain it. However, this process is not borne out in considering the quality of jobs obtained. Interns have worse prospects than any other category in obtaining a *professional* job (but only *significantly* worse than initially being in paid work or study), but better odds compared with further study in terms of gaining a permanent contract. This will partly occur through their greater accumulated experience, but may also reflect the common use of fixed term contracts for junior staff having recently completed postgraduate degrees, in academic institutions in the UK.

Considering career satisifaction, there is tentative evidence that ex-interns are happier than those not in work or study at six months (the odds-ratio is significant in only the private school specification), but significantly less satisfied than those who were initially in work or in study.

Table 5: Logit for labour market outcomes 42 months after graduation by labour market activity 6 months after graduation (Odds Ratios or Tobit coefficients; SES measured by parental socio-economic classification)

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (£s)
Activity at 6 months					
In Work	2.029***	1.613***	1.698***	1.593***	3032.40***
	(0.103)	(0.069)	(0.069)	(0.071)	(176.182)
In Study	0.761***	1.921***	0.808***	2.150***	2457.00***
	(0.044)	(0.099)	(0.040)	(0.115)	(228.047)
Internship	1.077	0.854	1.058	1.177	-131.694
	(0.206)	(0.157)	(0.166)	(0.209)	(696.652)
Socio-economic background:					
High parental SES	1.113*	1.096*	1.040	1.084	722 773***
	(0.069)	(0.060)	(0.054)	(0.063)	(229.868)
SES-prior activity interactions					
In Work × High par' SES	0.859**	0.923	0.939	0.957	-138.306
	(0.061)	(0.055)	(0.054)	(0.060)	(249.68)
In Study × High par' SES	0.788***	0.834***	0.867**	0.904	-403.632
	(0.062)	(0.059)	(0.059)	(0.066)	(314.141)
Internship × High par' SES	1.383	1.257	0.957	1.154	541.995
	(0.366)	(0.294)	(0.200)	(0.265)	(923.761)
Male	0.937**	1.049**	0.877***	0.989	2137.756***
	(0.026)	(0.022)	(0.019)	(0.021)	(92.161)
Black	0.588***	0.680***	0.694***	0.717***	112.995
	(0.045)	(0.044)	(0.043)	(0.047)	(263.862)
South Asian	0.721***	0.780***	0.775***	0.750***	687.278***
	(0.039)	(0.032)	(0.033)	(0.032)	(177.229)
Other Asian	0.709***	0.656***	0.795***	0.595***	108.127
	(0.066)	(0.052)	(0.062)	(0.049)	(339.673)
Other Non-White	0.741***	0.812***	0.794***	0.841***	-38.244
	(0.035)	(0.031)	(0.031)	(0.033)	(166.284)
Non A-Level	0.874**	0.762***	0.924*	0.898**	-1440.171***
	(0.051)	(0.035)	(0.041)	(0.040)	(185.543)
First class/2:1 degree	0.851***	1.166***	0.930***	1.248***	2336.93***
	(0.027)	(0.027)	(0.022)	(0.029)	(96.034)
Disability	0.782***	0.831***	0.792***	0.898***	-946.587***
	(0.032)	(0.027)	(0.026)	(0.030)	(140.557)
TTWA unemployment rate	0.960***	1.011	0.978**	0.998	-506.743***
	(0.013)	(0.010)	(0.010)	(0.010)	(35.928)
Oxbridge	0.429***	1.062	0.545***	1.130**	5477.171***
	(0.027)	(0.059)	(0.030)	(0.063)	(260.674)
Golden Triangle	0.539***	0.962	0.651***	1.114*	5863.975***
	(0.035)	(0.054)	(0.036)	(0.062)	(257.95)
Russell Group	0.801***	1.136***	0.832***	1.022	2557.766***
	(0.028)	(0.030)	(0.023)	(0.028)	(115.409)
1994 Group	0.827***	1.225***	0.900***	1.046	2813.119***
	(0.033)	(0.037)	(0.028)	(0.032)	(131.119)
N	47,095	45,950	46,890	46,400	38,573

Notes: All control variables except the TTWA unemployment rate are as measured at university application, in university student records. High parental SES, is classes 1 and 2 (Higher and lower managerial or professional occupations). Additional controls: Six year fixed effects and 18 subject area fixed effects. TTWA is Travel to work area. *: $p < 0.1$; **: $p < 0.05$; ***: $p < 0.01$.

Table 6: Logit for labour market outcomes 42 months after graduation by labour market activity 6 months after graduation (Odds Ratios or Tobit coefficients; SES measured by private school attendance)

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (£s)
Activity at 6 months					
In Work	1.917***	1.594***	1.665***	1.532***	3073.428***
	(0.075)	(0.051)	(0.052)	(0.052)	(172.739)
In Study	0.655***	1.811***	0.756***	2.059***	2305.717***
	(0.029)	(0.071)	(0.028)	(0.083)	(172.739)
Internship	1.302*	0.975	1.165	1.237*	23.975
	(0.196)	(0.126)	(0.138)	(0.158)	(516.667)
Socio-economic background:					
Private School	1.170*	1.321***	1.163*	1.216**	2791.51***
	(0.110)	(0.104)	(0.090)	(0.100)	(34.618)
SES-prior activity interactions					
In Work	0.911	0.763***	0.914	0.959	-896.585**
× Privately schooled	(0.098)	(0.066)	(0.079)	(0.086)	(374.18)
In Study	0.933	0.645***	0.720***	0.799**	-1740.166***
× Privately schooled	(0.105)	(0.063)	(0.070)	(0.081)	(446.998)
Internship	1.007	1.066	0.575**	0.994	-835.148
× Privately schooled	(0.348)	(0.295)	(0.152)	(0.279)	(1168.12)
Male	0.923***	1.055**	0.875***	1.002	2201.70***
	(0.026)	(0.022)	(0.019)	(0.021)	(91.667)
Black	0.622***	0.645***	0.729***	0.729***	-165.190
	(0.048)	(0.042)	(0.046)	(0.047)	(0.000)
South Asian	0.782***	0.815***	0.825***	0.738***	691.304***
	(0.042)	(0.033)	(0.034)	(0.030)	(171.061)
Other Asian	0.736***	0.665***	0.827**	0.560***	-61.746
	(0.067)	(0.051)	(0.063)	(0.045)	(323.592)
Other Non-White	0.748***	0.823***	0.789***	0.832***	-150.885
	(0.036)	(0.032)	(0.031)	(0.032)	(166.409)
Non A-Level	0.900*	0.726***	0.901**	0.898**	1566.527***
	(0.056)	(0.035)	(0.042)	(0.043)	(195.005)
First class/2:1 degree	0.826***	1.159***	0.927***	1.271***	2466.242***
	(0.026)	(0.026)	(0.022)	(0.030)	(95.960)
Disability	0.758***	0.818***	0.793***	0.904***	1064.548***
	(0.031)	(0.027)	(0.026)	(0.030)	(141.688)
TTWA unemployment rate	0.969**	1.014	0.976**	0.996	-472.209
	(0.013)	(0.010)	(0.010)	(0.010)	(36.041)
Oxbridge	0.406***	1.060	0.519***	1.084	5080.902***
	(0.025)	(0.057)	(0.028)	(0.059)	(252.281)
Golden Triangle	0.535***	0.953	0.646***	1.087	5391.903***
	(0.033)	(0.051)	(0.035)	(0.057)	(240.953)
Russell Group	0.791***	1.143***	0.829***	1.018	2406.337***
	(0.028)	(0.030)	(0.023)	(0.027)	(114.244)
1994 Group	0.792***	1.207***	0.882***	1.060*	2822.342***
	(0.031)	(0.036)	(0.028)	(0.032)	(131.169)
N	47,547	46,250	47,360	46,854	38,958

Notes: All control variables except the TTWA unemployment rate are as measured at university application, in university student records. High parental SES, is classes 1 and 2 (Higher and lower managerial or professional occupations). Additional controls: Six year fixed effects and 18 subject area fixed effects. TTWA is Travel to work area. *: $p < 0.1$; **: $p < 0.05$; ***: $p < 0.01$.

Finally, in both specifications, internship experience is shown to have a similar return to doing 'something else'. The premia for initially being in work or study, over both internships and something else, are approximately £3000 and £2400. This means we reveal no evidence of catch-up in salaries to bolster the stepping stone benefit.

Moving on to the interaction terms, these show the premia to initially being in work or study are lower for both high parental SES and privately schooled students. Most notably the premium to having been in work or further study is significantly lower for private school pupils (who nevertheless maintain a £2800 baseline advantage).

Only one interaction term is statistically significant in relation to internship experience. The 'stepping stone' value of internships to gaining a permanent contract is lower for private school pupils than other graduates. There are no other important differentials by private school attendance. There is some tentative evidence (not significant due to small sample numbers) that the stepping stone of an internship is more effective for students with higher parental SES. Hence, we obtain no compelling evidence from these *descriptive* models that state-school or lower parental SES pupils taking internships are any more of less likely to be tracked into internships which lead to poor subsequent opportunities. We now proceed to derive estimates for the causal effect of internship participation on subsequent labour market outcomes.

4.2   The identification problem

Besides the standard issue of selection on unobservables; the skill or motivation of individuals and the effectiveness of university careers programmes are unobservable and positively corelated, for example (Saniter and Siedler, 2014); there are two key identification problems in estimating the labour market returns to internships. The first is that the SES gradient in access to internships through parental resources or networks means that low-SES graduates in internships are likely to be substantially *more* positively selected that high-SES. This will produce a positive bias in the relative return to internships for low-SES graduates.

The second problem lies in modelling the decision-process for selection into internships. There will exist unobserved heterogeneity in individuals' preference ordering and *ex ante* the 'quality' of internships. Some people might take an internship because it is expected to lead to an improved job match in the future, particularly if this is the social norm for their industry of choice. In this case their specific internship may be their first preference. Others might take an

internship because they unable to gain an acceptable paid job.

We obtain estimates by implementing a matching estimator for the treatment effect of taking an internship six months after graduation on labour market outcomes three years later. We produce separate results for the overlapping sub-samples of (i) those initally in an internship or paid work; (ii) those initially in an internship or study; and (iii) those initially in an internship or out of paid work or study. In each case we shall adopt the principle of independence of irrelevant alternatives (IIA); that the individual's preference ordering among the remaining activities *not chosen* does not matter. We then show that our propensity score matching estimates are robust to exact matching on individuals' reported reasons for taking their current position.

5   Results

To estimate the average treatment effect of internship participation we match individuals according to their nearest neighbour according to their conditional probability of participating in an internship given their 'pre-treatment' characteristics - their propensity score.

Formally, we assume that within cells defined by our pre-treatment characteristics ($\mathbf{X}_i$), opportunities arrive such that the assignment to the internship 'treatment' (I) is random. In this case, Rosenbaum and Rubin (1983) show that treatment is also random within cells defined by the one-dimensional propensity score ($p(\mathbf{X}_i) \equiv Pr(I = 1|\mathbf{X})$). Where Y_{1i} and Y_{0i} are the potential outcomes from treatment and no-treatment, the average effect of Treatment on the Treated (ATT) can therefore be evaluated as the expectation of the difference between the outcomes of pairs of individuals with the same propensity score, one of whom is treated ($I_i = 1$) and the other is not ($I_i = 0$):

$$
\begin{aligned}
ATT &\equiv E(Y_{1i} - Y_{0i}|I_{i=1}) & (1)\\
&= E(EY_{1i} - Y_{0i}|I_{i=1}, p(\mathbf{X}_i)) & (2)\\
&= E(E(Y_{1i}|I_i = 1, p(\mathbf{X}_i)) - E(Y_{0i}|I_i = 0, p(\mathbf{X}_i))|I_i = 1) & (3)
\end{aligned}
$$

We derive our propensity score by first restricting the sample to individuals graduating in 2007, 2009 or 2011, who are observed at both 6 months and 3.5 years after graduation (and hence can be used to evaluate the treatment effect on the later outcome) using a probit model for

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internship participation, conditioning on the full set of covariates discussed already, but also distance to London. With two continuous regressors (distance to London and the unemployment rate in the travel-to-work area of domicile), the probability of observing two individuals with identical propensity scores is close to zero. We implement *nearest neighbour matching with replacement over the region of common support*. This means that every treated individual is matched with a control individual, but some control individuals are matched with more than one treated (Becker and Ichino, 2002).

Tables 7, 8, and 9 show the Average effects of Treatment on the Treatment (ATT) or all five of our dependent variables. The counterfactual activity at 6 months is being in paid work, being in further study, or something else respectively. The ATT is shown above the analytical standard error and t-statistic. At the foot of each table is shown the region of common support, which is the range of probabilities of taking an internship for which both people taking an internship and undertaking the alternative activity, are observed. As a robustness check, in case results are heavily influenced by working in and living in or close to London, the final column in each table also shows the results when salaries are deflated according to the average received by all workers employed in the same Government Office Region.[4]

5.1 Internships versus paid work, study, or something else

Table 7: Average effect of Internship Treatment on the Treated. Counterfactual group: Those in paid work at 6 months. (Nearest neighbour propensity score matching estimates).

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
ATT	**-0.036**	**-0.050**	**-0.093**	**-0.033**	**-3456.08**	**-3573.95**
Standard error	(0.025)	(0.033)	(0.034)	(0.032)	(655.48)	(540.15)
t-stat	*-1.424*	*-1.526*	*-2.745*	*-1.026*	*-5.273*	*-6.615*
n treated	413	413	413	413	413	413
n control	405	399	405	400	341	323
Overall sample mean	0.886	0.443	0.712	0.355	25297.12	22267.32
Common support region		[**0.0012289**			**0.1630832**]	

Table 7 first shows the matching estimates when when the counterfactual activity at 6 months is being in paid work. The estimated treatment effect is negative for all six outcome variables, though only the two salary specifications (being in an internship at six months is associated

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[4]There are 10 Regions, with an average population of 5.6 million, of which Greater London is the second most populous (8.5 million) after South East England, but smallest in area.

with an approximately £3500 salary penalty three years later) and having a permanent contract (9.3 percentage points more likely) have t-statistics larger than 2. Nevertheless, at face-value an internship reduces the probability of being in any paid work by 3.6 percentage points, of being in a professional or managerial role by 5 percentage points, and of being very satisfied with one's career by around 3.3 percentage points.

Table 8: Average effect of Internship Treatment on the Treated. Counterfactual group: Those in further study at 6 months. (Nearest neighbour propensity score matching estimates).

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
ATT	**0.077**	**-0.150**	**0.043**	**-0.088**	**-1371.46**	**-1831.26**
Standard error	(0.032)	(0.038)	(0.038)	(0.037)	(729.228)	(607.43)
t-stat	*2.444*	*-3.994*	*1.109*	*3.015*	*-1.881*	*-3.015*
n treated	376	376	376	376	376	376
n control	345	340	343	341	257	242
Overall sample mean	0.694	0.455	0.498	0.407	24398.9	21361.78
Common support region	[**0.0064859**				**0.6875433**]	

Table 8 shows the matching estimates when the counterfactual activity at 6 months is being in further study. The estimated wage penalty is smaller, between £1350 and £1850 per year, though this is likely to reflect the shorter job tenure or period of employment exposure for those who initially took further study. Indeed, those initially taking an internship are around 8 percentage points more likely to be in work at all ($t = 2.444$) three years later. (They are also 4.3 percentage points more likely to be on a permanent contract but the t-statistic of 1.109 shows this is not statistically significant). Taking an internship rather than further study however reduces the probability of working in a professional or managerial role, or being very satisfied with their career, by 15 and 8.8 percentage points respectively.

This suggests that while internship experience may be enabling graduates to find paid work soon after, the job-specific or general human capital gained during this experience is less than what could be obtained from taking further study, and the resulting job match is poorer. Assuming living costs and foregone earnings during internships and are the same however, even if the student does not need to take a loan to undertake postgraduate study, it would take 6 (deflated salary) or 8 (raw salary) years for the salary penalty to outweigh the £11,000 average fee for a year of postgraduate study (UCAS, 2016). Nevertheless, this still represents a large overall lifetime penalty.

Table 9 shows the matching estimates when the counterfactual activity at 6 months is something

else altogether. Here, the only statistically significant result is for career satisfaction. Taking an internship raises the probability that this will be "very high" by 6.4 percentage points. Apart from this, differences are negligible, leading us to interpret our results as implying that for objective measures of job quality, taking an unpaid internship is about as good as doing nothing.

Table 9: Average effect of Internship Treatment on the Treated. Counterfactual group: Those doing something else at 6 months. (Nearest neighbour propensity score matching estimates).

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
ATT	**0.039**	**-0.014**	**0.036**	**0.064**	**639.04**	**-122.131**
Standard error	(0.029)	(0.034)	(0.036)	(0.032)	(373.06)	(543.47)
t-stat	*1.346*	*-0.411*	*0.996*	*2.004*	*0.949*	*-0.225*
n treated	413	413	413	413	413	413
n control	371	367	364	364	292	274
Overall sample mean	0.798	0.320	0.606	0.255	21919.96	19022.79
Common support region	[**0.0065574**				**0.8148419**]	

5.2 Robustness of the matching estimates

In this section we present two sets of robustness checks, to evaluate the quality of our matching. First, following the strategy of McGuinness et al. (2016), in Table 10 we report the pseudo-R^2 statistics of the probit regression used to calculate the propensity score, on the pre-matching and then matched samples. The pre-matching pseudo-R^2 provides a measure of the extent to which the treated and the comparator group differ in terms of observable characteristics. For all three comparator groups this is between 0.11 and 0.12, and the observed characteristics used to estimate the propensity score are jointly significant at all conventional levels. In contrast, when the probit model is re-estimated on the matched sample used to derive the estimates in Tables 7, 8 and 9 (specifically the 'In Work' columns in each case), the pseudo-R^2 is always less than 0.02, and the observed characteristics in the model have no collective significance (the p-value for the χ^2 test of joint significance is always larger than 0.98). This supports the assumption underlying our matching estimates, that the matching procedure has eradicated all the differences in observables between the treated and comparison groups.

Secondly, in Table 11 we present Mantel-Haenszel and Rosenbaum Bound Test Statistics (Mantel and Haenzel, 1959; Rosenbaum and Rubin, 1983) for each of the matching estimates presented in Tables 7, 8 and 9. These are sensitivity procedures are calculated using the `mhbounds` and

Table 10: Test for matching procedure eliminating observable differences between treated and control samples

	Pre-matching		Post-matching	
	Pseudo R^2	p (joint sig')	Pseudo R^2	p (joint sig')
In Work	0.1120	0.0000	0.0176	0.9900
In Study	0.1169	0.0000	0.0184	0.9822
Something Else	0.1141	0.0000	0.0115	0.9999

`rbounds` procedures in Stata (Becker and Caliendo, 2007, for binary dependent variables; and diPrete and Gangl, 2004,, for continuous dependent variables respectively). The test statistic shows the extent to which an additional unobserved factor must increase or reduce the odds of selection into the treatment, for a significant estimate to become statistically insignificant, in our case at either the 5% or 10% levels. This procedure enables us to to compare the robustness of the estimates for our five dependent variables and three comparator groups.

For example, such an unobserved factor, negatively correlated with subsequent salaries and so inducing a negative bias, would need to increase the conditional odds of selection into an internship over paid work by 50% (or 85% using the version deflating for regional wage differences), before we would cease to conclude that taking an internship results in a statistically significant salary penalty, at the 5% level (top row, two figures furthest to right). By contrast, the corresponding figure for our estimates relating to likelihood of a permanent contracts is 15%. The second panel of the table, with the comparator group being those in further study, shows our conclusion regarding the costliness of taking an internship against further study for entering a professional occupation is particularly robust. As with the comparator group of those in work, our conclusions about the salary penalty of taking an internship are stronger when the wage level of the resulting job is considered relative to those in the same region. (We do not match on the initial or final region of employment, because these are outcome variables and represent bad controls). Finally, against the comparison group of those doing something else altogether, our conclusion that former interns enjoy greater career satisfaction is sensitive to only a small influence of an unobserved factor, lending support to our general statement that doing an internship results in very similar outcomes to being out of the labour force or further study altogether.

Table 11: Robustness of matching estimator to additional unobserved factor affecting selection into treatment: Mantel-Haenszel and Rosenbaum Bound Test Statistics

	In Work	Profess-ional job	Permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
v. In Work						
Retain sig' at 5%	.	.	1.15	.	1.50	1.85
Retain sig' at 10%	1.04	1.04	1.22	.	1.56	1.93
v. In Study						
Retain sig' at 5%	1.19	1.51	.	1.14	1.01	1.26
Retain sig' at 10%	1.27	1.60	.	1.21	1.04	1.31
v. Something Else						
Retain sig' at 5%	.	.	.	1.03	.	.
Retain sig' at 10%	.	.	.	1.09	.	.

Notes: Missing cells (" . ") where main result presented in Table 7, 8, or 9 is insignificant at specified level.

5.3 Matching on graduates' motivation for current employment status

Implicitly, in our initial matching scenario each pair of individuals shares a choice set and preference ordering between the internship and the alternative activity, but one, through a random process, is assigned to the internship 'treatment' and one to the alternative 'control'. Having paired treated individuals with matches in the control state according to observed characteristics, we may still be concerned that there is some systematic positive or negative selection on an unobserved characteristic for the treated individual in each pair. Moreover, this need not represent the only treatment effect of interest. Consider instead a pair of individuals with the same long-run labour market objective. One of them may choose to take an internship and the other an alternative activity, as their best way to reach it, and it is of policy interest - for the information released by university careers services, for example - to understand the outcomes obtained by those following these different strategies.

However, the DLHE 6-month survey includes a battery of questions to elicit individuals' reasons for their current economic activity. In this section we report results when obtained by matching individuals *exactly* according to their responses to three of these questions, and then to their nearest neighbour according to their propensity score.

The statements and responses are shown in Table 12. Individuals could "tick all that apply". For a significant proportion of those taking an internship, it appears to represent an 'investment' activity - part of a long-term plan - rather than a last resort. A very similar proportion (40%) of those in an internship after 6 months state that "It fitted into my career plan [or] was exactly the type of work I wanted" as those who are in paid work. 69% of those in internships say they took the role "to gain and broaden my experience in order to get the type of job I really want", which is almost double the proportion of those in paid work (37%). Similar numbers (15 and 18%) take the long-term view that "it was an opportunity to progress within the organization".

An less positive indication is that internships may be somewhat speculative or experimental, with 38% citing "To see if I would like the type of work it involved", against only 18% of those in work. However, very few (16%) of those in internships report that it was the "best" or "only" job offer [they] received". For paid positions (where 30% agree), there is potentially a large difference in the selection of individuals according to whether it was their "best" or "only" job offer, but for those obtaining unpaid positions either situation is unambiguously demonstrative of a negative selection.

We see no significant difference in the propensity of high and low SES (or privately or state schooled graduates) to take an internship as the best or only offer they received, or as an opportunity to progress within the organization. However, the higher SES group are more likely to be taking internship both for the most positive reason ('exactly what they wanted") and the most speculative ('see if they would like the work').

The very small proportion (3%) of those in an internship who report taking the position in order to earn a living most likely includes those receiving expenses and/or board and lodging. These individuals are not 'paying' for their position, and it is enabling them to live.

The linear probability models and regressions in Table 13 offer a descriptive indication that those who consider their initial labour market outcome to be exactly what they are looking for are broadly right in their belief that they are in a good match, with these individuals having significantly (at the 1% level) better outcomes 3.5 years after by all six measures, including an approximately £3000 annual salary premium.

In contrast, those reporting aiming to gain or broaden their experience do not appear to gain a return on this investment. Other things equal, they are less likely to be in a paid job at all, a professional or managerial role or a permanent contract, they are less satisfied, and earn

Table 12: Reasons for current job or employment situation, 6 months after graduation, by job type. % of respondents

| | Differences by parental occupation: High SES v. Low SES | | | | | | | |
| | Internship | | | | In paid work | | | |
	All	High SES	Low SES	Sig' Diff?	**All**	High SES	Low SES	Sig Diff?
It fitted into my career plan/ it was exactly the type of work I wanted:	**40**	42	36	***	**44**	46	43	***
It was the best job offer I received/only job offer I received:	**16**	16	17		**30**	32	31	
It was an opportunity to progress within the organization:	**15**	16	15		**18**	19	19	
To gain and broaden my experience in order to get the type of job I really want:	**69**	70	66	***	**37**	35	34	***
To see if I would like the type of work it involved:	**38**	40	33	***	**18**	18	16	***
In order to earn a living/ pay off debts:	**3**	2	3		**40**	40	41	###

| | Differences by private schooling | | | | | | | |
| | Internship | | | | In paid work | | | |
	All	Private School	State School	Sig' Diff?	**All**	Private School	State School	Sig Diff?
It fitted into my career plan/ it was exactly the type of work I wanted:	**40**	42	39	*	**44**	52	44	***
It was the best job offer I received/only job offer I received:	**16**	14	16		**30**	31	31	
It was an opportunity to progress within the organization:	**15**	15	16		**18**	18	18	
To gain and broaden my experience in order to get the type of job I really want:	**69**	71	70		**37**	38	37	
To see if I would like the type of work it involved:	**38**	42	37	***	**18**	20	17	***
In order to earn a living/ pay off debts:	**3**	5	3	**	**40**	34	40	###

Notes: ***/**/*: High SES/Private School group higher at 1%, 5%, 10% level. ###/##/#: Low SES/State School group higher at 1%, 5%, 10% level

about £550 less per year. Initially taking the best or only offer they could find appears to be a broadly neutral position with respect to objective outcomes, with these individuals only slightly more likely to be in paid work at all after 3.5 years, but they are much less likely (7 percentage points) to be very satisfied with their career.

In the lower panel of Table 13 we interact the two most common cited motivations with the internship dummy. These association indicated here suggests that interns taking a position because it fits their career plan in fact experience more negative outcomes on average, at least

with respect to career satisfaction or obtaining a professional job or permanent contract, while the internship penalty may be moderated slightly (none of the interactions are significant) for those intending to gain or broaden their experience, with respect to permanency, satisfaction, and salary.

Table 13: Labour market outcomes at 3.5 years according to reasons for labour market activity at 6 months after graduation

Linear regression/probability models for 3.5-year outcomes according to Internship and reasons for taking current job at 6 months

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
Internship	-0.035 (0.022)	-0.050 (0.037)	-0.117*** (0.030)	-0.058* (0.033)	-3609.50*** (572.87)	-3248.047*** (504.82)
'Fitted exactly'	0.042*** (0.005)	0.113*** (0.008)	0.066*** (0.007)	0.177*** (-0.008)	3102.78*** (133.48)	2854.27*** (117.50)
Best or only offer	0.017*** (0.006)	-0.006 (0.009)	0.040*** (0.008)	-0.073*** (0.008)	18.51 (141.702)	-22.470 (124.59)
Gain/broaden experience	-0.019*** (0.005)	-0.020** (0.008)	-0.028*** (0.007)	-0.027*** (0.008)	-549.05*** (134.42)	-570.203*** (118.57)
N	15,310	14,925	15,249	15,143	13,319	12,645

Linear regression/probability models for 3.5-year outcomes according to Internship interacted with reasons for taking current job at 6 months

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
Internship	-0.043 (0.050)	0.019 (0.077)	-0.152** (0.070)	-0.058 (0.077)	-4606.596*** (1306.284)	-3449.851*** (1178.080)
'Fitted exactly'	0.040*** (0.005)	0.115*** (0.008)	0.064*** (0.007)	0.185*** (0.008)	3110.662*** (133.776)	2607.136*** (117.710)
'Fitted exactly' × Internship	0.049 (0.044)	-0.117* (0.069)	-0.148* (0.062)	-0.124* (0.067)	-726.289 (1156.545)	-1613.534 (1022.247)
Gain/broaden experience	-0.017*** (0.005)	-0.021** (0.008)	-0.025*** (0.007)	-0.037*** (0.008)	-561.729*** (133.958)	-581.793*** (118.065)
'Gain/broaden experience' × Internship	-0.019 (0.053)	-0.029 (0.081)	0.106 (0.073)	0.082 (0.081)	1643.758 (1377.287)	1058.904 (1240.329)
N	15310	14925	15249	15143	13319	12645

Notes: Additional controls are distance to London, domicile unemployment rate, high parental SES, private school attendance, gender, non-academic entry qualifications, first class or 2:1 degree, student has a disability, university mission group (Oxbridge, Golden Triangle, Russell Group, 1994 Group), ethnicity, year of graduation, 16 subject area dummies.

Table 14 shows the estimates obtained using the coarsened exact matching (CEM) procedure of Blackwell et al. (2009). Individuals are *exactly* matched into cells according to the 8 possible combinations of responses with respect to the following three key reasons for participating in their current job, then matched to their nearest neighbour within the cell according to the propensity score derived above:

- "It fitted into my career plan/it was exactly the type of work I wanted";

- "It was the best job offer I received/only job offer I received" and

- "To gain and broaden my experience in order to get the type of job I really want".

The detrimental effect of internship participation on being in work at all or in a professional job is estimated to be slightly larger, and on salaries and career satisfaction slightly smaller, though

Table 14: Average effect of Internship Treatment on the Treated. Counterfactual group: Those in paid work at 6 months. (Nearest neighbour propensity score matching estimates with exact matching on reasons for current labour market activity).

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
ATT	**-0.056**	**-0.109**	**-0.087**	**-0.019**	**-2643.96**	**-2857.65**
Standard error	(0.037)	(0.049)	(0.049)	(0.045)	(891.76)	(-755.40)
t-stat	*-1.532*	*-2.218*	*-1.763*	*-0.414*	*-2.965*	*-3.783*
n treated	214	214	214	214	214	214
n control	200	191	199	199	169	148
Common support region		[**0.0012289**			**0.1559813**]	

still statistically and economically significant, than without matching on reasons for current job.

5.4 SES differences in returns to unpaid internships

In Table 15 we show the results obtained when the propensity score matching estimator is implemented on the sub-samples of High SES and Low SES graduates (those with at least one parent in a professional or managerial occupation, and those without, respectively), and those who obtained their final pre-university qualifications at private schools and at state schools. With these definitions of socioeconomic status we capture individuals whose parents are more and less likely to have professional and social networks, and financial capital at their disposal to facilitate internship participation. The results in Table 15 are shown for matched samples of those in internships or paid work, internships or further study, or internships or something else 6 months after graduation. In Table 16 we present the results for internships versus paid work, with exact matching on the motivation for the initial labour market activity.

5.4.1 Without matching on labour market motivations

Considering internships versus paid work, the salary penalty (without controlling for initial labour market motivations) is remarkably similar in both the High versus Low SES and private versus state school comparisons. The penalty with respect to obtaining a permanent contract is similar for High and Low SES graduates, at around 13 percentage points, but much larger - 24 percentage points - for privately schooled graduates, who generally perform much better on this outcome regardless of internship status, and so for whom there is greater scope to be penalized. A similar pattern is seen with respect to obtaining a professional job, though none

Table 15: Average effect of Internship Treatment on the Treated. Heterogeneous effects. (Nearest neighbour propensity score matching estimates).

Internships versus paid work

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
High SES N=230/224	**-0.035**	**-0.084**	**-0.138**	**0.007**	**-2696.480**	**-2589.97**
(s.e.)	(0.033)	(0.046)	(0.045)	(0.044)	(855.166)	(703.962)
t-stat	*-1.059*	*-1.824*	*-3.087*	*0.170*	*3.153*	*-3.679*
Low SES N=164/154	**-0.091**	**-0.028**	**-0.122**	**-0.049**	**-3087.449**	**-3489.532**
(s.e.)	(0.041)	(0.049)	(0.053)	(0.051)	(1000.373)	(833.716)
t-stat	*-2.251*	*-0.567*	*-2.305*	*-0.969*	*-3.086*	*-4.186*
Private School N=82/80	**-0.012**	**-0.072**	**-0.244**	**-0.110**	**-2851.697**	**-2981.328**
(s.e.)	(0.058)	(0.079)	(0.074)	(0.077)	(1527.059)	(1086.329)
t-stat	*-0.212*	*-0.916*	*-3.293*	*-1.425*	*-1.867*	*-2.744*
State School N=331/323	**0.003**	**-0.002**	**-0.057**	**-0.072**	**-2909.880**	**-2807.145**
(s.e.)	(0.030)	(0.036)	(0.038)	(-0.037)	(699.780)	(583.082)
t-stat	*0.100*	*-0.062*	*-1.497*	*-1.969*	*-4.158*	*-4.814*

Internships versus Further Study

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
High SES N=214/201	**0.093**	**-0.111**	**0.003**	**-0.079**	**-1488.808**	**-2223.156**
(s.e.)	(0.039)	(0.049)	(0.049)	(0.048)	(907.300)	(719.410)
t-stat	*2.382*	*-2.259*	*0.669*	*-1.657*	*-1.641*	*-3.090*
Low SES N=144/129	**0.014**	**-0.218**	**0.014**	**-0.006**	**-4033.866**	**-4333.814**
(s.e.)	(0.049)	(0.061)	(0.063)	(0.059)	(1122.603)	(968.447)
t-stat	*0.281*	*-3.569*	*0.221*	*-0.101*	*-3.593*	*-4.475*
Private School N=73/70	**0.096**	**0.009**	**0.021**	**0.027**	**-489.955**	**-1388.367**
(s.e.)	(0.066)	(0.083)	(0.085)	(0.080)	(1506.551)	(1058.286)
t-stat	*1.444*	*0.109*	*0.241*	*0.343*	*-0.325*	*-1.312*
State School N=303/227	**0.106**	**-0.185**	**0.111**	**-0.119**	**-3110.549**	**-2981.001**
(s.e.)	(0.036)	(0.042)	(0.043)	(0.041)	(802.021)	(673.801)
t-stat	*2.942*	*-4.417*	*2.604*	*-2.904*	*-3.878*	*-4.424*

Internships versus Something Else

	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
High SES N=230/212	**0.039**	**0.013**	**-0.041**	**0.047**	**-49.938**	**-365.071**
(s.e.)	(0.038)	(0.046)	(0.048)	(0.044)	(881.687)	(701.716)
t-stat	*1.042*	*0.291*	*-0.855*	*1.052*	*-0.057*	*0.520*
Low SES N=164/137	**0.024**	**-0.023**	**-0.035**	**-0.017**	**-842.141**	**-974.422**
(s.e.)	(0.050)	(0.052)	(0.059)	(0.053)	(1121.636)	(953.717)
t-stat	*0.490*	*-0.447*	*-0.594*	*-0.316*	*-0.751*	*-1.022*
Private School N=82/70	**0.000**	**-0.071**	**-0.037**	**0.067**	**1410.245**	**-944.435**
(s.e.)	(0.066)	(0.084)	(0.085)	(0.077)	(1649.204)	(1310.341)
t-stat	*0.000*	*-0.841*	*-0.430*	*0.868*	*0.855*	*0.721*
State School N=331/301	**-0.024**	**-0.040**	**-0.038**	**0.045**	**34.633**	**34.342**
(s.e.)	(0.031)	(0.038)	(0.040)	(0.036)	(735.392)	(599.163)
t-stat	*-0.792*	*-1.050*	*-0.970*	*1.266*	*0.047*	*0.058*

Notes: Sample N shown for treated (internship) then control (comparator).

of the treatment effects are statistically significant.

Moving on to the comparison between those in internships and further study, the salary penalty is bigger for low-SES and state school graduates. The penalty for getting a professional job is also much bigger for low SES/state-schooled (essentially zero for highest-SES of all: privately schooled). The foothold into paid work is quite effective for everyone except the low SES group (who are 'lower SES' than state schooled students, whose opportunities hold up well). Finally,

Table 16: Average effect of Internship Treatment on the Treated. Heterogeneous effects. (Nearest neighbour propensity score matching estimates with exact matching on motivations for initial labour market position).

Internships versus paid work with exact matching						
	In Work	In a professional job	Has a permanent contract	Very satisfied with career	Salary (raw) (£)	Salary (deflated) (£)
High SES N=127/117	**0.000**	**-0.008**	**-0.109**	**0.018**	**-1244.572**	**-1837.547**
(s.e.)	(0.048)	(0.065)	(0.063)	(0.061)	(1131.672)	(916.395)
t-stat	0.000	-0.124	-1.741	0.301	-1.100	-2.005
Low SES N=75/74	**-0.080**	**-0.058**	**-0.187**	**-0.003**	**-4729.90**	**-4298.556**
(s.e.)	(0.058)	(0.075)	(0.078)	(0.067)	(1468.305)	(1262.943)
t-stat	-1.374	0.779	-2.393	-0.040	-3.221	-3.404
Private School N=39/37	**-0.051**	**0.040**	**0.000**	**0.026**	**-58.727**	**-1694.100**
(s.e.)	(0.082)	(0.118)	(0.116)	(0.110)	(2077.086)	(1656.847)
t-stat	-0.628	0.343	0.000	0.233	-0.028	-1.022
State School N=173/186	**-0.023**	**-0.153**	**-0.097**	**-0.006**	**-2859.064**	**-2908.965**
(s.e.)	(0.042)	(0.053)	(0.053)	(0.048)	(958.874)	(821.132)
t-stat	-0.552	-2.883	-1.825	-0.120	-2.982	-3.543

Notes: Sample N shown for treated (internship) then control (comparator).

neither the treatment effects for obtaining and internship versus going 'Something Else', nor the differences between high and low SES or state and privately schooled students are statistically significant.

5.4.2 With matching on labour market motivations

In Table 16, in which graduates in internships and in paid work after 6 months are exactly matched on their motivations for their activity (with respect to "It fitted into my career plan/it was exactly the type of work I wanted"; "It was the best job offer I received/only job offer I received" and "To gain and broaden my experience in order to get the type of job I really want"), the results are strikingly different to the first panel of Table 15.

The salary penalty is markedly smaller for High SES (less than £2000) or privately schooled graduates (indistinguishable from zero in the case without regional adjustment) than Low SES (more than £4000) or state schooled (more than £2800) graduates. Similarly conclusions can be drawn with respect to obtaining a professional job or a permanent contract.

In the former case, there is no evidence that High SES or privately schooled graduates experience any penalty at all (and although not a statistically significant finding, privately schooled graduates who take an internship are 4 percentage points more likely to obtain a professional job three years later). Meanwhile, low SES pupils who took an internships are 6 percentage points less likely (again not statistically significant from zero) and state schooled pupils 15 percentage points less likely to obtain a professional job than those who went straight into paid work.

In the latter case, privately schooled pupils experience no penalty at all, compared with a 10 percentage point setback for state schooled graduates.. While High SES graduates do experience a marginally significant but quantitatively important 11 percentage point penalty in obtaining a permanent contract, this is much smaller than the 19 percentage point gap for Low SES graduates. None of the coefficients with respect to obtaining paid work at all, or to career satisfaction, are statistically significant.

Our interpretation of these findings is that where High SES or privately schooled graduates are taking internships for a relatively speculative reason, to gain or broaden their experience (which they are slightly more likely to, and this predicts a less positive labour market return), their social and family support network and connections either enable them to capitalize on what they have learned in the industry they have joined, or to revert to a less ambitious career path where they nevertheless enjoy strong wage growth or career development. Where they take an internship because it fitted their career plan (which again they are slightly more likely to, but this predicts a more positive labour market return), their career plans are more ambitious in that "exactly what they want" entails a higher salary than for lower SES graduates.

6 Conclusions

This work has demonstrated both significant positive and significant selection into unpaid graduate internships, according to different dimensions of individual characteristics. Those from socially privileged backgrounds or graduating with high degree classes or from elite institutions are more likely to select into these positions, but so are several disadvantaged groups including those from ethnic minority groups, with disabilities, or who entered university via a vocational track. This suggests that unpaid graduate internships are segmented into 'desirable' positions, high-up in individuals' preference orderings but competitive to access; and less desirable or potentially exploitative positions, taken either to gain necessary experience or learn about an industry or because no other positions were available.

We then presented estimates for the effect of being an internship 6 months after graduation on several measures of job quality 3.5 years after graduation.

We first presented matching estimates for the Average Treatment effect on the Treatment (ATT), with these estimates implicitly capturing the effect on an individual being randomly

assigned to take an unpaid internship rather than going into paid work, into further study, or something else altogether, respectively. We showed that that interns experienced a significant subsequent salary penalty relative to both paid work (approximately £3500) and further study (approximately £1500). Former interns also faced significant penalties in relation to permanency of employment (relative to those in paid work), and obtaining a professional position and high career satisfaction (relative to those in further study). In contrast, those who take unpaid positions arrive at a very similar objective labour market situation 3 years later to those who were initially unemployed or out of the labour force, but with better career satisfaction.

We then matched on individuals' motivations for their initial labour market activity. The treatment effect identified here is that for a person choosing an internship over initial paid work as their perceived best way for them to achieve the same objective from their initial labour market match. We demonstrate that although the salary penalty become smaller (approximately £2700), it is still quantitatively large and statitically significant, as are the penalties in terms of entering a professional job or attaining a permanent contract. The reason people enter their initial position is strongly associated with subsequent labour market performance in its own right. Those taking a position to gain or broaden their experience significantly worse outcomes by all our measures. The distinction is particularly strong compared with those taking a position because it exactly fitted their career plan, but those taking the best or only available offer also have strong outcomes by the objective measures (their career satisfaction is marginally worse). However, among those taking an internship, it 'fitting exactly' with career plans *increases* the internship penalty for all outcomes except being in work at all (and this effect is insignificant for salaries), with tentative evidence for taking an internship to gain or broaden experience mitigating the penalty, with respect to permanancy, satisfaction and salary.

Finally, we compared the returns to unpaid graduate internships for groups distinguished by socio-economic status and private school attendance. We find that, particularly having matched on individuals' motivations for their initial labour market activity, the internship penalty is significantly mitigated for graduates with parents in professional occupations or who attended private school. This suggests that their social and financial capital gives an advantage in accessing 'good' internships, a segregated market over exploitative positions, and in capitalizing on this experience. Enforcement of the law banning unpaid internships may slow the resulting widening of the socio-economic gap in returns to Higher Education and limiting of intergener-

ational social mobility. Overall, however, our results argue more for improving access to and reducing the opportunity cost for low SES students of taking relevant experience for ambitious careers *during* undergraduate degrees, and improving provision of information to students and early graduates about the likelihood of different outcomes from internships in key fields.

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