Wage Expectations of UK Students:
How Do They Vary and Are They Realistic?

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Abstract

The wage expectations of university students have relevance for human capital theory, models of student enrolment, and public policy on provision of higher education. But these expectations have been the subject of relatively little research in industrialised countries. The paper investigates students' expectations with UK survey data that are superior to those used in several existing studies in various ways, including their coverage of a representative sample of universities and the rich nature of the information on socio-economic background. The analysis first shows how wage expectations and belief in employment prospects vary with time remaining at university, quality of the university and family background. The paper then compares expectations with the actual wages earned by the same cohort on graduation, using data that are drawn from an attempted census of all graduates. This provides a more reliable basis for assessing the realism in students' expectations than in several existing studies. Results support the hypothesis that full-time students overestimate their starting salary, bringing a fundamental assumption of human capital theory into doubt.

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"The contempt of risk and the presumptuous hope of success are in no period of life more active than at the age at which young people choose their professions."

Adam Smith, The Wealth of Nations (1776), Page 109

1. Introduction

The returns to education have been widely explored in England and Wales. Some recent studies suggest students in particular subjects receive a very poor financial return to their investment in university education (Vignoles 2007). The fact students still decide to enter university and take these courses is often explained by the value of non financial benefits to those individuals, such as the joy of learning and experiencing independence. However, an often overlooked possibility is that students do not have rational expectations, as noted by Adam Smith in the quote above. This paper investigates the variations in students' expectations and whether these expectations are in line with wages in the graduate labour market. Discussion follows on the provision of higher education across Europe, with topics including student debt, fees and widening access schemes. The UK is used as an example, with specific reference to the government's objective of getting 50% of school leavers to experience higher education. The importance of the research to human capital theory is also discussed, and how this may affect academic models of school enrolment.

This topic has a small literature within America and Continental Europe, although no recent academic research on students' wage expectations has been conducted within the UK. These existing European studies tend to rely on convenience samples drawn from a limited number of institutions and subjects. The first part of this paper addresses this issue by using a representative sample drawn from the Department for Education and Skills Student Income and Expenditure Survey to estimate a model of student wage expectations. I test the hypothesis that students near the beginning of their course expect significantly higher wages than those about to graduate, and investigate the impact of several characteristics relating to students and their institutions. The conclusion reached is that the seniority of the student and characteristics such as wealth and ethnicity have a significant influence on wage expectations.

The second part of the paper tries to identify how "realistic" students are. Existing European studies tend to use unrepresentative samples when comparing students' wage expectations to the average earnings of graduates. This hinders the existing studies assessment of how realistic students are. In comparison, this study compares a representative sample of students' wage expectations with the average realisations of groups from the same cohort, drawn from an attempted census of all graduates, providing a better basis for comparison. Results suggest that full-time students overestimate future wages, though this varies with the subject being studied.

The paper begins by reviewing the current literature and describing the available datasets. Exploratory statistics follow in section 4, with the model for UK students' wage expectations in section 5. Results are then discussed in relation to the seniority of the student and various background characteristics. The final two sections compare students' expectations with actual graduate wages, before a discussion of what the findings imply for academic models of school enrolment and higher education policy across Europe.

2. Current Literature and Research Questions

There have been a small number of studies investigating students' wage expectations across America and Continental Europe. A common theme is that students who are further through their course have lower wage expectations than those at the beginning, reflecting better knowledge of their own ability and chances in the graduate labour market. Betts (1996) finds that students do not gather information until a late stage. He therefore concludes that students near the beginning of their course have reasonably poor labour market knowledge. Brunello et al (2001) show a similar pattern in their cross European study; students further through their course tend to not only expect lower wages, but are also less optimistic about their employment prospects. This begs the question, will the difference in wage expectations, based on the seniority of the student, remain once views of employability have been controlled for? Indeed will the same pattern be observed within the UK at all, using a natioanally representative sample of all students?

Another area of the literature focuses on how wage expectations differ based on the prestige of the university. Smith and Powell (1990) took samples from two universities in America that differed in terms of prestige. Students at the elite university were found to have higher wage expectations, conditional on their pre-university high school rank. However, Brunello (2001) looked at the expected *wage gain*[1] in relation to university status, and found that only tighter admission criteria had a significant impact on expectations. Within the UK the number of universities has grown dramatically since government expansion of the higher education sector in 1992, creating a large variation in terms of standards and prestige. This provides an ideal setting to try and identify the affect of university quality from a large number of institutions across one country.

Significant investigation has also been conducted into how socio-economic differences affect students' wage expectations. Parents are assumed to be one of the most important sources of students' labour market knowledge, with expectations based around what they earn. Webbink and Hartog (2000) found students from high income families expect significantly more than those from poorer backgrounds, but that they are also more likely to overestimate their future wage. Smith and Powell (1990) also found this positive association between parents' income and students' wage expectations. One piece of work conducted in the UK by Williams and Gordon (1981)[2] looked at the impact of socio-economic variables on the wage expectations of students at the end of compulsory education. However they found that socio-economic status had little direct influence on students' expected lifetime gain from going to university. Other variables typically investigated include gender, age and the education and occupation of parents. However less attention has been paid to variables such as ethnic group and if the student moves out of the family home. More research, covering a wider array of variables, is required to understand the impact of socio-economic characteristics on wage expectations. For instance, do ethnic minorities anticipate some form of discrimination in the labour market and therefore

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[1] Expected salary with a degree minus expected salary without a degree.
[2] Two known UK studies have been conducted, one by Williams and Gordon (1981) and the second by Bosworth and Ford (1985). Also Brunello et al contained some information from the University of Sterling and University of Essex, though the sample sizes were small.

lower their wage expectations? Or do students who live away from home expect higher wages, as they are more likely to move to get a job?

One possible explanation as to why variation in wage expectations occurs between these groups is that students are simply reflecting their different labour market opportunities. However, Wolter (2002) shows that students tend to overestimate their wage with a degree. Smith and Powell (1990) suggest students are well informed about average wages, but tend to overestimate their own returns. In the absence of longitudinal data, these studies compare expectations with realisations of students from an earlier cohort. However the one known European study that used longitudinal data, by Webbink and Hartog (2000), found a similar result; that students overestimate their future wage by around 10%.

A difficulty encountered in most of these studies is that they compare a highly selective convenience sample of students' expectations with another selective survey on graduate wages. The two populations covered in each survey are likely to differ, making comparability difficult. Even Webbink and Hartog (2000) advise caution generalising results in their longitudinal survey, due to the highly selective nature of follow-up. This paper addresses this issue by comparing a survey and an attempted census of students that cover largely comparable populations, to assess how realistic UK students are in their expectations

This research also has substantial policy implications. Higher education is expanding across almost all European countries. For example the UK government is aiming to get 50% of school leavers to enter university, with several schemes in place to encourage young adults to continue their education. However are these schemes simply reinforcing students' unrealistic expectations? Young people may be entering university based on unrealistically high expectations of their prospects on graduation. This may be further exacerbated by government policy that encourages young people to go to university, highlighting the magnitude of possibilities the student will have on graduation, that never actually materialise. A further possibility is that students are willing to take on high levels of debt because they believe their future wages will enable repayment of their student loans. Gustman and Stafford (1972) show that the higher the income expectations of students, the more they consume. However if their expectations are unrealistic, students may over consume during university, leading to difficulties and debt in later life. Therefore this research also adds to the debate on how to finance higher education across Europe, paying particular attention to the provision of student loans and debt.

On the basis of the international literature and current policy interest across Europe, the research questions to be explored in this paper are as follows:

1. Do students who are further from graduation have greater wage and employment expectations?

2. Do students at elite universities have significantly higher wage expectations than those at less prestigious institutions?

3. Do "modern" students have lower wage expectations than those from a more "traditional" university background?

4. Do students have realistic expectations? Do students who are studying a subject directly leading to a career have "more realistic" wage expectations?

This provides the only known study in Europe using a representative sample of all university students from a wide number of institutions. The first question follows much of the existing research, but extends the analysis to show how students' views of their employment prospects influence their wage expectations. The second question has been less widely covered, due to the reliance on convenience samples taken from a small number of institutions. The definition of 'elite' in this work is whether the institution belongs to the 'Russell Group'; a self-selected alliance of the top 20 research-intensive universities[3]. A group of variables relating to students' backgrounds are to be investigated in the third question, splitting individuals into two groups, "traditional" and "modern". A "traditional" student can be thought to have come from a background that has traditionally had good access to university education, for instance wealthy, white students from private schools, who are disproportionately represented at the elite Russell Group institutions. In contrast, "modern" students can be thought of as those who have been targeted in the government's widening access policies. This includes those from low-income or ethnic minority backgrounds. The last research question investigates if students are realistic; the first such study conducted in the UK. In the absence of longitudinal data, students' estimates of their starting salary are compared to the actual wages earned by the same cohort of university graduates.

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[3] For further details see http://www.russellgroup.ac.uk/

3. Data on Wage Expectations

One reason why more research has not been done in this area is the lack of available data. One possible source is the Association of Graduate Recruiters Graduate Career Survey. However this study only targets the "top 30" UK universities[4], and therefore does not cover the whole UK student population, leading to an unrepresentative sample. Several methodological problems also exist with the sampling strategy used and reliability of responses. The 2004/5 Student Income and Expenditure Survey (SIES) is an alternative source. This survey was carried out using face-to face interviews between January and March 2005 by the Institute of Employment Studies and the National Centre for Social Research on behalf of the Department for Education of Skills.

The purpose of the study was to generate a representative sample of all higher education students in England and Wales, in order to investigate income and expenditure patterns. One strength of using this dataset is that it contains detailed information on a number of potential explanatory variables. Information is provided on the students' current year of study and the length of their course, providing valuable information regarding the first research question. The number of universities included in the survey provides a large sample of students from both Russell Group and less prestigious institutions. Unfortunately some other important information is missing; in particular there is no indicator of student ability. Therefore the variable relating to the prestige of an institution will also proxy student ability. The data also contains detailed information about students' background, including ethnicity, social class and previous schooling. These are all good indicators of whether the student would have traditionally had good access to university. Other controls such as gender and whether the student is classed as 'dependant'[5], meaning they are in full-time education and had their parents' income taken into consideration when applying for student support, are included. For 'dependant' students, there is also an approximate measure of family income, though it can only be taken as a proxy due to the way this data has been collected and recorded (further details are given in appendix 2).

To achieve a representative sample of students, a complex sample design was used. Universities were sampled using a probability design based on the size of the institution. There was also stratification by region and whether it was a "pre 1992" or "post 1992" university.[6] A sample of 80 universities, from a population of 132, was drawn, with probability proportional to size. In total, 69 universities agreed to take part. All these universities were included in the final sample, with the intention of contacting 240 randomly selected students from each institution. Separate samples of full-time and part-time students were drawn, with special previsions made for those institutions with medical schools.[7] 25 Further Education Colleges (other degree awarding institutions) were also approached, with 19 taking part. From these institutions, 60 students were randomly selected. Across all institutions, a total of

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[4] A "top 30" university in this case is defined by the Association of Graduate Recruiters. The majority of universities included in the survey are Russell Group institutions, known for their excellence in research.

[5] Full details are given in appendix 1 about the survey definition of this variable.

[6] A "post 1992" university is an institution that achieved university status in 1992 or later. This date marks a major change in the UK higher education sector, when several polytechnic institutions were given degree awarding powers. This increased the number of students at universities dramatically.

[7] Further details can be found in the 2004/2005 SIES technical report.

16,524 students were selected to take part. These students were each mailed an initial "opt-in" questionnaire, where they were asked to provide some basic information and whether they consented to be contacted to take part in the research. 7,548 (45%) opt-in questionnaires were returned, with 5,810 (35%) giving their consent to take part. In total 4,570 names were issued with 3,548 interviews achieved.[8] For the purpose of this study, students who did not report their expected starting salary, along with those studying at further education colleges, were dropped. A further 79 observations were dropped from the dataset, where the expected starting salary was below £8,000.[9] The final dataset contains 3,094 observations, with the sample selection rules presented in table 1.

TABLE 1

The level and pattern of non-response obviously has implications for the generalisability of results. Those that take part in the survey could be systematically different to those who opt out. To address this, observations were weighted to correct for the probability of a student being selected and responding.[10] A second stage of weighting was also conducted to ensure the sex and age profile of students matched that of Higher Education Statistics Authority records. An important implication for the research is whether the sample drawn accurately reflects the wider student population. The SIES 2004/2005 report states,

"As can be seen, this was an ambitious methodology but one which succeeded in producing the objective of a nationally representative student sample for interviews." (P 10)

It does indeed appear that every attempt has been made to investigate and correct for any bias in the sample, though it should be noted that the use of sample weights can only correct estimates in terms of observable characteristics. In comparison to most of the studies on wage expectations discussed in section 2, the SIES data is much more likely to be representative of a wide student population and therefore provides a much better source for analysis.

Another critical part of the survey is how students report their wage expectations. They were each asked the following question:

"What sort of salary do you expect to be earning in the first job you take once you have graduated?"
Interviewer comments: If not sure of the exact amount, please give your best estimate.

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[8] Another institution that mainly involves part-time distance learning, The Open University, was in the original dataset but was dropped as these students did not give details on their wage expectations.
[9] Many (60) of these values were below £3000, and deemed illogical.
[10] Weights were calculated as the *inverse* of the probability of being both selected and responding to the survey, and were the product of five conditional probabilities. The loss of effective sample size due to weighting was only moderate for full-time students (where the effective sample size was 88 per cent of the actual sample size) but relatively high for part-time students (where the corresponding proportion was 62 per cent). Further details are provided on non-response and weighting in the 2004-2005 Student Income and Expenditure technical report.

Students are clearly asked for their *expected* salary, to be recorded in an open text field, allowing students to give precise estimates. This is interpreted as students giving the mean of all possible outcomes they face. In other words, students are providing the arithmetic mean for the entire distribution of all possible outcomes. A further issue is that the question asks students about the first job they take after university. Students are not asked explicitly whether they expect this to be full-time or part-time work, or if this will be temporary while they look for a job directly related to their career aspirations. Nether-the-less it seems reasonable to assume they are reporting figures for their first full-time job after university.

When interpreting the data it is also assumed that students are providing a gross, yearly figure. [11] Although ideally this would be made explicit in the question, it seems reasonable to assume students would report figures in this way, as it is the standard method of advertising salaries in the UK. Assumptions must also be made about how students deal with inflation when forming their wage expectations. The most common assumption is that students do not consider inflation, thus reporting in 2005 wages, as discussed in Manski (1993). This is the approach also taken in this paper.

To investigate the first three research questions posed, a statistical model of wage expectations using the following specification will be developed:

$$Log(W_i) = \alpha + \boldsymbol{\beta}\mathbf{X}_i + \psi P_i + \mathbf{\Upsilon}U_j + \boldsymbol{\Gamma}\mathbf{T}_i + \lambda\mathbf{V}_i + \xi_i$$

With   W= Student's expected wage
        X=Matrix of background characteristics (e.g. gender)
        P=Proximity to graduation
        U=University Type
        T=Matrix of variables relating to access to university education
        V= Student's view on their employability
        ξ = error
        i= for individual i
        j= for university j

The error term is assumed to be normally distributed and will contain, amongst other things, information relating to missing variables such as ability. All effects of clustering and stratification on the standard errors will also be accounted for.

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[11] The sample selection procedures restrict estimates to salaries above £8,000, to try and exclude those reporting non-annual figures, and those in part-time jobs but with few hours. Sensitivity to this assumption was also investigated by restricting salary estimates to those above £10,000, with little change in the results and conclusions reached.

4. Exploratory Statistics

Initial analysis provides some interesting insights into the structure of the data. Figure 1 shows the distribution of log expected wages is broadly symmetric. However spikes occur at certain points in the data, shown in table 2. Students seem to round their estimates to at least the nearest thousand. Large spikes are especially prelevant at multiples of £5,000 (for instance £15,000, £20,000 and £25,000), with other instances at £12,000 and £18,000 (equivalent to a salary of £1,000 and £1,500 per month). Brunello at al (2001) report bunching of responses in their European study, although they go on to say that there is no evidence to suggest students do not take care when completing the questionnaire. This paper goes a stage further and indicates that the results and conclusions reached see little change when trying to account for this bunching. A description of the techniques used can be found in appendix 3.

Table 2

Figure 1. Distribution of log expected starting wage
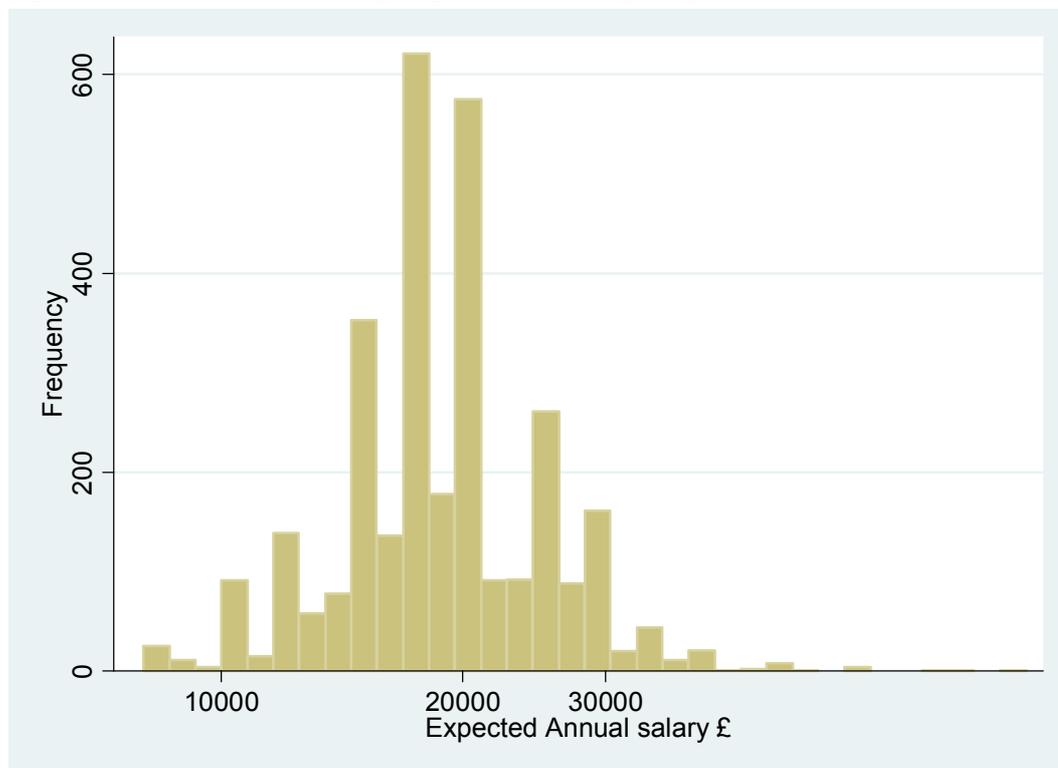
Some summary statistics are provided in table 3. Exploratory analysis suggests there is a monotonic trend regarding how close the student is to graduation; the further away the student is from finishing university the higher their wage expectations. Since this variable is likely to be orthogonal to other characteristics, this provides a reasonably good initial insight into the first research question.

The second research question focuses on how wage expectations vary between students at universities of differing prestige. For this research, universities have been placed into one of three categories; the elite Russell Group, "Other Pre-1992", and "Post 1992"[12]. Students at Russell Group universities tend to have higher salary expectations than both the other groups. However this is likely to reflect a variety of factors, including the different subjects being studied.

There is also an indication that students of the type who have traditionally had good access to university expect higher wages. A strong wealth effect can be seen, illustrated by the level of parents' income and the type of school the student attended prior to university. One interesting point however is that White students appear to expect less than Black and Asian Students, contradicting the hypothesis posed.

Table 3

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[12] "Post 1992" universities gained their university status in or after 1992. "Other Pre 1992" institutions, had university status before 1992 but are not member of the Russell Group. These universities generally take high standard students but do not have the research standing of the Russell Group. Further details can be found in section 6.

5. Results-Proximity to Graduation

A number of existing studies have found junior students to be more optimistic than those nearing graduation. Betts (1996) concluded that students lowered their expectations due to "learning effects", where individuals discover more about their ability and the labour market as they move through tertiary education. Brunello et al (2001) found similar results in their cross European study, identifying senior students to be less optimistic about wage levels and employment prospects.

The initial research question follows these studies and asks if students further from the labour market are more positive about their employment prospects and have higher wage expectations. This is then extended by investigating whether wage expectations still differ after controlling for students' views on their post graduation prospects.

Full results are provided in Table 4, containing two specifications of the model set out in section 3. The first specification follows the traditional approach in the literature and does not contain students' views of their employability after university (**V**) as explanatory variables. These are then included in the second specification. Extracts are also provided throughout the section to show the percentage difference between particular groups and the baseline category.

Table 4a and 4b[13]

Initial results, using the first specification, support the existing studies. Students one year away from graduation expect around 3.3% more on average than final year students, while those 2 or more years away expect around 7% more.

Variable	% Difference in comparison to baseline using specification 1	% Standard Error
Proximity to Graduation (Ref: Final Year)		
1 Year	3.3*	1.2
2 or More Years	7.1*	1.5

An interesting extension is whether students who are further from the labour market also hold more positive views on their employability after university. Two variables within the SIES shed some light on this issue. Firstly, respondents were asked whether it will be hard for them to get a graduate job. In particular, students were asked to what extent they agree or disagree with the statement:

'The growing number of graduates will make it hard to get a graduate job'

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[13] Results have been split into two tables. Table 4a contains variables directly relating to the research questions posed, while 4b contains the other control variables.

Secondly, students were asked about their post university plans, including whether they have considered taking a temporary job[14]. These two questions provide a reasonably good indication of student views on their employability. Tables 5 and 6 contain cross-tabulations between these variables and how close the student is to graduation.[15]

Table 5

Table 6

Both sets of results indicate final year students generally hold more negative views. Under 5% of students who are two or more years away form graduation considered taking a temporary job after university, compared to over 15% of final years. This could be interpreted in several ways. It is suggested that final year students are less positive about their labour market prospects. However an alternative explanation could be that these students are looking to delay the coming of the "real world". Investigation of table 5 however shows that a high proportion of final year students, compared to those one or two years away, agree or strongly agree that the growing number of students will make it hard to get a graduate job. The combined evidence does indeed suggest *final year* students are *less optimistic* about the graduate labour market. This may be due to the fact that final year students probably know more about their expected grade, and link this to their employability. Alternatively, given the survey is conducted between January and March, they may well have already started their hunt for a graduate job, and have thus far been unsuccessful.

A question that instantly comes to mind is whether students at the start of their course, after controlling for their more optimistic outlook on employment, still expect a higher starting wage than those in their final year? The two additional variables, analysed in the cross-tabulations, were included into the regression model in the second specification.

Variable	% Difference in comparison to baseline using specification 2	% Standard Error
Proximity to Graduation (Ref: Final Year)		
1 Year	1.6	1.2
2 or More Years	3.6*	1.5

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[14] Students were asked if they planned to get a job related to their future career, a temporary job, continue studying or go travelling. They could identify more than one option; therefore this gives a rough indication of students' future plans.

[15] Logistic and ordinal regression was also used to investigate how various variables affect the responses to these two questions. However, cross-tabulations have been presented rather than the results from these models for ease of interpretation, with little evidence lost in relation to the research question posed.

The impact of being further from graduation on wage expectations has been significantly reduced. The coefficient for students a year away from graduation stands at 1.6%, and is not statistically significant. Previously students two years or more away from graduation expected a 7% premium compared to final years. This almost halves to 3.6% when their future plans and opinions about the graduate labour market are taken into consideration.[16]

This pattern could represent either a cohort or age effect. Given that other research offers similar results, it seems reasonable to suggest this represents a changing of students' views as they progress through university, rather than a difference between these particular groups. At first, it seems there is a large difference in wage expectations between year groups. However students appear to change their views of the labour market in at least two aspects, namely their employability and the wages on offer. Once views of employability have been controlled for, the difference in wage expectations appears to be reasonably small.

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[16] Further investigation showed this variable was reasonably sensitive to the sample selection rule used. For example, if £10,000 is used as the minimum expected salary, the coefficient is further reduced to the area of insignificance.

6. Results - University Prestige and Socio-Economic Characteristics

A lot of attention has been paid in the UK to encouraging "non-traditional" groups to go to university. Students from ethnic minority and low income backgrounds have been specifically targeted in an attempt to raise tertiary education attainment rates among these groups. These are considered to be "modern" students who would traditionally not have had such good access to university. In contrast, a "traditional" university student can be thought of as from a white, reasonably well-off, family who is living away from home for the first time. There is also a distinction between universities. The Russell Group has a higher proportion of "traditional" students than post 1992 institutions for example.

The research will focus on five variables in particular:

- Prestige of the university
- Parents' income.
- School type attended before university (private or state)
- Ethnicity
- Whether the student lives away from home.

The first variable focuses on the prestige of the university. Students at a Russell Group university are expected to have significantly higher expectations than those at other pre 1992 and post 1992 institutions. The next two of these factors indicate wealth. A positive association is expected, as students observe their parents' relative position in the income distribution and expect similar success. Students from ethnic minority backgrounds are hypothesised to expect less than their white peers as they will anticipate some form of discrimination in the labour market. Living away may provide an indication of willingness to move in the future for jobs, which is likely to enhance their opportunities and thus their expected wage. Results from modelling wage expectations will be discussed in relation to individual factors, then illustrated with respect to a hypothetical student.

i. University prestige

Students at older, more prestigious universities are expected to have higher wage expectations. This is thought to reflect students expecting a labour market premium for going to a "well-known" university. However this variable is also likely to reflect student ability, as no separate control is available within the SIES.

Universities have been split into three groups. Students' university entry score (known as UCAS score in the UK) reflects performance in public exams that are typically taken at age 18. This varies greatly between the three university groups. Students at Russell Group universities enter with an average UCAS score of 400, compared to 329 for other pre 1992, and 237 for post 1992, institutions. [17]

The results indicate that students at pre-1992, non Russell Group universities expect almost identical wages to those at post 1992 institutions. This is despite the fact that the former tend to admit higher ability students and generally have a better reputation within the UK higher education sector. However students at Russell Group universities tend to expect significantly more than both the other groups.

Variable	% Difference in comparison to baseline	% Standard Error
University Type (Ref: Post 1992)		
Other Pre 1992	0.0	1.6
Russell Group	7.0*	1.6

Further research is needed to investigate the impact of going to a prestigious institution, with a control for pre university ability. Conlon and Chevalier (2003) found that the actual premium of going to a Russell Group university, after controlling for ability using propensity score matching, is 2.5% for women and 0% to 6% for men. They use this as an argument for allowing these institutions to charge higher fees. However only if students *expect* a premium will they ultimately be willing to pay more to go to these institutions. A suitable measure for pre university ability is required to resolve this issue and provide an important addition to the work of Conlon and Chevalier.

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[17] Entry scores were calculated from 2005 HESA student record data.

ii. Parental Income. [18]

The hypothesis presented suggests that students from wealthier backgrounds will expect a higher starting wage.

Variable	% Difference in comparison to baseline	% Standard Error
Parents Income (Ref: Under £20,000)		
£20,001-£40,000	3.7*	1.8
Over £40,001	6.7*	2.2
Missing Data	8.7*	2.7

The results support the hypothesis that students from richer backgrounds have higher wage expectations. All groups presented expect significantly more than those with parents earning below £20,000. There is also a monotonic trend; the higher the income group, the greater the wage expectation. A logistic regression, not presented, was also carried out to investigate if certain groups are more likely to not report a figure for parents' income.[19] The results of the logistic regression suggested that students who have parents generating most of their income from pensions or investments are less likely to report a figure. To the extent that this exhibits wealth, for instance early retirement or being able to live off investments without working, the result fits quite well with the observed pattern; the better off the students' parents, the higher their wage expectations.

When forming their wage expectations, students may well observe their parents' income and use this as a benchmark for their future salary. It could be that students from a rich background expect this high salary in order to maintain a high standard of living, or to occupy a similar position in the income distribution to their parents. Alternatively, students may think their parents have connections in the labour market that will help secure them a lucrative job. However one other possibility is that this variable is reflecting unobserved factors, such as parents' influence on intelligence and work ethic, which are also correlated with wage expectations.

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[18] It should be remembered that when interpreting the results for parents' income, the measure can only be considered as a proxy, with further details in appendix 2. Also data is only available for students classed as "Dependant" (59% of the total).

[19] Out of the 1838 dependant students, 164 (9%) did not report an income figure.

iii. School Type

The type of school a student attends before university can be thought of as an additional indicator of wealth. A large proportion of students at independent schools come from rich families, as indicated in table 7. [20]

Table 7

An interaction between school type and whether the individual is a dependant student was discovered in the model selection process. It appears that going to a private school for a dependant student increases their wage expectations, whereas there is a relatively small decrease for independent students. This result does however lie on the boundary of statistical significance.

Variable	% Difference in comparison to baseline	% Standard Error
Dependant Status (Ref: Dependant)		
Independent	6.4*	2.3
School Type (Ref: State)		
Private School	4.2*	2.1
*Private School*Independent Student*	-6.3*	3.0

This may reflect the same effect described for parents' income. Students who went to private school are likely to have friends from wealthy families, observe their success in the labour market and thus increase their own expectations. Furthermore it could be that students realise that they have good contacts from going to private school, which could give them a labour market advantage. When considered along with family income described previously, there is obviously quite a significant difference in labour market expectations based on wealth.

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[20] Data on parents' income is only available for dependant students, hence reduced sample sizes.

iv. Living Away from Home[21]

Traditionally university was a time when students moved out from the family home. However it is becoming increasingly common for students to live with their parents[22] to reduce the financial burden of studying. Do these students differ in their wage expectations?

Variable	% Difference in comparison to baseline	% Standard Error
Living Arrangement (Ref: Parental Home)		
Living Away from Home	7.3*	2.1
Gender (Ref: Male)		
Female	0.9	2.7
Living Away from Home * Female	-6.4*	2.8

The analysis provides a very interesting result. Women who live away and those who stay at home appear to be homogeneous in relation to their wage expectations. Men, on the other hand, appear to vary dramatically in their views. Those that live away expect on average a wage around 7% higher than those who have stayed at home. It may be the case that students decide to live away from home because they expect a higher wage, and thus believe they will have the means to pay back a larger amount of debt. Alternatively, as shown by DaVanzo (1976,1983), previous migration is one of the most important covariates in predicting future migration. One would expect those who have moved away to university to be more likely to move in the graduate labour market, therefore having a better range of opportunities. Nethertheless, it is difficult to explain the difference between men and women. One possibility is that men may be more willing to migrate in the graduate labour market, while women may either settle in their university location or back at home. Therefore women who have moved away and those that remained at home are both immobile when looking for jobs, and thus there is no difference observed in their wage expectations. However Faggian et al (2007) showed women are in fact more migratory in the graduate labour market than men, and they are more likely to move somewhere completely new. Another possibility is that men who move away from home are a selective group, who have particularly high ambitions and motivation. A different selectivity mechanism may operate in women's decisions, with the choice less driven by labour market ambitions and more by families and friends.

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[21] There were 180 men living at home and 824 men living away in the SIES. Similarly, there were 365 women at home and 1722 living away from home.
[22] 545 (18%) out of the 3094 students reported living with their parents.

v. Ethnicity

A great deal of research, and policy interest, revolves around the low participation rate of certain ethnic minorities, such as Black Africans, in tertiary education. The hypothesis posed suggests that students from a minority background may expect to suffer some form of discrimination in the labour market, and thus have lower wage expectations. However results suggest that Black and Asian students expect a significantly *higher* starting wage than white students.[23]

Variable	% Difference in comparison to baseline	% Standard Error
Ethnicity (Ref: White)		
Asian/Black	5.8*	2.6
Mixed	-0.3	2.1

It is tempting to suggest that ethnic minorities may be more unrealistic in their salary expectations than white students. However an alternative explanation is that there is a selectivity mechanism at work. It may be that only high quality Black and Asian students make it to university and, without a direct separate control for ability, this is being reflected in the ethnicity variable.

v. Impact on a hypothetical individual

To illustrate the difference in wage expectations between "traditional" and "modern" students, three different hypothetical individuals are considered. The characteristics held constant are shown in table 8.

Table 8.

Person 1 can be considered to be a "modern" university student, as they live at home, are from a state school, attend a post 1992 university and have parents earning below £20,000. A person with these characteristics would expect a starting salary around £16,000. [24]

Table 9

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[23] The Black and Asian groups were combined due to small sample sizes within each. In initial regressions the two groups were entered separately, producing similar coefficient estimates and standard errors, significant at the 10% level. A test was performed of whether Black and Asian have equal regression coefficients, resulting in the null hypothesis not being rejected.

[24] If one were to assume this individual was of Black or Asian origin, this would increase to around £17,000.

Person 2 has most of the same characteristics, but attended a private school up to the age of 18 and has parents earning over £40,000 per year. Therefore these two individuals can be thought to differ in *wealth factors.* By just changing these two variables, the illustrative individual's expected salary increases from £16,000 to just under £18,000. Finally, person 3 has the same characteristics as person 2, but now lives away from home and goes to a Russell Group university. The representative individual now expects a salary over £20,000, a rise of around £2,500 on the preceding estimate, and 28% more than person 1.

7. Data on Realised Wages

The preceding analysis illustrates that there are quite large differences in students' wage expectations. However this may simply reflect the different labour market opportunities that students face. An alternative hypothesis is that students have unrealistic expectations and significantly overestimate starting wages. This is investigated by comparing wage expectations reported in the SIES to actual wages earned by university leavers, corresponding to the same year, recorded in the Higher Education Statistics Authority (HESA) Destination of Leavers Survey (DLHE). This section describes the additional data source and methods for comparing the two surveys.

To investigate whether students have realistic expectations at the individual level, longitudinal data is required that captures both the students' estimates of their starting wage and what they subsequently earn in the labour market. Unfortunately, no known UK data has such structure; an alternative method of comparison is required. One option is to compare the average expectation and realisation for groups of students who have a similar population structure. This requires an additional data source that contains information on wages for the same population investigated in the Student Income and Expenditure Survey.

One source identified is the HESA 2004-2005 Destination of Leavers from Higher Education (DLHE) survey. This is an attempted census of *all* 2004-2005 graduates' employment circumstances, including their current salary, six months after completing university. Students are contacted directly by the institution they studied at by postal questionnaire, with non-respondents followed up in a telephone interview. This results in a survey response rate of around 80%. The results are then linked with administrative data about the student collected by HESA, providing a rich source for analysis. Variables within the dataset include socio-economic status, university entrance (UCAS) score, degree classification, subject of study and where the student lived while at university.

 The target of this survey is obviously a great deal wider than that of the SIES. Several sample selection procedures[25] were applied to the data to ensure the two sources were comparable. As in the SIES, only students who attended a university in England and Wales were considered. The data was also restricted to only those students who had finished their first undergraduate degree. It is assumed that respondents to the SIES were reporting their first wage expected after their undergraduate degree. However it is impossible to rule out the possibility that some students reported their wage expectation under the assumption that they were going to continue in full-time education and gain a post graduate qualification. Again the impact of this on results is likely to be negligible. Finally, only students who reported salaries of £8,000 or more were included. Since students were asked for their *full-time annual equivalent* wage, this was identified as the lower bound for logical responses due to minimum wage laws in the UK.[26] Furthermore a similar selection rule was applied to the SIES data in the previous sections, and continued to ensure the two data sources were comparable.

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[25] Details can be found in appendix 4.

[26] The adult minimum wage at this time was £5.05. Assuming the minimum amount of time required in a full-time job is 30 hours per week, for 52 weeks a year, this generates a full-time annual income of around £7,900. Only around 1% of observations were dropped using this sample selection rule, with little impact on the conclusions reached.

The DLHE has many features that make it a strong candidate to compare with the SIES data. The information collected specifically refers to the 2004-2005 year group also investigated in the SIES. One potential problem is that wage expectations in the SIES were gathered from students in all year groups, and not just those in the final year who would have been followed up in the DLHE survey. However, an assumption already stated is that students do not take into account future inflation and productivity growth when stating their wage expectations (Manski 1993). Hence, to the extent that the above assumption holds, the influence of this on results is likely to be small.

The questions posed in each survey also relate closely to one another.

SIES
"What sort of salary do you expect to be earning in the first job you take once you have graduated?"
Interviewer comments: If not sure of the exact amount, please give your best estimate.

DLHE
"What was your annual pay to the nearest thousand £, before tax?"
If you were employed less than a year or were part-time, please estimate your pay to the full-time annual equivalent.
£

The SIES asks about salary expectations in students' *first job* after graduation and the DLHE records information on salary *sixth months* after finishing university. In the vast majority of cases, the difference between these two definitions is likely to be minimal. Previously it was stated that students in the SIES are thought to provide estimates of a *gross, annual* salary. The DLHE survey asks students to provide an estimate for their full-time equivalent annual wage before tax, providing a closely matched definition. A final issue is that the DLHE survey asks students for their wage to the nearest thousand, while expectations in the SIES were recorded in an open text cell. However section 4 described how students' expectations tend to bunch around the nearest thousand, meaning this is unlikely to induce any substantial bias.

However, for all the benefits of using the survey for comparison, there are some difficulties with response rates and sample selection. Although the DLHE is an attempted census of graduates, there is quite a large degree of non-response to the question about salary. For example, after the sample selection procedures have been applied, 214,220 observations remain. Of these only 75,264 (35%) contain information on the student's salary, largely due to item non-response surrounding this question. As a result, there may be a selectivity problem when comparing the two surveys. Differences recorded could be a result of who is responding to each of the surveys, rather than actual differences between students' expectations and realisations. A further issue maybe that certain groups have higher drop out rates than others, leading to different proportions recorded in each survey. For instance students from poor backgrounds may be more likely to drop out of university. Therefore one would observe a higher proportion of this group in the SIES, with data recorded during university, than the DLHE, with data recorded after university. To investigate such problems, the SIES and DLHE were compared in terms of characteristics that could be observed within both populations. The results are shown in table 10.

Table 10[27]

In most cases, the difference in observable characteristics appears to be modest. A larger proportion of men appear to be in the HESA data than the SIES, though there seems to be fewer from Russell Group universities. The first of these factors is likely to raise the actual wage in comparison to the expected wage, while the second will have the opposite effect. A greater problem may stem from differences between the proportion of full-time students, and the subject composition, of the two surveys. For instance medical students make up 8% of the SIES compared to 2% of the DLHE. To compensate for this problem, separate estimates will be made for each relevant group. For example, rather than comparing the expectations and realisations for the whole population, full-time and part-time students will be investigated separately. Medics will also be excluded in many parts of the analysis to compensate for differences between the two sources. One further issue is that although the populations appear broadly similar in terms of observable characteristics, there may still be differences in those that are unobservable. A measure of pre university ability is one such important factor that unfortunately can not be investigated.[28] However the two samples appear to be broadly similar in observable characteristics using the current comparison method, and should provide a reasonable basis to answer the research questions posed.

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[27] Final year students in the SIES would have been followed up in the DLHE survey. However all students in the SIES have been used in the subsequent analysis, based on the assumption that they report their expected wage in 2005 prices, and that how close they are to graduation is orthogonal to other characteristics.

[28] To further investigate this issue, a logistic regression for whether the student responded to the salary question in the DLHE was developed. Those in non-graduate jobs and those with lower degree classifications were two of the most important factors found in non-response. The likely result of this is that the average salaries observed in the DLHE data are, if anything, an upwardly bias estimate of graduates wages.

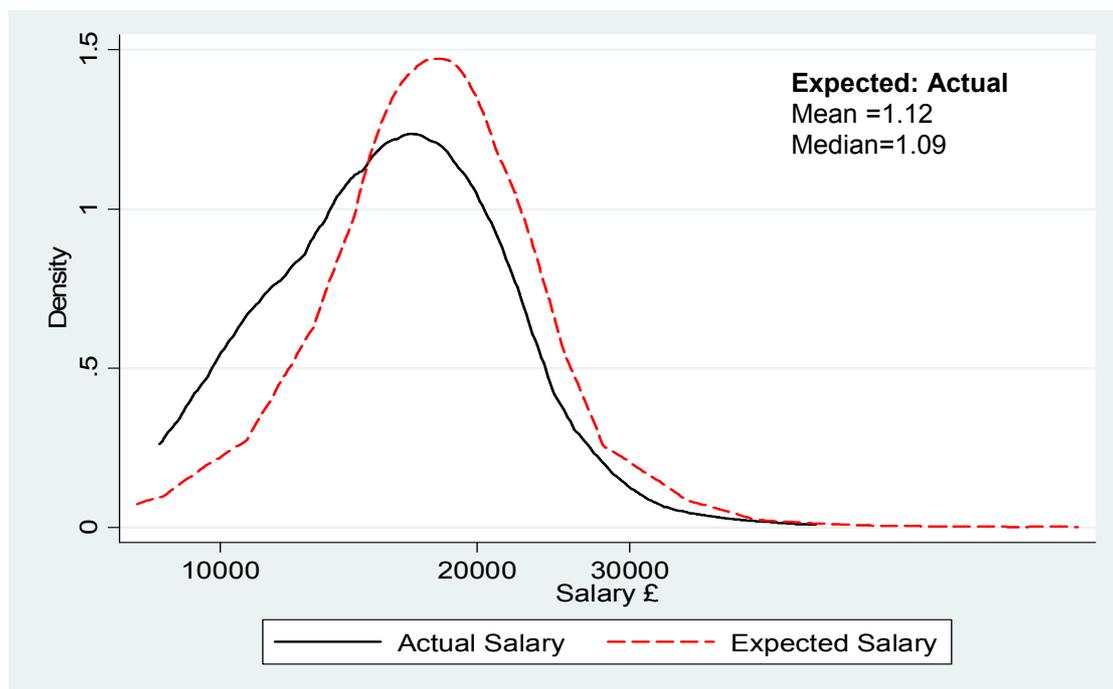### 8. Comparison of Expected and Actual Wages

Two methods are used to compare students' wage expectations with the actual wages observed. Firstly the ratio of the expected mean (median) wage is compared to the mean (median) of the actual wage. The second method is to graphically represent the distributions, via kernel density estimates, of the actual and expected wage to identify differences.

Do students have realistic expectations?

The initial hypothesis to investigate is whether students tend to overestimate wages in the graduate labour market. The population was divided into full and part time students, with summary statistics and kernel density estimates reported below.

Figure 2. Kernel density estimates of actual versus expected log wages[29]

Full-time Students

Part-time Students

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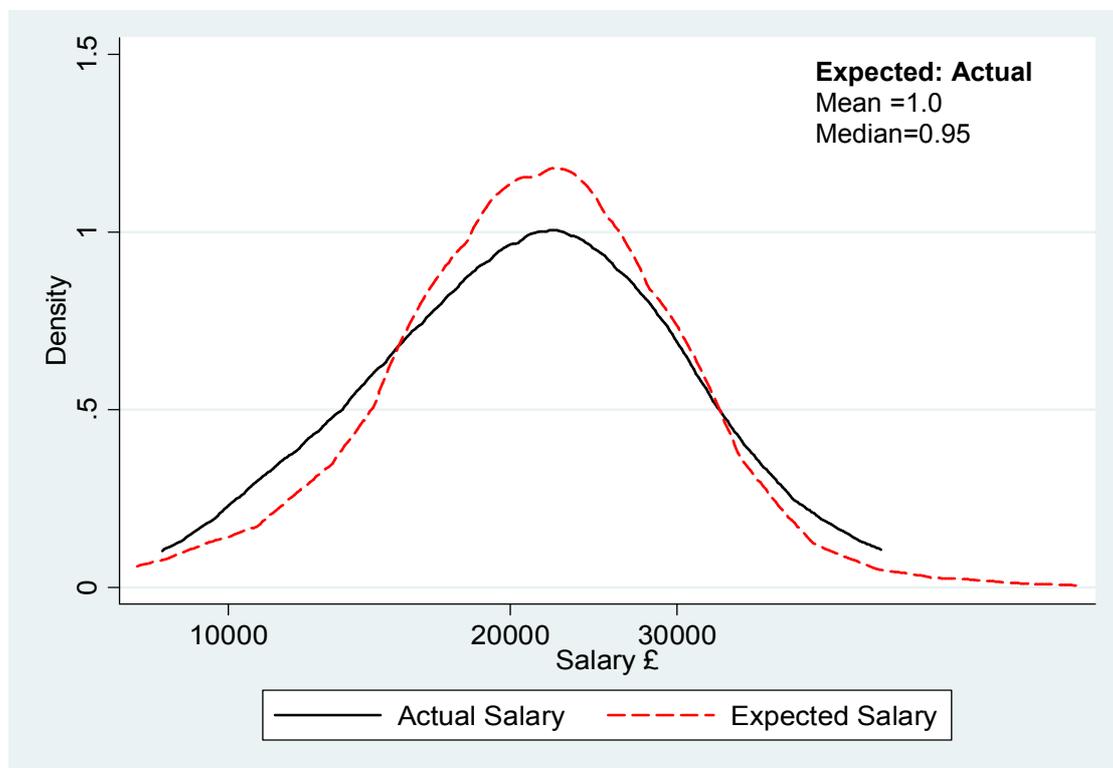
[29] Medical students have been excluded, due to the differing proportion of these groups in the two surveys and the large influence they have on both expected and actual wages. Analysis was also conducted containing medical students, with very similar results.

The ratio of the mean (median) expected salary to actual salary for part-time students is 1 (0.95), suggesting that, on average, part-time students have realistic expectations. Furthermore, the kernel density estimate illustrates how closely the distributions of part-time students' expectations and actual wages match. However a different conclusion is reached when looking at the results for full-time students. The kernel density estimate of students expected wage appears to be to the right of the estimate for actual wages, suggesting overestimation by students. This overestimation is also illustrated by the ratio of expected to actual salary. Expectations are around 12% (£2,000) higher than in the actual labour market. This means that students, after tax, overestimate starting wages by around half the yearly fee now charged in the UK for university tuition.[30] Thus there seems sufficient evidence to support the hypothesis that, on average, full-time students, as a group, have "unrealistic" expectations of future wages.

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Does the realism of students' wage expectations vary by background characteristics?

In the preceding section, wage expectations were found to vary between groups based on several different background characteristics. An interesting question is whether students who expect higher wages actually secure this premium in the labour market, or are they, on average, more unrealistic?[31] The ratio of the mean expected to actual wage is contained in table 11. Analysis in section 5 showed that junior students have higher wage expectations than those about to graduate. Assuming that all students report their expected salary in terms of 2005 wages, ignoring future inflation and productivity growth, there is evidence that junior students are also more unrealistic. Whereas final year students tend to overestimate their starting salary by 9% on average, those who have just entered university overestimate by around 16%. An important implication is that students who have just made the decision to invest in university education have especially inflated expectations. Human capital models of school enrolment rely on the assumption that students are able to accurately assess their future income streams under alternative investment decisions. However this analysis indicates that students are not particularly good at making this assessment.

Other analyses in section 6 found that men who live away at university have particularly high wage expectations. The indications are that this group is no less realistic than the others, with men who live away from home securing a higher wage in the labour market. Again this may be attributed to their willingness to migrate or their higher labour market ambitions.

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[30] These particular students would have actually paid an upfront tuition fee of around £1,200 per year. Tuition fees changed for students starting after 2005 to a maximum of £3,000 per year, payable after graduation.
[31] One possible reason why the average expectation and realisation may differ is the sampling variation in the two data sources. To investigate this, the 95% confidence interval for students' expected wages was compared to the DLHE estimate of the actual wage. Since the DLHE is an attempted census, with a very large number of responses, the sampling variability is so small that this is assumed to be the true population wage. In all cases, the actual wage was outside the confidence interval for the expected wage, suggesting the difference observed can not be attributed to sampling variability.

It was also shown that students at Russell Group universities expect higher wages than those at other pre 1992, and post 1992, institutions. There is little evidence that students at a Russell Group university are any less realistic than those at post 1992 institutions, with both groups overestimating by around 13%. However students at other pre 1992 universities appear to be more accurate, overestimating by only 7%. This may reflect that students at Russell Group universities place too higher value on going to a prestigious institution, while those at post 1992 universities suffer poor labour market opportunities. Meanwhile students at other pre 1992 universities still have good opportunities in the graduate labour market, while their expectations are not inflated to the high levels of those at the Russell Group.

Finally, Black and Asian students were found to expect higher wages than those from White and Mixed ethnicity backgrounds. These students were found to overestimate by around 14%, compared to 12% for white students and 9% for those of mixed race. Thus, there is little evidence to suggest that Black and Asian students are any less realistic than white students. However there maybe some evidence that students of mixed race can predict their starting salary slightly better than both the other groups.

Overall, there is little evidence to suggest that background characteristics exert a strong influence over how realistic students' wage expectations are. However it is apparent that students near the start of their course tend to overestimate future wages by more than those in their final year, though one can not rule out this being a cohort rather than an age affect. There is also an indication that students at other pre 1992 institutions make better estimates than those at post 1992 and Russell Group universities.

Table 11

Does the accuracy of students' wage expectations depend on the subject they study?

Though full-time students seem to be too optimistic in their wage expectations, there has been little evidence thus far to suggest this varies substantially by background characteristics. However, it is hypothesised that students who are studying a subject leading to a particular career will be more realistic, as they are likely to research specific jobs and have better knowledge of the labour market they face. Alternatively students who take language and art based courses are likely to enter a far more general labour market, with less certainty about their future career prospects. Results are provided in table 12, with kernel density estimates for various subjects shown in figure 3.
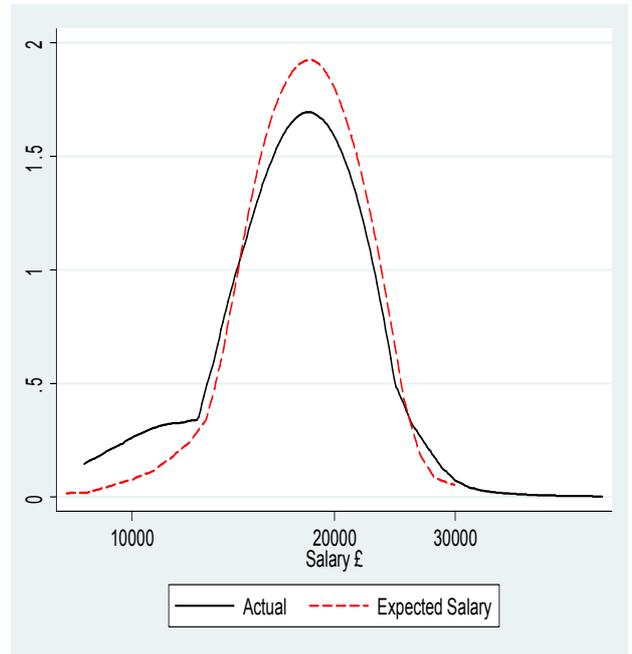
Table 12
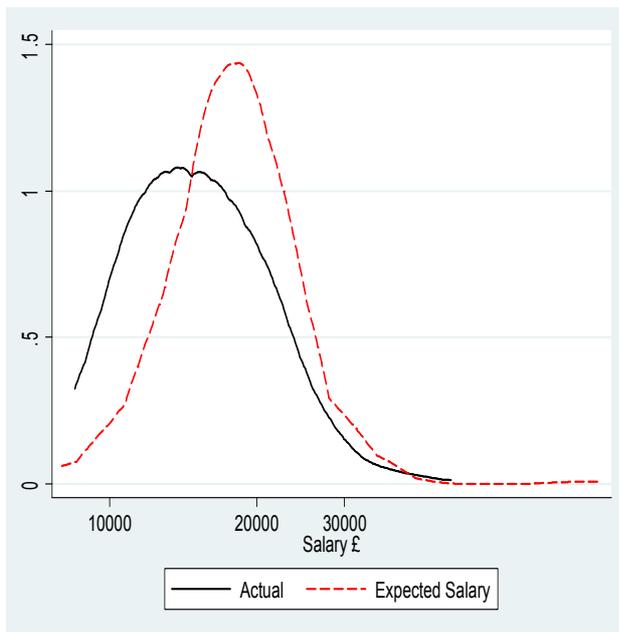
Figure 3. Kernel Density Estimates
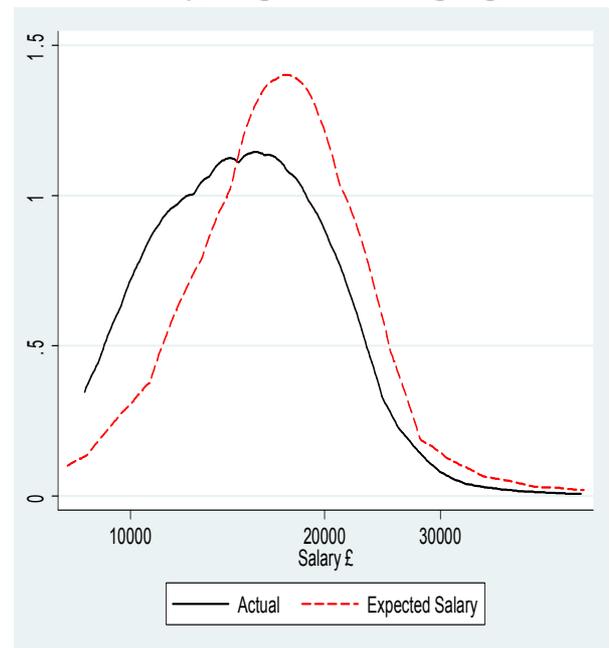

Allied to Medicine
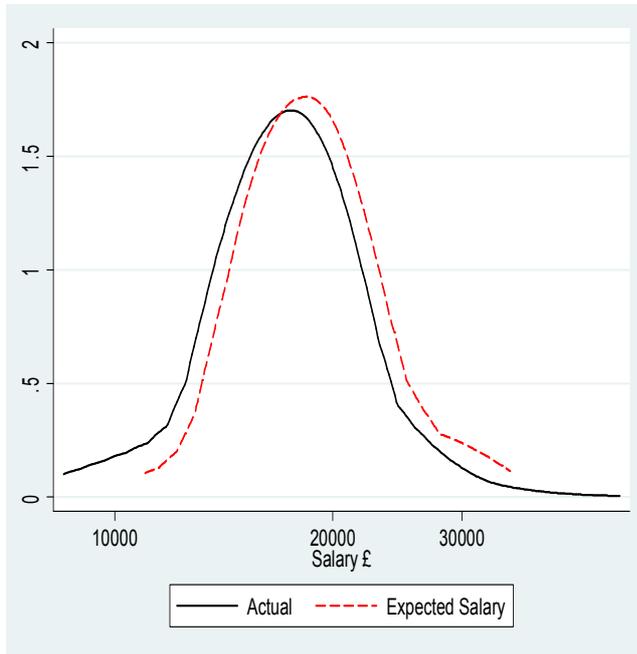
Education

Social Studies

History, English and languages

The results show that there is overestimation in all subjects, except medicine, where there is quite a large degree of underestimation. Law also appears as an outlier, with especially large overestimation.[32] One possibility may be that students wishing to enter a legal profession have to complete additional study at a Law school after university. Therefore the vast majority will not be in the labour market yet and their wages unobserved. Those that have entered work straight from their course are likely to be in a much less lucrative position than what will generally be the case for Law graduates as a whole.

As hypothesised, students who are studying a subject that directly leads to a career have more realistic wage expectations. Education and Subjects Allied to Medicine both lie near the top of the table. Moreover, the kernel density estimates in the upper panel of figure 3 illustrates how closely the distributions for actual and expected salaries match. A comparison to the distributions for social sciences and language based studies clearly illustrates the superior estimates made by those entering careers in health and education.

Interesting patterns also occur between the subjects that lead to the more general labour market. Those subjects where the errors seem to be largest generally involve language, rather than technical, skills. For example, the social sciences, languages and business based courses mainly involve writing essays, while subjects teaching more mathematical skills, such as Computer Science and Engineering, appear to contain more realistic students. However Science can instantly be identified as an exception. This could reflect students believing that they will receive a high wage because they have chosen to take on a traditionally challenging subject. In reality however, the technical skills they have built up may be required by relatively few employers, forcing some into non-graduate jobs and others accepting a lower salary to retrain in an unrelated discipline.

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[32] This could simply be reflecting sampling error, due to the reasonably small sample size. To investigate this, confidence intervals of students' expected salary were created for each subject. Actual wages for all subjects, reported in the DLHE survey, never fell within this confidence interval. This suggests sampling variability alone is not responsible for the observed differences.

Discussion

These findings have significant implications for both academic models of human capital and higher education policy across Europe. Under a human capital model, students enrol in education where the perceived benefits, both financial and non-financial, are greater than the costs. However the findings suggest that students tend to overestimate the graduate wage, suggesting they do not accurately predict the benefits of their higher education. This puts into question whether a human capital model, as described above, will lead to an efficient outcome. Overestimating future wages could lead some students to mistakenly choose to go to university, who will not receive the benefit they expect on enrolment. The UK Class of 99' report (Purcell, Elais et al), illustrates such feelings in qualitative research, as shown below:

> *'I would have still ended up in the position I'm in now if I would have carried on working full-time…. I applied for over two hundred jobs, I felt this degree was a total waste of time; I was a self-funding student, which was a waste of money. I'm still paying for it now, I'm a single parent and to be honest it was the biggest waste of time and money that I've ever spent'.*

> *……..everyone tells you if you do a degree the world will be your oyster, you'll earn loads of money. No'.* Page   194

Other aspects of the research may also have importance for higher education policy. Students build up debt while at university, when income is low, and expect to pay this back when they have a job after graduation. Gustman and Stafford (1972) also show that students with higher wage expectations tend to consume more at university. From an economic point of view, students are using credit markets, in part, to smooth their consumption over time. However, if students overestimate their future wage, they will also be overestimating their ability to pay back the money they borrowed. This may lead to students taking on too higher levels of debt that they later struggle to repay, due to the fact they are not in as well a paying job as expected. It may also mean they are willing to take on debt to pay for high tuition fees when entering university, but regret this decision in hindsight when paying back the money is harder than they once expected. This obviously has direct implications for the provision of credit for students, with loans for fees and maintenance provided by governments and banks. An oversupply of easy, cheap money could well lead some individuals into difficulties later in life. Any higher education system in Europe looking to expand by offering students cheap loans should consider this before pursuing such a policy.

Another important issue is how this relates to widening access schemes proposed by European governments, and in particular the UK target of getting half of all school leavers to experience higher education. The benefits of university are widely promoted by governments, and in particular career prospects, to encourage individuals to continue their education. However this practise may just enhance students' unrealistic expectations, which certainly seems to be the case in the quote above. Another important point is whether students are being given accurate information about salaries and employment prospects from the various available sources. For instance the Association of Graduate Recruiters conducts a bi-annual survey, which states that the median starting salary of graduates in 2005 was £22,000. This is well above the figure reported in the DLHE, because it only looks at certain jobs with large UK employers. However this is often presented in the media as the average starting graduate wage. This information may well inflate students' expectations to unrealistic levels. More information for students on starting salaries and employment prospects is required to make sure that individuals are making well informed decisions when continuing their university education.

9. Conclusions

This paper set out to explore heterogeneity in UK students' wage expectations and to identify whether they held "realistic" views of the graduate labour market. In doing so, this provides the first study in Europe to explore wage expectations using a nationally representative sample of students. The results highlight how, as students progress through university, their views change on life as a graduate. Final year students are less optimistic about their ability to land a "career job" and their starting salary. This shows how students learn about their own ability and the labour market through their time in higher education, and that prospects may not be as bright as they once expected. Other significant variations were found based on students' individual characteristics. There appears to be a significant difference based on wealth, with students from high income, private school backgrounds expecting a greater salary than their low income peers. However the initial hypothesis that students from ethnic minority backgrounds may expect some form of discrimination in the labour market, and therefore estimate a lower wage, is rejected. Ethnic minorities actually expect a higher salary than their white peers, perhaps reflecting that only high ability ethnic students make it to university.

The second half of the paper furthers this analysis by investigating if students' wage expectations are realistic. This is probably the first European study to compare wage expectations from a nationally representative sample to the actual wages earned by graduates from the same cohort. The evidence suggests that full-time students overestimate wages in the graduate labour market, though there is little evidence to suggest background characteristics affect the degree of overestimation. However the research does show that students studying a subject leading to a particular career expect salaries reasonably close to the observed data structure. On the other hand those from the social sciences and language based studies appear to be generally quite far away in their predictions.

The possibilities to extend this research are almost endless, due to the lack of current investigation and the potential importance to several higher education policies across Europe. Longitudinal data, following students for a period of several years until they are well established in the labour market, would further the current research. Recording students' perceptions of wages with and without a degree would also provide an interesting insight into student enrolments and decision making.

This paper has provided an initial investigation into how students view their financial futures after university, and if they are expecting too much from the labour market in obtaining a higher education qualification. However a much greater depth of research is needed to understand the financial nature of students' decision making and the possible consequences for European higher education policy.

Tables

Table 1. Sample selection rules[33]

Rule	Sample
Initial Sample	3,548
Missing Salary Expectations	3,376
Further Education Colleges dropped	3,175
Expectations below £8000 dropped	3,094

Table 2-Peaks in the distribution of expected wage

Expected Salary £000	Frequency	%
8	23	0.7
10	88	2.8
12	138	4.5
13	47	1.5
14	75	2.4
15	340	11.0
16	126	4.1
17	169	5.5
18	417	13.5
19	107	3.5
20	528	17.1
21	46	1.5
22	78	2.5
23	39	1.3
24	48	1.6
25	225	7.3
26	33	1.1
27	28	0.9
28	53	1.7
30	147	4.8
35	32	1.0
40	21	0.7
50	8	0.3
60	4	0.1

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[33] If the sample selection rules were applied in a different order, the figures within the table would change.

Table 3. Exploratory statistics

Category	N	P90 (£000)	P10 (£000)	P90/P10	Mean (£000)	Median (£000)	Standard Deviation (£000)
Proximity to Graduation							
Final Year	1,067	27.0	12.0	2.3	19.1	18	6.0
1 Year	904	28.0	14.0	2.0	19.6	18	5.8
2 or More Years	1,121	29.0	13.0	2.2	20.2	20	7.3
Gender							
Male	1,004	30.0	14.0	2.1	20.9	20	7.2
Female	2,087	25.5	12.5	2.0	19.0	18	5.9
University type							
Russell	709	30.0	15.0	2.0	21.4	20	6.7
Other Pre 1992	539	26.5	12.0	2.2	19.0	18	6.7
Post 1992	1,844	25.0	13.0	1.9	19.2	18	6.2
Parents Income (£ per annum)							
Below 20K	378	24.0	12.0	2.0	17.4	17	4.9
20k-40k	594	25.0	12.0	2.1	18.2	18	5.8
40k+	649	28.0	12.0	2.3	19.6	19	6.1
Missing	164	25.0	12.0	2.1	19.4	18	8.7
Independent Student[1]	1,278	30.0	15.0	2.0	21.0	20	6.7
Ethnic Group							
White	2,639	27.0	13.0	2.1	19.4	18	6.4
Black/Asian	279	30.0	15.0	2.0	21.1	20	6.8
Mixed	174	30.0	14.0	2.1	20.6	20	6.4
School Type							
State	2,711	27.0	12.5	2.2	19.4	18	6.1
Private	381	30.0	15.0	2.0	21.5	20	8.2
Living Arrangement							
Parental Home	545	25.0	12.5	2.0	18.5	18	5.0
Lives Away from Home	2,547	28.0	13.0	2.2	19.9	19	6.7
All Groups	**3,094**	**28.0**	**13.0**	**2.2**	**19.7**	**18.5**	**6.4**

Notes: 1 See appendix 1

2 Data does not add up to 3094 in all cases due to missing data

Table 4a-Regression results.

Variable	SPECIFICATION 1 Coefficient	SPECIFICATION 1 Standard Error	SPECIFICATION 2 Coefficient	SPECIFICATION 2 Standard Error
Future Plans (Ref: Career Job)				
Temporary Job	-	-	-0.225*	0.025
Career or Temporary Job	-	-	-0.096*	0.021
Further Study or Travel	-	-	-0.001	0.013
Hard to get Grad Job (Ref: Agree)				
Neutral	-	-	0.012	0.017
Disagree	-	-	0.055*	0.012
Missing	-	-	0.098*	0.028
Proximity to Graduation (Ref: Final Year)				
1 Year	0.033*	0.012	0.016	0.012
2 or More Years	0.065*	0.015	0.036*	0.014
University Type (Ref: Post 1992)				
Other Pre 1992	-0.001	0.017	0.000	0.016
Russell Group	0.078*	0.018	0.068*	0.016
Parents Earnings (Ref: Below £20,000)				
£20,001-£40,000	0.045*	0.020	0.036*	0.018
£40,001+	0.074*	0.024	0.065*	0.022
Missing Data	0.108*	0.028	0.084*	0.027
How parents earns (Ref: Work)				
Benefits	-0.053	0.039	-0.057	0.039
Investments	0.093*	0.026	0.083*	0.025
School Type (Ref: State)				
Private School	0.040	0.022	0.041*	0.021
Dependant Status (Ref: Dependant)				
Independent	0.086*	0.021	0.062*	0.022
Private School Independent Student*	-0.052	0.029	-0.065*	0.029
Living Arrangement (Ref: Parental Home)				
Living Away from Home	0.056*	0.021	0.070*	0.021
Gender (Ref: Male)				
Female	0.003	0.027	0.009	0.027
*Living Away from Home * Female*	-0.059*	0.027	-0.066*	0.028
Ethnic Group (Ref: White)				
Black/Asian	0.057*	0.026	0.056*	0.025
Mixed/Other	0.006	0.021	-0.003	0.021

Note: 1 * Indicates significance at the 5% level

2 Results have been split into two tables. Table 4a contains variables directly relating to the research questions posed, while 4b contains the other control variables.

3 A chow test was conducted as to whether the results should be reported separately for men and women. The test, after including the interactions between gender with living arrangement and qualification type, illustrated that there is no evidence of any further structural differences. Therefore reporting results in one model, including just these interactions, was considered to be the parsimonious approach.

Table 4b-Regression results

Variable	SPECIFICATION 1		SPECIFICATION 2	
	Coefficient	Standard Error	Coefficient	Standard Error
Total Income				
Mean Centred (per £000)	0.005*	0.002	0.004*	0.002
Study Mode (Ref: Full-Time)				
Part-Time Student	-0.024	0.024	-0.027	0.023
Earnings From Work				
Mean Centred (per £000)	0.000	0.003	0.001	0.003
Part-Time Student *Earnings From Work	0.014*	0.003	0.013*	0.003
Qualification (Ref: Degree/PGCE)				
Study for Other Qualification	0.063	0.038	0.049	0.038
Study for Other Qualification *Female	-0.138*	0.038	-0.133*	0.039
Subject Area (Ref: Art & Music)				
Medicine	0.296*	0.031	0.265*	0.029
Allied To Medicine	0.124*	0.027	0.104*	0.026
Sciences	0.069*	0.028	0.087*	0.026
Maths & Computer Science	0.137*	0.031	0.139*	0.031
Engineering & Technology	0.155*	0.035	0.138*	0.035
Architecture & Building	0.135*	0.035	0.127*	0.036
Social Studies	0.105*	0.029	0.112*	0.027
Law	0.180*	0.037	0.185*	0.035
Business & Admin	0.111*	0.031	0.120*	0.030
English, languages, Classics	0.035	0.036	0.054	0.034
History & Philosophy	-0.011	0.034	0.014	0.035
Education	0.114*	0.024	0.099*	0.023
Combined	0.060	0.033	0.067*	0.033
Other	0.036	0.051	0.040	0.048
Entry Qualification (Ref: A-levels)				
GNVQ/AVCE	-0.055*	0.024	-0.056*	0.022
Other	-0.008	0.016	-0.012	0.016
Age				
Mean Centred	0.006*	0.003	0.006*	0.003
Age*Independent Student	-0.005	0.003	-0.006*	0.003
University Location (Ref: Other England)				
London	0.066*	0.017	0.069*	0.016
Wales	-0.045*	0.020	-0.046*	0.019
Missing	0.018	0.036	0.019	0.034
Live in London (Ref: Yes)				
No	-0.040*	0.016	-0.041*	0.014
Constant	9.630*	0.039	9.652*	0.039

Notes: 1 * Indicates significance at the 5% level

Table 5. Student response to whether they believe 'the growing number of graduates will make it hard to get a graduate job'

	Final Year %	1 Year %	2+ Years %
Strongly Agree/Agree	55.7	44.2	48.0
Neutral	15.8	16.2	16.7
Strongly disagree/ Disagree	28.6	39.6	35.3
Observations	1053	884	1107

Notes: 1 data does not add up to 3,094 due to missing information

Table 6. Response to whether students have considered getting a temporary job

	Final Year %	1 Year %	2+ Years %
No	84.7	91.8	95.7
Yes	15.3	8.2	4.3
Observations	1067	904	1121

Notes: 1 data does not add up to 3,094 due to missing information

Table 7. Parents' income by type of school

	Below £20K	£20-40k	£40k+	Missing Data	Observations
State %	23.1	34.4	33.2	9.3	1525
Private %	11.4	26.1	54.9	7.6	260

Notes: 1 data does not add up to 3,094 due to missing information, with parents income only available for dependant students.

Table 8. Characteristic held constant for hypothetical individual

Variable	Value Taken
Entry Qualification	A-levels
Live in London	Yes
Full-Time Student	Full-Time
Income from Work	Mean
Qualification Working Towards	Bachelors/PGCE
Gender	Male
Ethnic Group	White
Total Income	Mean
Dependant status	Dependant
How Parent Earns	Work
Age	Mean
Subject	Art
Proximity to finishing	Final Year
Future Plans	Get Career Job
Ease of Getting Grad Job	Neutral
University Location	England

Table 9. Estimated expected wage for hypothetical individual

Variable	Person 1 (White)	Person 1 (Asian or Black)	Person 2	Person 3
Living Arrangement	Home	Home	Home	Away
Ethnicity	White	Black/Asian	White	White
School Type	State	State	Private	Private
Parents Income	Below £20,000	Below £20,000	Over £40,001	Over £40,001
University Group	Non-Russell	Non-Russell	Non-Russell	Russell
Estimated Wage	£15,922	£16,841	£17,716	£20,330

Table 10. Comparison of SIES and DLHE samples

	SIES %	DLHE %
Gender		
Male	32.5	36.4
Female	67.5	63.6
Ethnicity		
White	85.4	84.6
Asian	4.7	6.8
Black	4.3	2.7
Mixed/Other	5.6	5.9
University Group		
Russell Group	22.9	19.4
Other pre 1992	17.4	20.7
Post 1992	59.6	59.9
Workload Status		
Full-Time Student	77.6	84.2
Part-Time Student	22.4	15.8
Social Class (Parents Occupation)[¥]		
Managerial/Professional	57.3	55
Intermediate	19.6	23.9
Routine/Manual	23.1	20.9
Living Arrangement [Ψ]		
Parental Home	17.6	19.9
Living Away from Home	82.4	80.1
Qualification Working Towards		
Bachelor/PGCE	88.7	88.1
Other	11.3	11.9
Subject		
Medicine	8.1	2.2
Allied To Medicine	9.4	15.4
Sciences	7.1	11.2
Maths/ Comp Science	4.9	8
Engineering & Technology	4	5.1
Architecture & Building	2.4	2
Social Sciences	12.8	11.1
Business	7.3	11.5
English & Languages	6.4	9.1
History	4	4.1
Art	10.2	7.2
Education	11.3	9.3
Combined	4.1	2
Law	4.1	2.2
Number of Observations	3,094	75,264

Notes: ¥ 50,618 unknown. % given for the 24,646 observations with social class reported.
Ψ17,435 unknown. % given for the 57,829 observations with living arrangement reported.

Table 11. Comparison between mean expected and actual log wages for background variables

	Mean Expected wage £000	Mean Actual wage £000	Ratio
All Full-time Students	**17.6**	**15.7**	**1.12**
Final Year	17.0		1.09
1 Year	17.6		1.12
2 or More Years	18.1		1.16
Ethnic Group			
Black/Asian	18.8	16.4	1.14
White	17.4	15.6	1.12
Mixed	17.9	16.5	1.09
University Type			
Russell Group	18.4	16.3	1.13
Other pre 1992	17.0	15.8	1.07
Post 1992	17.5	15.4	1.13
Gender			
Male	18.2	16.1	1.13
Female	17.3	15.5	1.12
Gender*Living Arrangement			
Male at Home	17.6	15.5	1.14
Male Away	18.3	16.2	1.13
Female at Home	17.2	15.1	1.14
Female Away	17.3	15.5	1.12

Notes: 1 Excludes medical and part-time students, due to different proportions found within the two sources.
2 For all variables the mean expected and actual salary are significantly different at the 5% level
3 Social Class has not been investigated due to a large amount of missing data in the DLHE for this variable.

Table 12. Comparison between expected and actual log wages for subject groups

Subject	Sample Size SIES	Mean Expected Wage £000	Mean Actual Wage £000	Ratio	Ratio Expected: Actual (Medians)
Medicine	225	24.5	28.4	0.86	0.88
Education	221	17.9	17.1	1.05	1.03
Allied To Medicine	203	18.7	17.1	1.09	1.03
Engineering & Technology	77	19.2	17.6	1.09	1.08
Maths & Computer Science	116	18.9	17.1	1.11	1.03
All Full-Time Students	**2075**	**17.5**	**15.7**	**1.11**	**1.09**
Architecture & Building	38	18.4	16.4	1.12	1.09
Art	288	15.8	14.1	1.12	1.11
History, English & Languages	260	16.8	14.8	1.14	1.24
Sciences	196	17.7	15.2	1.16	1.16
Business, Admin & Management	174	17.9	15.3	1.17	1.24
Social Sciences	317	17.8	15.1	1.17	1.24
Law*	98	19.4	14	1.38	1.48

Notes:

1 For all variables the mean expected salary is significantly different from mean actual salary at the 5% level.

2 "All full time students" excludes medicine and law students but includes other and combined subjects that are not shown in the table

3 English has languages has been combined with history and philosophy

Appendix 1. Definition of Part-time and Dependent Students

The SIES used the following definition for whether a student is classed as a dependant or independent student:

Dependent students	These are full-time students: • who had applied for student support and their parent/step parent, legal guardian's income had been taken into account • or were aged under 25 years, were unmarried and had not applied for student support. **Independent students** are all part-time students and full-time students not in the above category.
Part-time student	Students (excluding OU) on an undergraduate or PGCE course lasting at least one academic year and equivalent to at least 50 per cent of a full-time course. OU students were included if they were studying for an undergraduate degree or PGCE course and eligible for financial support (which involved taking or registering for a course worth more than 60 credit points). NB This profile means that the OU students included in this survey are not typical of all OU students.

Source: Extract from SIES 2004-2005 report

The National Centre for Social Research was also contacted to clarify the definition used for a dependent student. The questions asked and answers given appear below.

Q: Is a person, who has applied for student support, unmarried, under 25, but **has not had** *their parent's income taken into account* classed as a dependent or independent student?

A: Independent student

Q: Is a person, who has applied for student support, unmarried, under 25, **had** *their parent's income taken into account*, **but is above the threshold** *for any further support other than the basic level*, a dependent or independent student??

A: Dependent student

This highlights that whether parents' income has been taken into consideration is important to deciding how the student is classed. Anyone who is 25 or over, married or has not had their parent's income taken into account is classed as an independent student. Those whose parent's income has been taken into account are dependent students. One problem identified from the responses may be that parents know they are above the income threshold for any further support and hence do not disclose this information on the UCAS application form. Therefore it is possible that some respondents, who are actually dependent students, are mistakenly classified as independent. The data records there to be 1,278 independent students with 691 of these part-time students and 587 full-time. It is likely that there is some measurement error in recording some of these 587 full-time students as independent, for the reasons stated above.

Appendix 2. Construction and difficulties in measuring parental income

Parental income has been recorded in band widths of £5,000 or £10,000, though the respondent could decide whether to report the information in a gross or net amount. It is necessary to try and put the data on the same scale. In this instance, it was decided to put all net data on the gross scale. The modifications to the data are shown below.

Net Value £	Gross Value £	Category £
0-5,000	0-5,000	20,000 and below
5001-10,000	5,000-12,000	20,000 and below
10,001-15,000	11,900-19,400	20,000 and below
15,001-20,000	19,400-27,000	20,001-40,000
20,001-25,000	27,000-34,000	20,001-40,000
25,001-30,000	34,000-41,000	20,001-40,000
30,001-40,000	41,000-58,000	40,001+
40,001-50,000	58,000-75,000	40,001+
50,001+	75,001+	40,001+

There are some limitations to this technique. The choice of groups is largely dictated by the data. For instance a net salary of £15,000 is roughly equal to a gross salary of £20,000. Being that £15,000 and £20,000 are both cut off points, it is sensible to create a category of income £20,000 or below to minimize overlap between groups. With the categorizations used, there should be little overlap, though this can not be totally avoided. For instance a student may know that their parent earns £15,100, equivalent to £19,500 gross, per year. However this student would be put into the group £20,000-£40,001 gross per annum because of the overlap problem. It is reasonable to suggest that the analysis will not be severely affected by this, as the overlap is small. Some other assumptions must be made about this variable. The question asked is about the total income of parents. This may complicate the conversion between net and gross. In particular the tax, if only one parent is earning the income, is greater than if two parents are working. For example, consider two households with £30,000 NET income. Household A has one parent working who earns the whole £30,000. The gross equivalent is £41,000 per year. Household B however has 2 parents earning £15,000, with gross equivalent being £38,800. Hence there is a difference between the gross equivalence due to the tax system that would put household A into the £40,000+ bracket and household B into the £20,001-£40,000 group. Furthermore there is an issue that some forms of income are not taxable, such as child benefit. For simplicity, it has been assumed that all parental income is taxable and has been generated by one adult in the household. With the boundaries chosen the effect is probably quite small, but it is still important to note this difficulty. It is also important to recognize that this variable may suffer a reasonably large degree of measurement error, as it relies on students reporting their parents' income. Hence the quality of the variable relies on students accurately knowing their parents' income. A further point to note is that some (36) students failed to state whether they were reporting figures in gross or net terms. In this instance it has been assumed that students are reporting gross figures.

It should also be noted that this is only one of several possible ways to classify this variable. One drawback is that the measurement of parents' income is quite coarse, as there are only three groups. An alternative is to take the midpoint of the groups, and create a quasi-continuous variable. This would have the benefit of providing a broader sense of parents' income, though the difficulty of conversion between net and gross income still exists. In both ways of handling the data there is a significant chance of measurement error. Thus the variable should be viewed as an approximate measure of parents' income.

Appendix 3. Interval regression Results

	OLS SPECIFICATION 2		INTERVAL REGRESSION SPECIFICATION 2	
	Coefficient	Standard Error	Coefficient	Standard Error
Future Plans (Ref: Career Job)				
Temporary Job	-0.225*	0.025	-0.235*	0.026
Career or Temporary Job	-0.096*	0.021	-0.100*	0.022
Further study or travel	-0.001	0.013	-0.002	0.013
Hard to get Grad Job (Ref: Agree)				
Neutral	0.012	0.017	0.013	0.017
Disagree	0.055*	0.012	0.058*	0.012
Missing	0.098*	0.028	0.101*	0.030
Proximity to Graduation (Ref: Final Year)				
1 Year	0.016	0.012	0.014	0.012
2 or More Years	0.036*	0.014	0.034*	0.017
University Type (Ref: Post 1992)				
Other Pre 1992	0.000	0.016	-0.001	0.016
Russell Group	0.068*	0.016	0.071*	0.019
Parents Earnings (Ref: Below £20,000)				
£20,001-£40,001	0.036*	0.018	0.039*	0.019
£40,001	0.065*	0.022	0.068*	0.021
Missing Data	0.084*	0.027	0.086*	0.028
How parents earns (Ref: Work)				
Benefits	-0.057	0.039	-0.059	0.039
Investments	0.083*	0.025	0.085*	0.030
School Type (Ref: State)				
Private School	0.041*	0.021	0.043*	0.022
Dependant Status (Ref: Dependant)				
Independent	0.062*	0.022	0.064*	0.024
Private school Independent Student*	-0.065*	0.029	-0.068*	0.029
Living Arrangement (Ref: Parental Home)				
Living Away from Home	0.070*	0.021	0.074*	0.022
Gender (Ref: Male)				
Female	0.009	0.027	0.009	0.028
*Living Away from Home * Female*	-0.066*	0.028	-0.068*	0.029
Ethnic Group (Ref: White)				
Black/Asian	0.056*	0.025	0.059*	0.024
Mixed/Other	-0.003	0.021	-0.004	0.024

Note: 1 * Significant at 5% level

Variable	OLS SPECIFICATION 2		INTERVAL REGRESSION SPECIFICATION 2	
	Coefficient	Standard Error	Coefficient	Standard Error
Total Income				
Mean Centred (per £000)	0.004*	0.002	0.005*	0.002
Study Mode (Ref: Full-Time)				
Part-Time Student	-0.027	0.023	-0.027	0.024
Earnings From Work				
Mean Centred	0.001	0.003	0.001	0.003
Part-Time Student *Earnings From Work	0.013*	0.003	0.013*	0.003
Qualification (Ref: Degree/PGCE)				
Study for Other Qualification	0.049	0.038	0.053	0.039
Study for Other Qualification *Female	-0.133*	0.039	-0.139*	0.040
Subject Area (Ref: Art & Music)				
Medicine	0.265*	0.029	0.267*	0.034
Allied To Medicine	0.104*	0.026	0.105*	0.026
Sciences	0.087*	0.026	0.090*	0.029
Maths & Computer Science	0.139*	0.031	0.141*	0.033
Engineering & Technology	0.138*	0.035	0.138*	0.037
Architecture & Building	0.127*	0.036	0.127*	0.037
Social Studies	0.112*	0.027	0.114*	0.027
Law	0.185*	0.035	0.194*	0.035
Business & Admin	0.120*	0.030	0.122*	0.032
English, languages, Classics	0.054	0.034	0.055	0.036
History & Philosophy	0.014	0.035	0.014	0.039
Education	0.099*	0.023	0.102*	0.023
Combined	0.067*	0.033	0.068	0.037
Other	0.040	0.048	0.043	0.047
Entry Qualification (Ref: A-levels)				
GNVQ/AVCE	-0.056*	0.022	-0.059*	0.021
Other	-0.012	0.016	-0.010	0.014
Age				
Mean Centred	0.006*	0.003	0.006*	0.003
Age*Independent Student	-0.006*	0.003	-0.006*	0.003
University Location (Ref: Other England)				
London	0.069*	0.016	0.071*	0.017
Wales	-0.046*	0.019	-0.047*	0.020
Missing	0.019	0.034	0.016	0.034
Live in London (Ref: Yes)				
No	-0.041*	0.014	-0.041*	0.016
Constant	9.652*	0.039	9.645*	0.037

Students' estimates tend to bunch around round numbers, despite an open text field allowing precise estimates to be recorded. How may we take this into account when estimating regression coefficients? One possibility is to assume students do not expect to get exactly the salary they report, but give a "ball-park" figure. A student who estimates their salary does not expect to receive exactly this amount, but somewhere around the figure. As an example, a student predicting a salary of £13,000 may be presenting their midpoint estimate or reporting to the nearest thousand. In reality they expect a salary between £12,500 and £13,499.

One way to treat the data is to suggest that students' actual estimates are unknown, but lie within a censored interval. If it is assumed that students round their estimate to the nearest thousand, intervals as described in the preceding example may be appropriate. It is also necessary to assume that the unobserved response (expected starting wage) is normally distributed.

However this does not account for the extra large peaks at certain points. Examination of the data suggests that extra clustering occurs at numbers that are rounded to the nearest £5,000. Consequently it seems appropriate to assume that students who are reporting these figures are exercising a greater degree of rounding and have a wider anticipated salary range. Therefore the interval is adjusted for figures at £15,000, £20,000, £25,000, £30,000 and £35,000 under the assumption that students round their estimate to the nearest £5,000. Hence a student who predicts a wage of £30,000 is assumed to have a censored estimate within the range £27,500 to £32,499.

Results for the censored regression model appear in the table above. Compared to the original OLS regression, very little changes with the introduction of the censoring assumption and use of interval regression. Both coefficients and standard errors are close to the OLS estimates. Most coefficients alter by around 0.2 to 0.3% suggesting that, even when assuming quite extreme rounding by students, there are limited differences compared to using ordinary least squares.

Appendix 4. Sample selection in DLHE data

The following table shows how the sample size in the DLHE dataset changes with the sample selection rules applied.

Sample Selection Rules	Observations
Start	316,472
England & Welsh universities only	276,832
First degree only	228,626
Salary above £8000	225,508
Employed within UK only	214,220
Missing salary data excluded	75,264

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