

Researching Graduate Careers Seven Years On
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Research paper No. 5

The Earnings of Graduates in their Early Careers

Peter Elias and Kate Purcell

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1. Introduction

The earnings of those who have participated in higher education are of interest for a variety of reasons. Although there is no necessary relationship between earnings and productivity, earnings premia acquired via higher education are routinely assumed to be a measure of the relationship between productivity, economic performance and investment in higher education. This, in economic terms, is the 'value of a degree'. Second, although earnings reflect cultural values and the ability of various professional interest groups to protect their members' earnings, the relative earnings of those who pursue different subjects of study within higher education is one possible indication of imbalance between the supply of and demand for the various skills and knowledge imparted in degree courses. Such information can inform those responsible for curriculum development and those who provide educational and careers guidance. Finally, the relationship between other benefits of education, subsequent earnings and wealth formation, particularly the balance between private and public benefits of higher education, has intensified the debate about who should pay for further expansion of the higher education system – the individual or the State. These interests have generated a significant body of economic research, which purports to show, *inter alia*, that the expansion of higher education in the UK over the past fifteen years has been too rapid or too slow, or that some graduates are 'overeducated' for the jobs they are able to obtain after graduation, or that the value to employers of graduates, as reflected in the salaries they are prepared to pay them, has been in decline. Nearly all these studies have focussed upon the earnings of graduates, yet the messages they provide are mixed.

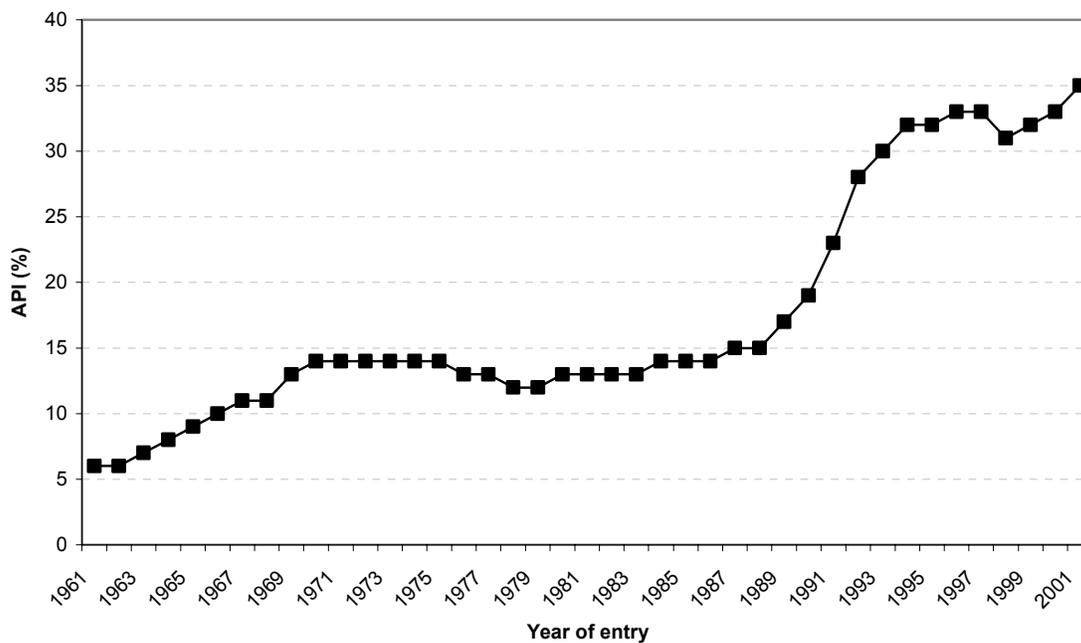
This paper presents findings from a programme of research that has tracked the early careers of recent graduates from UK higher education institutions. The intention of this paper is to explore further the earnings of graduates at an early stage in their career development – seven years after graduation. Using information from a number of sources, we conclude that the demand for graduates remains high and that higher education is a profitable path for the vast majority of potential participants. The approach we adopt is as follows. Section two gives a brief overview of the growth of higher education in the UK over the past twenty years, shows evidence from cross-sectional data sources on the nature of the 'graduate premium' and reviews recent research evidence about the nature of this premium. Section three presents a cross-cohort comparison of the earnings of two groups of graduates, those who gained their first degrees in 1980 and those who graduated in 1995, comparing and contrasting the growth in their earnings over the first six or seven years of their post-graduation careers. Section four moves away from cross-cohort comparison to study in more depth a phenomenon revealed in

these earlier sections, the growth and persistence of the gender gap in earnings. The final section discusses these findings and suggests where further research may be focussed.

2. Higher education and earnings: a review of recent evidence

It is widely acknowledged that the UK higher education system has undergone a major transformation over the past 25 years, from a system that catered for an elite group of entrants in the late 1960s and early 1970s to one that now aims to provide tertiary education to half the population of 18 - 30 year olds. An indication of the scale of this expansion can be gained from Figure 1, which shows the increased rate of participation of young people in higher education between 1961 and 2001/02.

Figure 1 Participation by young people in Higher Education, Age Participation Index¹ (API) Great Britain, 1961 to 2001



Sources: Department for Education and Skills, Trends in Education and Skills (www.dfes.gov.uk/trends), Wilson (2000).

This increase has been matched by a rise in the number of 'mature'² students in higher education. In total, the number of participants in higher education in Great Britain almost doubled in a decade, from 1.2 million students in 1990/91 to 2.1 million in 2000/01. These changes have been driven by a number of factors, including reform of the school qualifications obtainable at age 16, the decline in employment opportunities for minimum-age school leavers

¹ The Age Participation Index (API) measures the number of home domiciled young (aged under 21) initial entrants to full-time and sandwich undergraduate courses, expressed as a proportion of the average 18 to 19 year old Great Britain population. This measure has now been superseded by the Higher Education Initial Participation Rate, which measures the initial participation of 17-30 year olds in Higher Education (where such participation is on courses expected to last at least 6 months and the actual participation exceeds 6 months), recording a continued rise in participation from 41% in 1999/2000 to a provisional rate of 44% in 2002/03.

² 'Mature' students are those aged over 21 on entry to an undergraduate programme, or over 25 on entry to a postgraduate programme.

and the associated fall in relative earnings for young people, the incorporation of the former polytechnics and many colleges of higher education within the university sector and the continuing labour market advantage associated with a higher education (Bynner *et al.* 2002).

Given the scale of this expansion, concerns have been expressed that the increased output of highly qualified people may not have been matched by an increase in demand for their skills and qualifications (Battu *et al.* 2000, Wolf 2002). As more young people stay in the higher education sector and gain degrees, it is argued that this must be associated with a reduction in the value of degrees and a lowering of the graduate earnings premium, as a wider spectrum of the ability range is drawn into higher education and as employers substitute graduates into jobs which were previously the domain of non-graduates. Estimates of the extent of graduate 'overeducation' in the range of 30 – 40% of all graduates have been commonplace over the last few years³. Others have suggested that the major increase in the supply of graduates indicates a growth in credentialism rather than the development and enhancement of human capital (Ainley 1997, Keep and Mayhew 1996, 1997, Brown 2004). At the same time, employers in areas requiring certain graduate skills (particularly with reference to numeracy-based subjects), continued to report skill shortages (AGR 2002; Mason 1999). Advocates of educational expansion argue that widening access to previously under-represented groups and providing 'second chance' opportunities for undergraduate study is enabling more people to realise their potential and make a more substantial contribution to the economy.

An important indicator of the balance between the demand for graduate level skills and knowledge and the supply of highly qualified labour is the so-called 'graduate earnings premium' - the gain in earnings associated directly with the skills and knowledge imparted via a degree-level qualification. Given the huge expansion of higher education, the increased supply of graduates would, in the absence of a similar increase in demand, tend to depress the average graduate earnings premium. We examine recent evidence to see whether or not there has been such a decline.

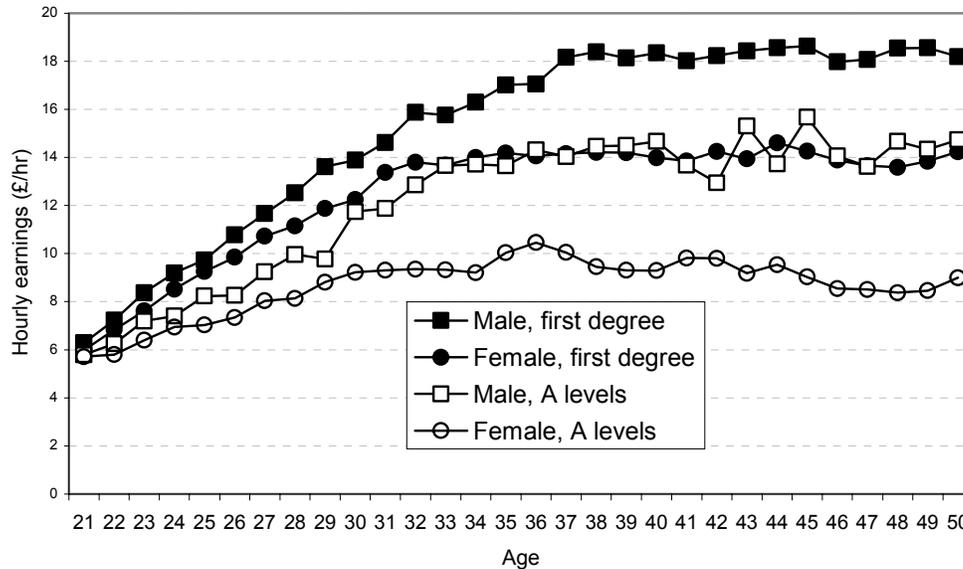
Measurement of the graduate earnings premium has to take account of the fact that graduate earnings rise more rapidly with age and job tenure than do the earnings of non-graduates. Figure 2, which draws upon the earnings information collected in the UK Labour Force Surveys between 1999 and 2003, shows for men and women the variation in hourly earnings by single years of age for graduates (first degree holders only) and non-graduates (those with some university entrance level qualifications [A-levels] but without a degree).

While this might appear to provide evidence of a differential growth rate of earnings in the early career stage, there are two different interpretations that can be put upon these age/earnings profiles. First, it is possible that older graduates experienced a faster rate of growth of their

³ Battu *et al.* (2000) derive estimates of graduate mismatching at 40%, Sloane *et al.* (1999) estimate 31% , Dolton and Vignoles (2000) estimate 30 to 38%, Mason (1996) reports 45%, Green *et al.* (1999) produce a figure of 46% and Alpin *et al.* (1998) report 20-30%. All of these studies employ definitions of 'overeducation' which are questionable. In contrast, Chevalier (2001) examines the extent to which graduates express dissatisfaction with the match between their work and their qualifications. He shows that about 6% of 1985 and 1990 graduates express such dissatisfaction with their 1996 jobs.

earnings than is the case for those who graduated more recently (the so-called 'cohort' effect). The alternative interpretation is that graduate earnings do, in fact, grow with experience gained after graduating, and at a faster rate than for non-graduates (the 'age/experience' effect). The information shown in Figure 2 could confound age/experience effects with cohort effects. To determine whether or not the graduate earnings premium is declining it is necessary to disentangle these different influences.

Figure 2 Average hourly earnings of graduates (first degree only) and non-graduates (A-levels only), by age and gender



Source: Labour Force Surveys, 1999 - 2003.

McIntosh (2004) shows that the profile of graduate earnings by age is essentially an age/experience effect. He does this by estimating the graduate earnings premium by single years of age from 'pseudo-cohort' data⁴ built up from the 1993 to 2001 Labour Force Surveys. While he notes some variation in this premium apparent for women, the premium averages about 10-15 per cent in the year immediately after graduation, to about 20-25 per cent by the time the cohort is aged 29 – 33 years.

To disentangle the separate effects of age and experience on graduate earnings, whilst attempting is obtained from the two major birth cohort studies in the UK, the National Child Development Study (NCDS) also known as the '1958 birth cohort' and the 1970 British Cohort Study (the '1970 birth cohort'). Studies of the earnings of graduates compared with non-graduates have been made on both cohorts between ages 23 and 33. Comparisons across cohorts at different ages are shown in Table 1.

⁴ The difference between a 'true' cohort and a 'pseudo' cohort is that the former yields information from exactly the same group of people as they age, whereas the latter gives information from different people in each year, selected so as to be representative of the true cohort. 'Pseudo' cohorts suffer from more sampling variation than true cohorts, but they experience no attrition. For a large national survey such as the LFS, pseudo cohort techniques yield good approximations to true cohort effects'

Table 1 Variations in the earning premium for a degree, inter-cohort comparisons

Age of graduates and year earnings premium measured	Earnings premium for a degree	
	Men	Women
23 year olds in 1981	21%	32%
26 year olds in 1981 (adj.) ¹	25%	36%
26 year olds in 1996	29%	33%
33 year olds in 1991	40%	45%
29 year olds in 1999	26%	25%
33 year olds in 1999 (adj.) ²	32%	31%

Sources: For 23 year olds in 1981 and 26 year olds in 1996, Elias and Pierre (2002).

For 33 year olds in 1991 and 29 year olds in 1999, Elias, Hogarth and Pierre (2002).

- Notes: 1. The adjusted return for 26 year olds in 1981 is prepared by adding 4% to the premia for male and female graduates at age 23, given the likely increase at this age due to 3 years additional experience.
2. The adjusted return for 33 year olds in 1999 is prepared by adding 6% to the premia for male and female graduates at age 29, given the likely increase at this age due to 4 years additional experience.

Because earnings information is only collected at the time of each survey, the earnings premia need to be adjusted for the slight differences in age. Four surveys are contrasted here. The 1958 cohort was surveyed in 1981 (age 23) and in 1991 (age 33). The 1970 cohort was surveyed in 1996 (age 26) and in 1999 (age 29). The first set of comparisons is made between the earnings premia for graduates who were 23 in 1981 with graduates who were 26 in 1996. An adjustment is made (based upon the work of McIntosh described above) to provide an estimate of the earnings premia for 26 year olds in 1981 based upon the observed premia for 23 year olds in 1981. The second set of comparisons is made between the premia for graduates aged 33 in 1991 with those aged 29 in 1999. Again, an adjustment is made for the four-year difference in age between the two cohorts. These estimates indicate that the graduate earnings premium received by women may have been falling for some time. Between 1981 and 1996 it probably fell slightly. From 1991 to 1999 for older female graduates the premium dropped from 45 per cent to about 30 per cent. For men a similar finding holds, with the male graduate earnings premium dropping from 40 per cent for 33 year olds to an estimate of 32 per cent by 1999. While this information is subject to a significant error due to the *ad hoc* nature of the adjustments made to facilitate comparisons at similar ages in different time periods, there is no strong evidence of a decline in the earnings premium for 26 year olds in 1999 compared with the same age group in 1981. For the older age group, there may have been a decline in the premium, suggesting that the rate of growth of graduate earnings between ages 26 and 33 has been slowing. However, the evidence is slender and may well be subject to an unknown degree of specification error.

Thus, the limited amount of evidence that has sought to disentangle age/experience from cohort effects does show some support for the hypothesis that the graduate earnings premium is declining. However, the evidence is drawn mainly from studies of graduates who entered the labour market well before the major expansion of the graduate labour supply took place. In the

next section we focus attention on two cohorts of graduates, those who gained their first degrees in 1980 contrasted with a cohort who graduated in 1995.

3. The growth of graduate earnings: a cross cohort comparison⁵

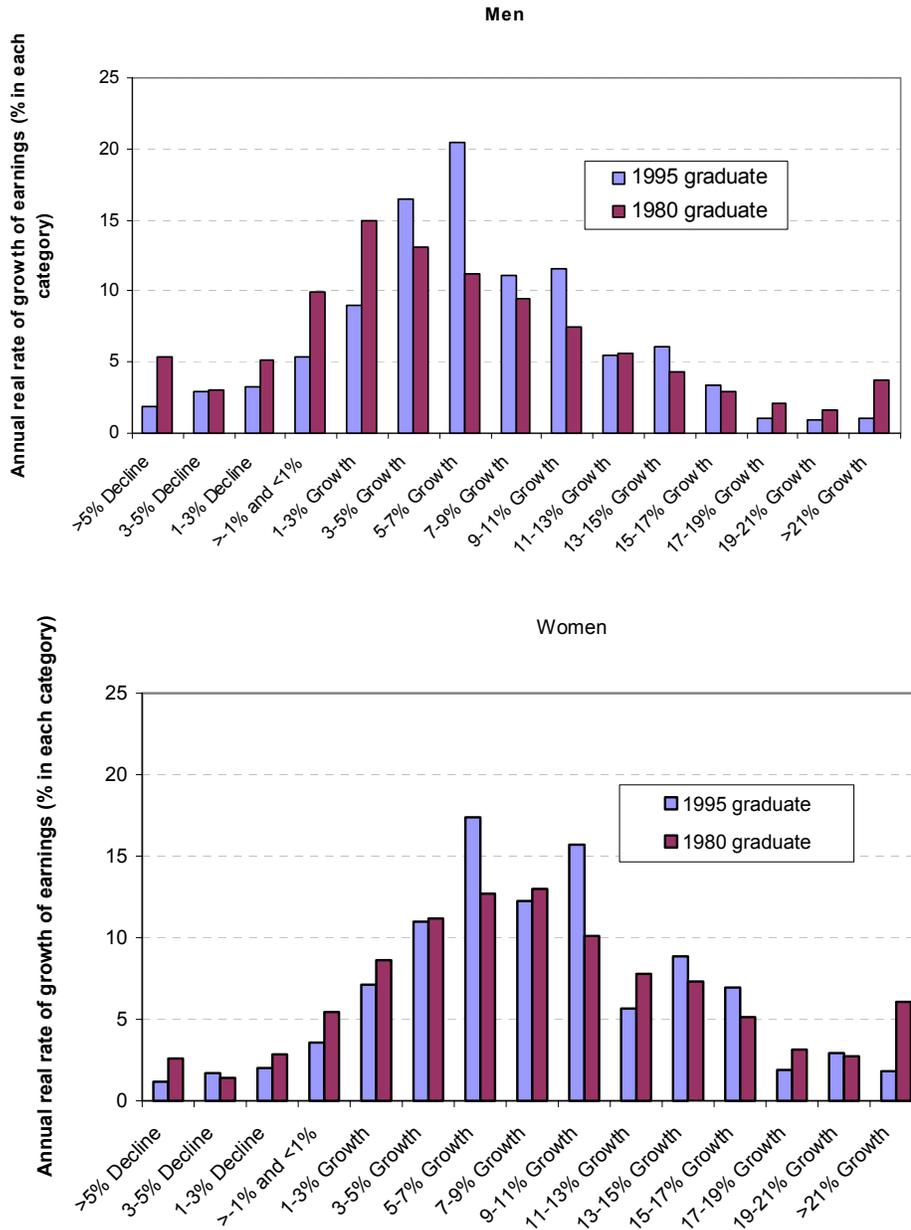
In this section we examine the rate of growth of graduate earnings, comparing growth rates over the six or seven years after graduation from two national cohort studies – 1980 graduates and 1995 graduates. While this does not facilitate examination of the graduate earning premium, a comparative approach based upon real earnings (actual earnings deflated by the average earnings index) should indicate the direction in which the premium is changing. The time span is of particular interest, given that it covers the period in which higher education expanded from an elite system, with only 1 in 8 of young people attending a university and gaining a degree, towards a system of mass universal higher education. As was demonstrated in Figure 2, the graduate earnings premium is established in the years immediately after graduation. We would expect therefore that the significant increase in the supply of graduates on to the labour market between the mid 1980s and 2002/03 would impact upon the rate of growth of graduate earnings in these early stages of their career, possibly widening the distribution of growth rates and lowering the average as employers substitute graduates for non-graduates or as the 'quality' of graduate labour supply declines.

For this purpose we make use of information collected in the 1986/7 survey of 1980 first degree graduates and diplomates. This national survey was a one in six random sample of pre-1992 university graduates and one in four graduates from other higher education institutions. Information was collected on the earnings of graduates for their first main job after graduation and their job held at the time of the survey. From associated work history data, we are able to identify the start date of their first main job they had held since graduation. We have similar information collected in our 2002/03 survey of 1995 graduates. From these sources we computed the average annual rate of growth of earnings, having deflated annual earnings by the index of average earnings⁶. Figure 3 compares the distribution of average growth rates between 1980 and 1986/7 for the 1980 graduates with the distribution of average growth rates between 1995 and 2002/03 for the sample of 1995 graduates recontacted in 2002/03.

⁵ Most of the work to develop these two data sources into a comparative dataset was conducted by Kamiar Mohaddes, an undergraduate economics student at Warwick. Full details of the work involved are given in Mohaddes (2003). Further information on the 1980 survey is given in Dolton et al. (1990) and Dolton and Makepeace (1992)

⁶ In this, and all subsequent analyses, we restrict the analysis to those who were aged under 30 years at the time they gained their first degree. We show elsewhere that older graduates tend to have different work experiences, outcomes and sometime, objectives for studying.

Figure 3 The distribution of real annual rates of growth of graduate earning in the 6/7 years after gaining their first degrees: a comparison of 1980 graduates with 1995 graduates, by gender



Sources: *Survey of 1980 Graduates and Diplomates* and *7 Years on: a survey of the early careers of 1995 graduates*.

For presentational purposes the growth rates have been grouped into two per cent bands. We observe that, for both men and women, the distributions of growth rates have narrowed, with smaller proportions of graduates in the tails of these distributions. For men, the mean annual rate of growth of real earnings over this 6/7 year period after graduation fell marginally from 8.6 per cent per annum to 8.4 per cent per annum. For women, the mean rate of growth of earnings rose, from 5.6 per cent on average between 1980 and 1986/7, to 6.5 per cent per annum between 1995 and 2002/03. However, these changes must be interpreted with care, due to the fact that there are a number of compositional changes in the nature of the two

graduating cohorts which need to be taken into consideration. To gain a better understanding of the changes that have taken place between these two periods, we model the growth rate as a function of a number of key variables, notably the subject area in which the graduate studied for his/her first degree, the entry qualification they had at the time they started their first degree course, the type of institution they attended, whether or not they were educated at a fee-paying school prior to university entrance, the class of degree they obtained, any work-limiting disability, age and family structure. The results are presented in appendix table A1. These show that the type of university attended does not appear to have a separate influence on the rate of growth of graduate earnings in either period, apart from graduates from Colleges of Higher Education who do experience lower growth rates generally. A poor degree result does associate with a lower subsequent rate of growth of earnings, especially for men. Further qualifications do not necessarily enhance earnings growth, especially for those graduates who went on to gain a PhD, although this result should be interpreted with caution due to the fact that those who have taken a significant time to gain a postgraduate qualification have had correspondingly less time to realise the value of their additional investment in human capital. Attendance at a fee-paying school prior to university adds between three quarters of a per cent to one and a half per cent to the annual real rate of growth of earnings after graduation. We considered that this might reflect family resources more generally, and included other variables in these equations which attempt to describe the social class background of the individual, but these variables (defined rather narrowly in terms of parental occupations at the time the respondent was 14 years old) were uniformly non-significant. Subjects studied have a major impact on earnings growth. Here the reference category is 'Social sciences'. Relative to this group, arts, humanities and languages graduates have lower growth rates of earning, and the pattern has remained fairly similar in both periods. Law graduates had a strong rate of growth of earnings in the 1980 – 1986/7 period, yet this appears to have declined somewhat for those graduating in 1995 with a first degree in Law. We investigated this decline and found that it reflected in the better starting salaries for law graduates entering legal occupations in 1995 compared with their starting salaries in 1980 (Mohaddes, 2003).

The family structure variables are of considerable interest, given that we note that the real rate of growth of post-graduation earnings appears to have grown significantly for women. Combined with knowledge that women are postponing family formation (Bynner, *et al.* 2002), this result could be associated with the fact that women who graduated in 1980 were more likely to have started family formation in the subsequent 6/7 year period than the women who graduated in 1995. This certainly appears to be the case, given that 13 per cent of women in the 1980 cohort stated that they had children under the age of 5 years some 6/7 years after graduation, compared with only 8 per cent of the 1995 cohort. Furthermore, the larger negative coefficients on the family structure variables shown in table A1 indicate that the negative impact of children on earnings growth was more pronounced for women in the 1980 cohort than in the 1995 cohort.

To test whether or not there had been any major decline in the rate of growth of graduate earnings between the two periods, we need to adjust for these compositional influences (i.e.

changes in the proportions of graduates studying different subjects, changes in family formation, etc.). To achieve this, we combined the samples and tested for differences in growth rates by gender. The results are shown in Table 2, with male graduates who gained their first degrees in 1980 as the reference group. This analysis confirms that, for men, there is no significant difference in the average rate of growth of real earnings in the 6-7 years after graduation between men who graduated in 1980 and those who graduated in 1995. For women who graduated in 1980, they experienced an average rate of growth of earnings which was 2.5 percentage points per annum below their male counterparts. Interestingly, for women graduating in 1995, even after adjusting for differences in mix of subjects studied, entry qualifications, and family formation, etc., this had improved somewhat to the extent that those who graduated in 1995 were on a growth path which was only 0.4 percentage points *per annum* below their 1980 male counterparts.

Table 2 Adjusted differences in real annual rates of growth of earnings of 1980 and 1995 graduates, by gender

	Relative rate of growth of real earnings	Standard error	Significance
1980 graduate, male	Ref.		
1980 graduate, female	-2.5%	0.08	0.000
1995 graduate, male	n.s.	-	-
1995 graduate, female	-1.4%	0.07	0.000

Note: 'ref.' denotes the reference category.

'n.s.' denotes no significant difference from the reference category.

Other variables included in the model are: subject studied, attended a fee paying school, entry qualifications, age, class of degree obtained, work limiting disability, children in age groups 0-1, 2-3, 4-5, 6-11, 12 and over,

We conclude, therefore, that for women the real rate of growth of earnings over the first 6/7 years after graduation of those who graduated in 1995 has improved relative to a similar cohort of women who graduated in 1980, and that this is not as a result of postponement of family formation. However, the annual rate of growth of the real earnings of women graduates remains significantly below the rate of growth of earnings of men who graduated in 1980 or 1995. For men, we note that the real rate of growth of their earnings in the first 6 of 7 years of their careers is, on average, as good now as it was in the period 1980 to 1986/7.

4. Gender differences in the earnings seven years after graduation

Gender differences in earnings are well researched⁷, but remain elusive in terms of our understanding of the processes through which they arise and the mechanisms that perpetuate them. Human capital theory posits a relationship between expected lifetime labour market experience, education and earnings, suggesting that women will invest less in human capital if they expect to withdraw from the labour market for reasons of family formation or caring

⁷ See for example Walby and Olsen (2003), Sorensen (1989), Borjas (1996), Bergmann (1971),

responsibilities. Related to this theory, it has also been argued that some women's preferences for paid work are different from those of men, affecting their investment in careers and consequently, their earnings (Hakim, 2003). On the other hand, the reward structure reflects historically-embedded differences in the value accorded to women's and men's work, reflecting female dependency and gendered divisions of labour (Cockburn 1991, Phillips and Taylor 1980). Segmented market theory suggests that certain areas of employment become identified as 'male' or 'female' work (Crompton and Sanderson 1990). Segmentation arises either through sex-typing of job content (where jobs are assumed to be more accessible or attractive to women and men on the basis of biologically-based differences in aptitude and orientation) or because of differential accessibility to men and women deriving from social factors (primarily gender-related occupational prerequisites or the organisation of working arrangements). While the causes of segmentation remain debatable, subsequent 'crowding' (an excess of labour supply over labour demand) in such segmented markets can lead to a gender difference in earnings⁸.

An indication of the scale of the gender difference in hourly earnings across all jobs was shown in Figure 1. This illustrates how the gender gap in hourly earnings varies with age, beginning to appear in the early 20s and reaching a maximum in the mid 40s. While graduates at any age earn significantly more than non-graduates, the emergence of the gender pay gap arises in a similar fashion for graduates and for non-graduates. We note also that the period covering the first ten years after graduation is critical in terms of the difference between the pay of graduates and non-graduates. A gender difference is apparent even for the youngest graduates, initially at about 10 per cent, but rising to about 25 per cent by the time graduates reach their mid 40s.

We expected that a longitudinal study of the evolution of the gender gap in pay would not yield such striking evidence as is revealed in the cross-sectional data presented above. In the cross-sectional picture, most of those in their early 40s had graduated 20 years earlier and could be on a different labour market trajectory than those who graduated more recently. Women who had graduated recently are perhaps more likely to be working in occupations which had embraced a commitment to equal opportunities in recruitment and promotion. Second, the graduates in the longitudinal survey were predominantly aged between 24 and 28 years at the time of the first survey and few had children. The impact of family formation and childcare responsibilities on career patterns was, therefore likely to be less significant for women in this age range.

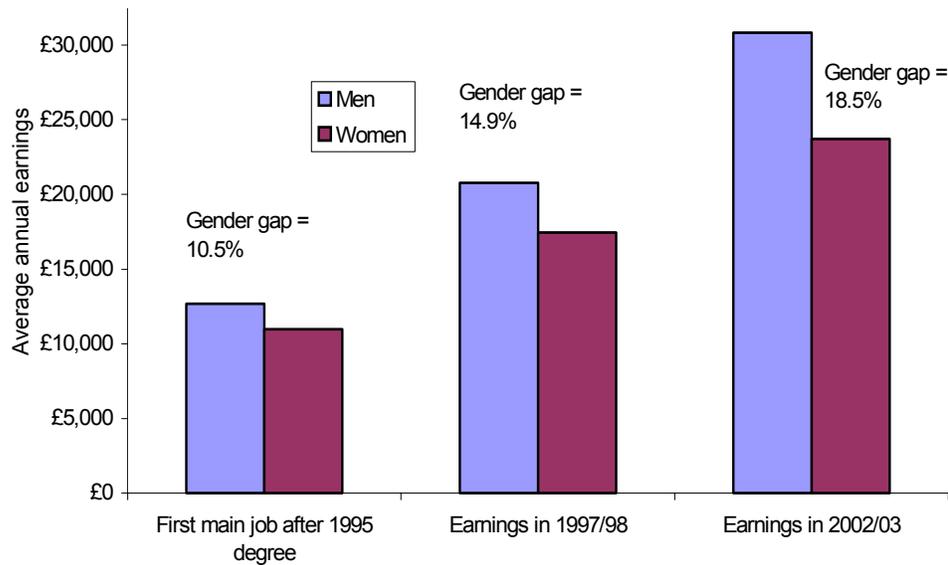
It was surprising, therefore, to find a significant gender gap in earnings at this early stage in the career development of these 1995 graduates. Figure 4 shows the evolution of the gender gap in pay among 1995 graduates in full-time employment⁹: for their first main job after graduating in

⁸ See, for example, England (1992), England (1982), Macpherson and Hirsch (1995), Borjas (1996) and Bergmann (1996).

⁹ For this and all subsequent analyses, our data are restricted to those who stated that they were in full-time employment or self-employment in 2002/03 and who were aged less than 30 years at the time they graduated in 1995. The exclusion of those aged over 30 years at the time of graduation was undertaken because of the lack of information in the survey about work experience prior to graduation.

1995 (as long as the job was started before January 1996), at the time of the first survey of this cohort (1998/99) and at the time of the second survey (2002/03)¹⁰

Figure 4 Average annual gross earnings of 1995 graduates by gender



Source: *7 Years On: a survey of the career paths of 1995 graduates*

These comparisons reveal that the unadjusted earnings gap (without taking account of gender differences in subject studied, social class background, entry level qualifications, class of degree obtained, etc.) has been increasing steadily as careers evolve over the seven and a half year period since graduation. Women graduates reported full-time annual gross earnings in their first job after graduation which were, on average, 11 per cent less than those of male graduates. Three and a half years later this had risen to almost 15 per cent, then to over 18 per cent by 2002/03.

Table A2 presents results from a detailed multivariate analysis of the earnings of 1995 graduates in full-time employment seven years after graduating with their first degree. From this analysis it can be seen that, although a number of factors show a powerful association with annual earnings, they do not necessarily contribute to a better understanding of the gender difference in pay. For example, graduates working in inner London experience a 25 per cent premium on their earnings. This highlights the fact that inner London employers pay higher wages to attract and retain employees who face higher living costs. If significantly more men than women in our sample worked in inner London, this would help us to understand the difference in that it would cause us to question why such a geographical difference in the employment of men and women exists. Examination of the mean values of these location

¹⁰ Sample attrition is a major problem with longitudinal surveys and our survey is no exception. Response rates in 1998/99 were just over 30 per cent. Only 70 per cent of these respondents gave permission to be recontacted. Of these, only 50 per cent responded. However, we are able to determine whether or not the respondents at the second survey are systematically different from those who responded at the first survey. We find little evidence of such systematic differences.

variables for men and women shows that there is little difference between them. Location of employment and the pay differential associated with it is not, therefore, a factor underlying the gender difference in pay.

Gender differences in earnings are associated with a number of factors which were measured in the longitudinal survey. Most important among these are:

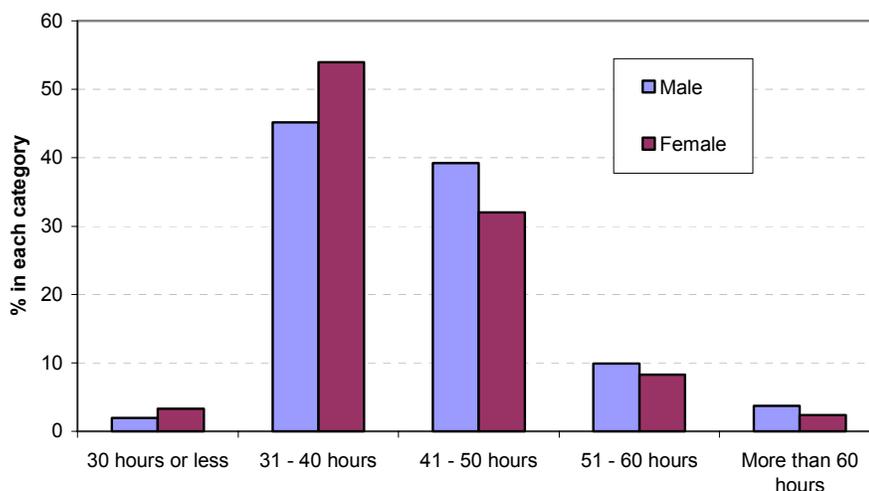
- weekly hours worked;
- the sectoral distribution of graduate jobs;
- the extent to which graduates are employed in workplaces where the type of job they do is segregated by gender;
- subject studied for their 1995 degree.

The following discussion presents these findings in detail

Weekly hours worked

The relationship found between annual earnings and hours worked per week is, as expected, positive – as weekly hours worked increase so do annual earnings. The regression coefficient shown in Appendix A3 implies that each additional weekly hour worked contributes to a one per cent increase in hourly earnings. This may not seem large, but the young male graduates in our sample report weekly hours that are significantly higher than for the women.

Figure 5 **Distribution of hours worked per week by gender**



Source: *7 Years On: a survey of the career paths of 1995 graduates*

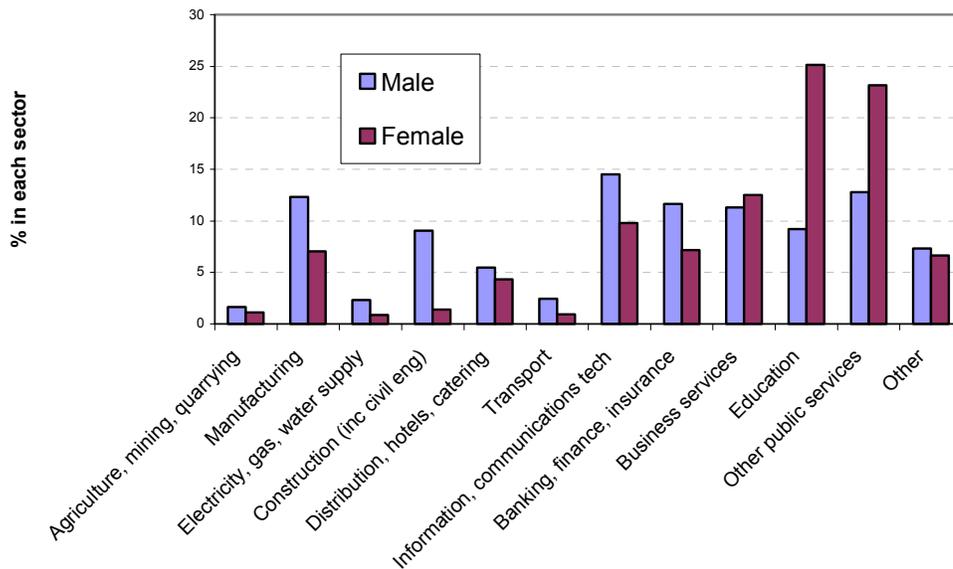
Figure 5 shows that over half of the men report working more than 40 hours per week. For women, only 43 per cent report weekly hours in excess of 40. While some may argue that this simply reflects fair compensation for longer hours of working, it raises the important question of why men work significantly longer hours and whether or not women's hours are more constrained than men's due to the gendered division of non-paid work. This is an issue we return to later in this paper.

The sectoral distribution of graduate jobs

Average earnings vary by industry sector and this is clearly part of the explanation for the observed gender pay gap among the graduate sample. The reasons behind this are complex and varied, and may well reflect differential access to sectors of employment by men and women. The distribution of graduate employment by sector probably reflects choices made at an early stage in the development of graduate career paths. For example, those who pursue languages and humanities at school, then take a degree in these subjects, are less likely to find employment in the engineering sector than those who pursued more quantitative subjects. Part of the explanation of sectoral pay differentials lies in the demand for and supply of particular skills. The information and communications sector is a good example of a sector where jobs, until recently, were in relatively short supply, leading to higher pay for those working in the sector. Additionally, public sector jobs typically pay less than equivalent private sector posts.

These factors combine to have a significant impact upon the pay of men and women. For example, those who work in banking, insurance, finance, the information and communications sector and business services have annual earnings which are approximately 15 per cent higher than the average.

Figure 6 Industry of current job by gender

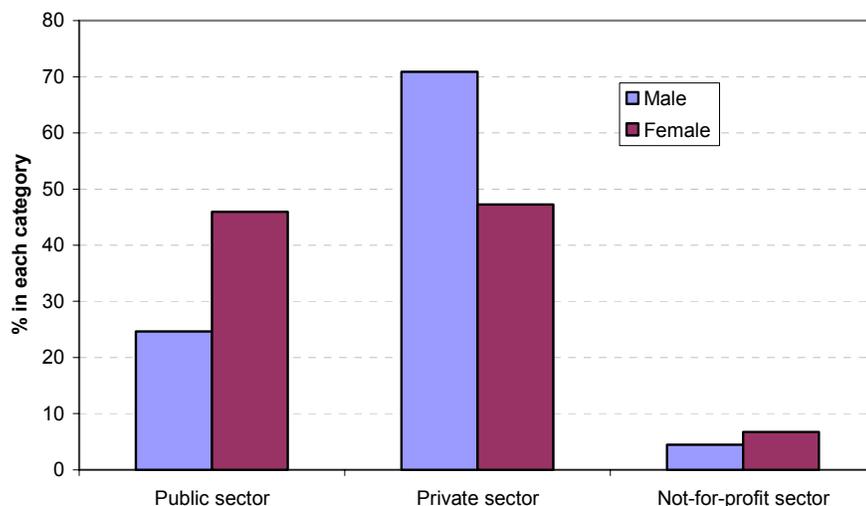


Source: *7 Years On: a survey of the career paths of 1995 graduates*

Figure 6 reveals that, while 29 per cent of the female graduates work in these sectors, almost 40 per cent of men have jobs in one of these three sectors. Similarly, well over a half of the female graduates work in education, health or other public services, compared with less than 30 per cent of the male graduates. Jobs in these sectors pay less on average, for both men and women, but the effect of such a negative pay differential is more significant for women given the higher proportion of women working in public sector jobs.

The public/private sector pay differential contributes significantly to the observed gender difference in pay. In addition to requesting information about the sector in which they are currently employed, we asked respondents to indicate whether their current employment was in the public sector, the private sector or 'the not-for-profit' (e.g. charitable institutions) sector. As can be seen from the regression results presented in Table A3, this distinction has a major impact upon annual gross earnings. Public sector jobs have earnings that are 10 per cent lower than private sector jobs, after having taken account of the sector in which a person works. Figure 7 shows that over half of the female graduates in full-time employment seven years after graduation are employed in the public or 'not-for-profit' sector, compared with only one third of male graduates.

Figure 7 Public/private sector employment by gender



Source: *7 Years On: a survey of the career paths of 1995 graduates*

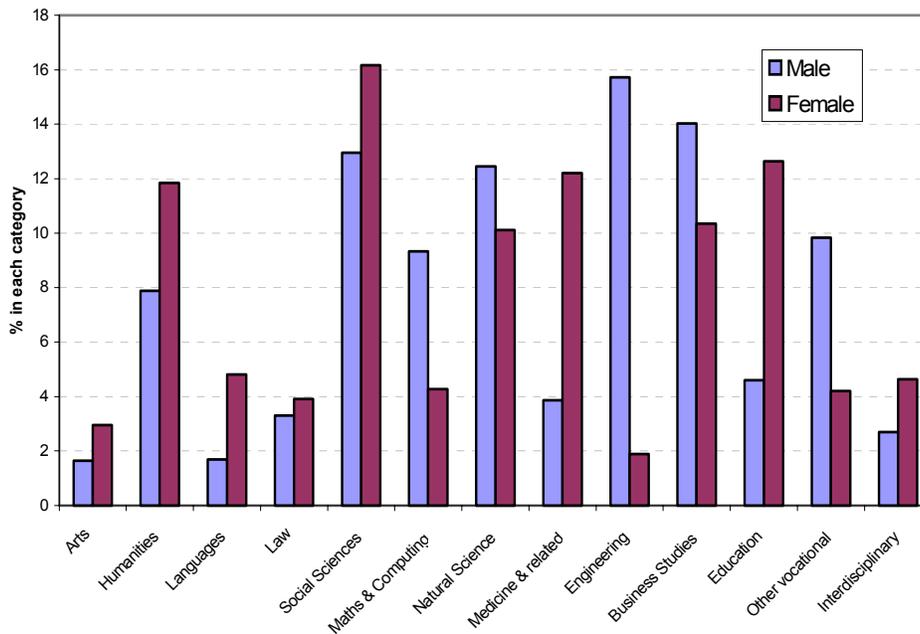
Undergraduate Degree Subject

Access to occupations is clearly restricted, if not substantially determined, by subject and discipline choices made at school and in higher education and the consequent skills developed. Boys and girl's secondary education subject choices and achievements at GCSE, 'A' level and equivalent public examinations are gendered, with boys more likely to have chosen science and numeracy-based subjects than girls and more likely to have gone on to higher education courses that require such a foundation (DfES 2002, HESA 2002). There is some evidence that seven and a half years after graduation, a key factor that aids our understanding of the gender difference in earnings remains as it was revealed in the earlier analysis. The subject studied for the degree is a powerful predictor of later earnings. Those who took on arts degree earn 17 per cent less than law, social sciences, engineering, business studies or education graduates. Humanities and language graduates also continue to show a lower 'graduate premium' relative

to these groups. In contrast, maths and computing graduates and those who studied engineering record annual earnings which are 10-12 per cent higher than the reference groups.

Figure 8 shows the higher proportion of male graduates who had studied the quantitative-based engineering, maths & computing, and other vocational subjects, with women studying in significantly higher proportions in arts, humanities, languages, social sciences, medicine and related subjects and education.

Figure 8 Subject studied at undergraduate level by gender



Source: *7 Years On: a survey of the career paths of 1995 graduates*

It is often assumed, not unreasonably, that degree subject studied is indicative of aptitudes and skills developed and, perhaps less reasonably, that specialisation in either numeracy or literacy-based skills is likely to be correlated with low development of the other skill-set. Skills, and the market values they are accorded, are socially constructed in particular socio-economic contexts, and it is very clear in our graduate sample that possession of different types of degree is differentially rewarded. For example, employers report shortages of graduates with numerical skills (AGR 2002), the gender premium has been found to vary according to subject (Walker and Zhu 2002) and the average earnings of those with numeracy-based degrees was higher than those where the skills developed were literacy-based. Thus, subject differences clearly go some way towards explaining the gender pay gap, differences in average earnings and the distribution of earnings of male and female graduates with similar degrees suggest that they fall short of providing a full explanation.

Workplace segregation by gender

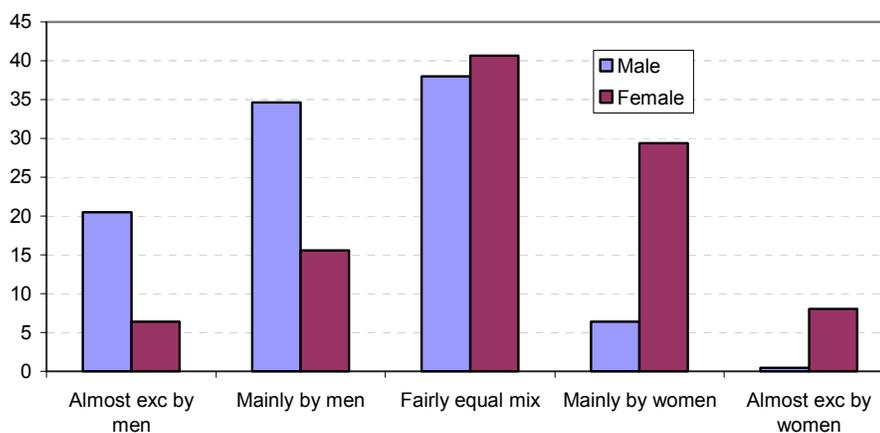
Other factors correlated with work and labour market context are clearly related to processes that link gender to earnings. A revealing finding from the results shown in Appendix 1 relates to the gender mix at the workplace. A question we included in the most recent survey asked:

In your workplace, is your type of job done ...

- ... mainly by men?
- ... by a fairly equal mixture of men and women?
- ... mainly by women?
- ... almost exclusively by women?

Figure 9 shows the response to this question, revealing the extent of occupational gender segregation at the workplace for all the young and 'young mature' graduates in full-time employment at the time of the survey, regardless of their occupation. While only 5 per cent of women are employed in workplaces where their type of job was undertaken almost exclusively by males, the corresponding figure for men was 20 per cent. In total, over half of the young male graduates in employment in 2002/03 were working in contexts where their jobs were exclusively or mainly done by men. Over 40 per cent of women were working in jobs exclusively or mainly done by women in their workplace.

Figure 9 Occupational workplace context by gender



Source: *7 Years On: a survey of the career paths of 1995 graduates*

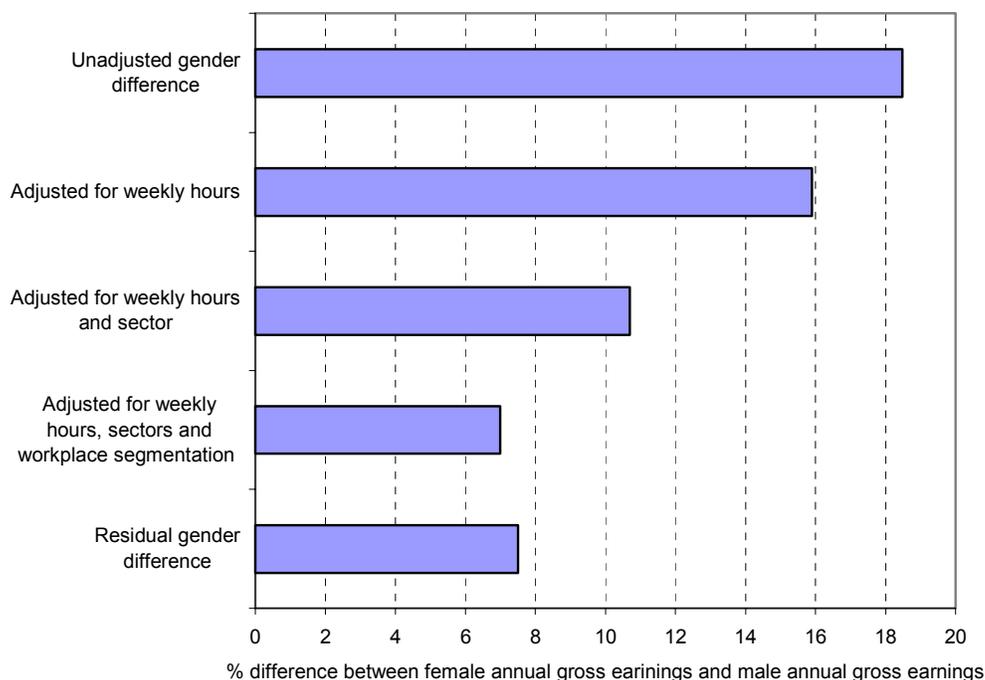
The combined effects on the gender difference in pay

The combined influence on the gender difference in pay of factors outlined above is shown in Figure 10. The uppermost bar on this chart shows the unadjusted difference in the earnings of male and female graduates in full-time employment seven years after graduation, as was shown in Figure 2. Each bar beneath this shows the effect on the gender difference in pay of introducing statistical controls for various factors. The adjustment for weekly hours alone reduces the gender differential to 15.9 per cent from 18.5 per cent. Next, adjustments are added for the sector of employment (SIC Divisions and the public/private sector distinction).

This has a major impact on the gender difference in pay. Introduction of these statistical controls, together with the adjustment for hours, reduces the gender difference further to 10.7 per cent. Finally, the impact of gender segmentation at the workplace as a major force in the gender difference in earnings is revealed by noting that statistical adjustment for this factor brings the gender difference down a further 3.7 percentage points. The final bar in this chart is the gender difference remaining after all the variables shown in the regression estimates in Appendix A3 have been added. The fact that this is slightly higher than the gender difference adjusted simply for hours, sectors and workplace segmentation reflects the fact that there are a number of factors which operate in favour of women's annual gross earnings. In particular, women's better entrance qualifications for university and their better degree results means that, when account is taken of these factors, the gender difference widens slightly.

An interesting finding from the analysis described above relates to the relative effects of subject studied and sector of employment. While these two factors are clearly related, we anticipated that it would be the subject studied which would appear as the most important set of factors in helping us to understand the gender difference in pay. In fact, it turns out that the opposite is true – sector of employment and the public/private sector distinction provides a better indicator of the gender difference in earnings than does the subject of study, although the two are clearly inter-related when we look at the occupational distribution.

Figure 10 The combined effects of various factors on the gender difference in annual earnings



Source: *7 Years On: a survey of the career paths of 1995 graduates*

These results show that a major part of the gender difference in the earnings of graduates working in full-time employment relates to differences in weekly hours worked and the different sectors in which men and women graduates are employed. These factors alone 'account' for

half of the gender difference in the earnings of young 1995 graduates in full-time employment seven years after gaining a first degree. Clearly this does not 'explain' the gender difference, given that choices of working hours, working in the public or private sector are choices made in the light of subjects studied, domestic constraints, partnership and may well reflect gender-based constraints on opportunities to vary working hours, work in the private sector, etc. However, a very interesting result illustrated at the 'macro' level of this national study is that the gender difference in earnings relates also to the gendered nature of the work environment. Women graduates tend to work in jobs where they are working primarily with other women, and these jobs pay less than jobs in male dominated workplaces, a finding that reinforces earlier sociological studies on the significance of gender segmentation at the workplace and its impact on pay and promotion (Wilson 1998, Reskin and Padavic 1994, Cockburn 1991, Kanter 1977). This is a phenomenon we are currently studying in more depth, using information from detailed interviews with 200 survey respondents (Purcell and Elias 2004).

We note also a residual difference in the earnings of men and women graduates that we fail to relate to any observed factor. In the 1999 graduating cohort, this accounts for almost 8 per cent of the difference in full-time earnings of these two groups some seven years after graduation. This difference remains after we have adjusted earnings to take account of the fact that women tend to work in jobs with shorter weekly hours, in sectors which pay less (particularly in public sector jobs and in workplaces where their kind of work is done predominantly by women - all factors which reduce the pay of women graduates relative to men. The scale of the 'unexplained' difference in pay for highly qualified men and women in their early careers is remarkable. Further research on this issue, focussing on the relationship between partnership and family formation, continues.

5. Conclusion

This paper presents new evidence which supports the view that, in the United Kingdom through the eighties and nineties, the growth in demand for highly qualified labour continued to match supply, despite the major increase in the output of university educated labour in the 1990s. This runs contrary to the views of some economists that expansion of the education system over this period led to the phenomenon they term 'overeducation'.

We review recent evidence about the called 'graduate earnings premium' - the gain in earnings associated directly with the skills and knowledge imparted via a degree-level qualification. From earlier cohort studies and from pseudo-cohort studies based upon the Labour Force Survey, there is some evidence of a decline in the graduate earnings premium. The evidence is mixed and does not relate to those who graduated recently from UK higher education institutions. The main evidence we draw upon is taken from two longitudinal studies: people who graduated in 1980 and 1995, showing that the rate of growth of real earnings in the six to seven years after graduation is higher for the 1995 cohort than it was for a similar cohort who graduated in 1980.

The analysis also sheds light on the gender difference in graduate earnings, a pervasive and persistent phenomenon even among Britain's most highly educated workforce. While a significant proportion of the 18 per cent gender difference in the earnings of graduates working full-time can be accounted for by gender differences in hours worked and sectoral pay differentials, a new finding emerges which shows that part of the gender difference in earnings is correlated with gender segmentation at the workplace. We are undertaking further investigation of this phenomenon, relating findings derived from qualitative research to the survey findings, which reveals the complexity of variables and the different balances of explanations for gender pay and career development profiles in different employment contexts.

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Appendix

Table A1 Factors associated with the growth of annual earnings of 1980 and 1995 graduates in full-time employment in the 6/7 years after graduation, by gender

	Males 1980			Females 1980			Males 1995			Females 1995		
	Coeff.	Std. Error	Sig.	Coeff.	Std. Error	Sig.	Coeff.	Std. Error	Sig.	Coeff.	Std. Error	Sig.
(Constant)	17.74	16.98	0.30	7.78	22.67	0.73	-69.32	6.67	0.00	-57.99	6.81	0.00
Type of institution attended												
Pre 1992 university	ref.			ref.			ref.			ref.		
Post 1992 university	-0.01	0.18	0.94	-0.25	0.21	0.23	0.12	0.10	0.24	0.43	0.09	0.00
Higher Education college	-1.57	0.42	0.00	-1.36	0.28	0.00	-1.45	0.21	0.00	-0.67	0.15	0.00
Class of degree obtained												
First	0.90	0.28	0.00	2.34	0.44	0.00	0.04	0.13	0.76	1.17	0.14	0.00
Upper second	ref.			ref.			ref.			ref.		
Lower second	-0.54	0.15	0.00	-0.08	0.17	0.65	-0.25	0.09	0.01	1.00	0.08	0.00
Third	-1.30	0.21	0.00	0.64	0.32	0.05	-1.08	0.17	0.00	-0.34	0.24	0.16
Other	-1.41	0.21	0.00	-1.05	0.23	0.00	-0.63	0.13	0.00	0.76	0.13	0.00
Further qualification obtained												
Short, job-related	0.25	0.75	0.74	-0.91	0.23	0.00	-0.40	0.09	0.00	-0.95	0.08	0.00
Postgraduate certificate	-2.69	0.18	0.00	-2.34	0.17	0.00	0.06	0.10	0.55	-0.29	0.08	0.00
Professional qualification	1.97	0.14	0.00	2.72	0.17	0.00	1.92	0.09	0.00	1.22	0.08	0.00
Masters degree	-0.76	0.20	0.00	-0.98	0.28	0.00	0.22	0.10	0.03	-0.86	0.09	0.00
PhD	-1.16	0.34	0.00	-5.47	0.62	0.00	-4.85	0.23	0.00	-0.70	0.19	0.00
Other qualification	-0.89	0.25	0.00	-1.27	0.25	0.00	-0.79	0.13	0.00	-0.19	0.11	0.07
Attended a fee-paying school	1.64	0.17	0.00	0.74	0.25	0.00	1.27	0.10	0.00	0.65	0.10	0.00
Subject studied												
Arts	-2.42	0.38	0.00	-0.51	0.34	0.14	-1.49	0.32	0.00	-1.23	0.23	0.00
Humanities	-0.76	0.27	0.01	0.16	0.26	0.53	-1.25	0.16	0.00	-1.02	0.13	0.00
Languages	-1.58	0.44	0.00	-1.00	0.31	0.00	-1.68	0.30	0.00	-1.03	0.17	0.00
Law	6.57	0.30	0.00	8.64	0.36	0.00	3.37	0.21	0.00	1.31	0.20	0.00
Social sciences	ref.			ref.			ref.			ref.		
Maths/computing	1.57	0.29	0.00	1.49	0.40	0.00	1.70	0.15	0.00	1.52	0.19	0.00
Science	-1.26	0.21	0.00	-1.09	0.28	0.00	-0.84	0.14	0.00	-0.98	0.14	0.00
Medicine	0.16	0.56	0.77	-0.02	0.43	0.96	-1.08	0.22	0.00	-2.06	0.14	0.00
Engineering	-1.61	0.21	0.00	-1.80	0.57	0.00	-0.59	0.14	0.00	0.23	0.26	0.36
Business studies	1.51	0.29	0.00	0.54	0.40	0.18	2.44	0.14	0.00	1.60	0.15	0.00
Education	-5.34	0.68	0.00	-3.15	0.40	0.00	-2.05	0.25	0.00	-1.44	0.15	0.00
Other vocational	-2.14	0.30	0.00	-0.28	0.40	0.48	-0.02	0.16	0.89	0.06	0.18	0.72
Interdisciplinary	-1.05	0.24	0.00	-1.42	0.25	0.00	0.95	0.23	0.00	-1.06	0.18	0.00
Entry qualifications												
24 plus UCAS points	0.47	0.17	0.00	0.66	0.20	0.00	0.54	0.12	0.00	0.87	0.11	0.00
16-23 UCAS points	0.04	0.15	0.81	0.21	0.18	0.23	-0.04	0.10	0.72	-0.06	0.09	0.51
Under 16 UCAS points	ref.			ref.			ref.			ref.		
Age	-0.48	1.12	0.67	0.08	1.52	0.96	5.33	0.43	0.00	4.47	0.45	0.00
Age squared	0.01	0.02	0.73	0.00	0.03	0.86	-0.09	0.01	0.00	-0.08	0.01	0.00
Work-limiting disability	-1.79	0.62	0.00	-5.13	0.83	0.00	-0.42	0.29	0.15	0.76	0.29	0.01

(contd.)

Family structure												
Has children aged 0-1	0.53	0.23	0.02	-2.12	0.28	0.00	0.06	0.13	0.63	-0.94	0.19	0.00
Has children aged 2-3	0.94	0.20	0.00	-2.99	0.30	0.00	0.48	0.19	0.01	-2.42	0.25	0.00
Has children aged 4-5	-1.39	0.34	0.00	-5.32	0.62	0.00	0.26	0.27	0.34	-2.06	0.43	0.00
Has children aged 6-11	-1.39	0.55	0.01	-2.84	0.87	0.00	-0.78	0.35	0.03	1.12	0.48	0.02
Has children aged 12+	2.11	0.96	0.03	-2.49	1.86	0.18	0.93	0.50	0.06	0.11	0.55	0.84
Adjusted R squared	0.151		0.232			0.149			0.111			
N (weighted/unweighted)	14,781	2,788	10,266	1,976	24,283	1,066	23,221	1,604				

Note: All independent variables are represented by 0, 1 values, with the exception of age and age squared, which are actual years (or years²).

The dependent variable is the real annual rate of growth of gross earnings from the first main job after graduation to the job held at the time of the survey. Earnings are deflated using the monthly index of average earnings relevant for the month in which earnings were reported. Only graduates in full-time employment at each measurement point are included. The coefficients associated with each variable can be regarded as the percentage addition to (or subtraction from) the annual rate of growth of earnings attributed to that variable, relative to the reference variable in each set (denoted by 'ref.').

Table A2 Factors associated with the annual earnings of 1995 graduates in full-time employment seven years after graduation

	Coeff.	Std. Error	Sig.	Mean	
				Males	Females
Hours per week (exc. breaks but inc. o/t, unpaid)	0.009	0.000	0.000	44.2	42.3
<i>Contractual basis of current job</i>					
Permanent/open-ended	ref.			84.8%	82.1%
Fixed term contract	0.020	0.005	0.000	8.7%	9.9%
Probationary	-0.033	0.011	0.002	1.1%	1.6%
Self-employed	0.080	0.008	0.000	3.9%	3.8%
Temp (agency)	0.140	0.015	0.000	0.4%	1.0%
Other temporary or casual	-0.109	0.024	0.000	0.0%	0.5%
Other (not permanent)	-0.097	0.020	0.000	0.3%	0.5%
Degree was required to obtain current job	0.157	0.003	0.000	64.3%	69.8%
<i>Sector of current job</i>					
Agriculture, mining	-0.109	0.012	0.000	1.6%	1.1%
Manufacturing	-0.121	0.006	0.000	12.2%	6.9%
Electricity, gas, water	-0.084	0.011	0.000	2.3%	0.9%
Construction	-0.168	0.008	0.000	8.9%	1.4%
Distribution	-0.108	0.007	0.000	5.4%	4.2%
Transport	-0.142	0.011	0.000	2.4%	0.9%
Information and communications	0.005	0.005	0.384	14.3%	9.6%
Banking, finance and insurance	ref.			11.5%	7.0%
Business services	-0.027	0.006	0.000	11.2%	12.3%
Education	-0.135	0.007	0.000	9.1%	24.8%
Other public services	-0.141	0.007	0.000	12.6%	22.8%
Other	-0.151	0.007	0.000	7.2%	6.5%
Private sector	ref.			70.2%	46.8%
Public sector	-0.096	0.005	0.000	24.4%	45.6%
Not for profit sector	-0.158	0.006	0.000	4.4%	6.7%
<i>In my workplace, my type of work is done</i>					
exclusively by men	ref.			20.2%	6.3%
mainly by men	0.022	0.004	0.000	34.2%	15.4%
by equal mixture of men and women	-0.049	0.004	0.000	37.5%	40.3%
mainly by women	-0.109	0.005	0.000	6.3%	29.1%
exclusively by women	-0.126	0.008	0.000	0.5%	8.0%
<i>After first started this job, to learn to do it reasonably well took</i>					
< 1 week	-0.030	0.006	0.000	6.1%	3.4%
1 week to 1 month	-0.022	0.004	0.000	11.4%	11.5%
1 - 3 months	-0.055	0.003	0.000	24.3%	24.7%
Over 3 months	ref.			58.2%	60.4%

(contd.)

	Coeff.	Std. Error	Sig.	Mean	
				Males	Females
<i>Use of computers in current job</i>					
Do not use computers in job	ref.			1.9%	3.4%
Routine use of computers in job	0.199	0.008	0.000	51.7%	70.0%
Complex use of computers in job	0.166	0.008	0.000	28.8%	21.1%
Advanced use of computers in job	0.257	0.009	0.000	16.9%	5.1%
<i>No employed by the organisation works for</i>					
< 10 employees	ref.			5.1%	5.4%
10 - 24 employees	0.142	0.008	0.000	5.7%	6.8%
25 - 49 employees	0.145	0.008	0.000	5.7%	8.7%
50 - 199 employees	0.151	0.007	0.000	15.2%	15.2%
200 - 499 employees	0.175	0.008	0.000	9.9%	8.5%
500 - 999 employees	0.171	0.008	0.000	6.3%	8.3%
1000+ employees	0.233	0.007	0.000	51.4%	46.1%
<i>SOC(HE) classification of current job</i>					
Traditional graduate job	0.152	0.005	0.000	20.0%	26.0%
Modern graduate job	0.102	0.005	0.000	21.1%	21.1%
New graduate job	0.201	0.005	0.000	20.0%	18.5%
Niche graduate job	0.136	0.005	0.000	23.2%	20.5%
Nongraduate job	ref.			11.5%	10.8%
Not classified	0.088	0.008	0.000	4.1%	3.2%
<i>Currently employed in</i>					
Inner London	0.252	0.004	0.000	17.2%	16.8%
Outer London	0.184	0.005	0.000	7.0%	5.8%
South East	0.089	0.004	0.000	14.8%	13.1%
Male	0.075	0.003	0.000	100.0%	0.0%
Age	0.113	0.013	0.000	29.5	29.1
Age squared	-0.002	0.000	0.000	871.8	852.5
Disability	-0.089	0.010	0.000	1.7%	1.4%
Other work limiting factor	-0.105	0.008	0.000	2.1%	2.7%
Lives with partner and children	0.031	0.004	0.000	14.0%	7.9%
Lives with parents	-0.200	0.004	0.000	11.4%	7.7%
Shared accommodation	-0.100	0.004	0.000	12.1%	9.4%
Has children age 6-11	0.042	0.010	0.000	2.4%	1.2%
Fee paying school	0.039	0.004	0.000	16.2%	14.5%

(contd.)

	Coeff.	Std. Error	Sig.	Mean	
				Males	Females
<i>Class of degree obtained in 1995</i>					
First class degree				10.6%	8.0%
Upper second	-0.030	0.003	0.000	43.2%	51.0%
Lower second	-0.050	0.004	0.000	29.6%	29.3%
Third	-0.115	0.007	0.000	4.5%	2.4%
<i>Subject area of 1995 degree</i>					
Arts	-0.181	0.009	0.000	1.7%	3.2%
Humanities	-0.122	0.006	0.000	7.8%	11.8%
Languages	-0.108	0.008	0.000	1.4%	5.7%
Law	0.029	0.008	0.000	3.4%	4.1%
Social sciences	-0.037	0.005	0.000	12.9%	16.6%
Maths and computing	0.051	0.006	0.000	10.1%	4.5%
Natural sciences	-0.093	0.005	0.000	12.8%	11.1%
Medicine and related	0.057	0.007	0.000	3.9%	9.7%
Engineering	-0.018	0.006	0.002	16.8%	2.3%
Business studies	ref.			14.0%	11.3%
Education	-0.018	0.007	0.008	2.7%	10.5%
Other vocational	-0.070	0.006	0.000	9.7%	4.6%
Interdisciplinary	-0.105	0.008	0.000	2.7%	4.5%
<i>Entry qualifications for 1995 degree</i>					
24+ UCAS points	0.003	0.004	0.451	17.6%	20.7%
16-23 UCAS points	ref.			18.7%	25.1%
less than 16 UCAS points	-0.052	0.004	0.000	17.8%	18.3%
Scottish or Irish Highers	-0.002	0.005	0.753	8.8%	8.7%
Access qualifications	-0.208	0.014	0.000	1.0%	0.6%
Foundation course	0.039	0.014	0.005	0.8%	1.0%
HND/HNC	-0.026	0.005	0.000	10.6%	4.0%
GNVQ or equiv.	0.097	0.015	0.000	0.9%	0.6%
Int. baccalaureate	0.118	0.023	0.000	0.4%	0.1%
O' levels	0.153	0.026	0.000	0.3%	0.2%
BTEC, OND, ONC	-0.064	0.008	0.000	2.9%	2.4%
First degree	-0.254	0.018	0.000	0.3%	0.7%
Postgrad qual.	-0.374	0.126	0.003	0.0%	0.0%
Other qual.	-0.117	0.009	0.000	2.0%	1.7%
<i>Further education and training since 1995</i>					
Short course(s)	-0.032	0.003	0.000	24.8%	32.0%
Undergraduate degree	0.018	0.008	0.019	3.2%	2.2%
Postgraduate cert. or dip.	-0.019	0.003	0.000	16.0%	31.7%
Professional qualification	0.055	0.003	0.000	22.7%	23.5%
Master's degree	-0.040	0.003	0.000	16.1%	19.1%
Phd Programme	-0.127	0.006	0.000	5.8%	5.6%
Other	-0.020	0.005	0.000	6.9%	10.4%

(contd.)

	Coeff.	Std. Error	Sig.	Mean	
				Males	Females
Moved between regions (pre degree home and current employment)	0.014	0.003	0.000	51.9%	48.4%
<i>Parental socio-economic class:</i>					
Managerial and professional occupations	ref.			46.7%	45.6%
Intermediate occupations	-0.033	0.004	0.000	11.2%	11.3%
Small employers and own account workers	0.023	0.004	0.000	15.2%	17.6%
Lower supervisory and technical occupations	-0.016	0.006	0.004	6.0%	4.6%
Semi-routine and routine occupations	-0.027	0.004	0.000	11.4%	9.7%
Neither parent in paid employment	-0.089	0.009	0.000	1.9%	1.8%
Not determined	0.018	0.005	0.000	7.6%	9.5%
Constant	0.201				

Adjusted R squared: 0.502

Weighted N = 59,956

Unweighted N = 3,286

Note: All independent variables are represented by 0, 1 values, except for age, age squared and weekly hours worked which are continuous. With the exception of these variables, mean values of the variables are displayed as the percentage in each category coded to the value 1

The dependent variable is the natural logarithm of annual gross earnings. The coefficients associated with each variable can be regarded as the percentage change in earnings associated with each variable, relative to the reference variable in each set (denoted by 'ref.')