

Researching Graduate Careers Seven Years On
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Research paper No. 1

Measuring change in the graduate labour market
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Employment Studies Research Unit

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EMPLOYMENT RESEARCH

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1. Introduction

In parallel with research activity relating to the second survey of 1995 graduates originally contacted in Winter 1998/9, we have undertaken further analysis of data from the first survey and other detailed sources. The objectives of this phase of analysis were twofold. First, we wanted to provide a more comprehensive picture of the changing dynamics of the graduate labour market, covering the past 25 years and focussing specifically on the last decade of higher education expansion and labour market change. Second, we needed to construct an heuristic model of the graduate labour market, involving the development of a typology of graduate jobs. We were aware of the fact that our previous research, and that of others analysing the graduate labour market and graduate career paths, had relied on broad occupational classificatory measures. These did not facilitate analysis of the relationship between changes in the organisation of work and changes in the supply of and demand for particular labour market skills and knowledge. A new classification was required to aid our understanding of the way in which graduates have been assimilated into the labour market over the past 25 years.

This report is presented in five major sections. Following this introduction, section two gives an overview of the scale of change in the Higher Education (HE) system in the UK, relating these changes to the main findings from our earlier analysis of the survey of 1995 graduates. Section three describes how we developed and tested our new classification of graduate occupations. Section four explores the changing occupational structure of the labour market over the period 1975 – 2000, utilising this new classification of graduate occupations. Section five continues this investigation, using information on the career paths of graduates covering the last twenty years. Finally, we review recent evidence on graduate earnings and present new information on the evolution of the gender pay gap between 1975 and 2000.

2. The expansion of higher education

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 and provide 'second chance' opportunities for adult returners to higher education. An indication of the scale of this expansion can be gained from Table 1, which shows the increase in the total number of students enrolled in higher education between 1970/71 and 2000/01. The number of male full-time undergraduates, standing at 241 thousand in 1970/71, had more than doubled by 2000/01. For female full-time undergraduates the increase is more than threefold. Among part-time students (including those taking

Open University courses) the growing participation of women in higher education is even more remarkable, from just 19 thousand studying on undergraduate programmes in 1970/71 to 320 thousand by 2000/01.

Table 1 Students¹ in higher education²: by type of course and gender (UK, 1970/71 – 2000/01)

	Thousands				
	Undergraduate		Postgraduate		All in higher education
	Full time	Part time	Full time	Part time	
<i>Males</i>					
1970/71	241	127	33	15	416
1980/81	277	176	41	32	526
1990/91	345	193	50	50	638
2000/01	511	228	82	118	940
<i>Females</i>					
1970/71	173	19	10	3	205
1980/81	196	71	21	13	301
1990/91	319	148	34	36	537
2000/01	602	320	81	124	1,128

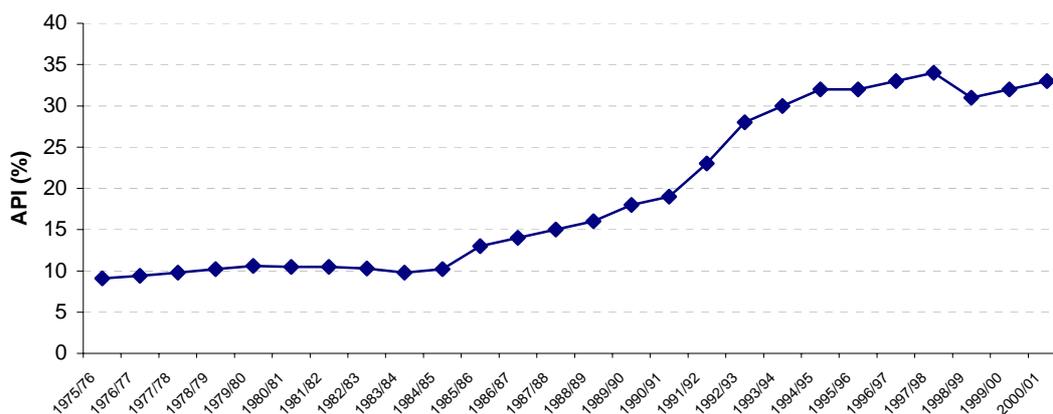
Notes: 1 Home and overseas students.

2 At December each year. Includes Open University.

Sources: Department for Education and Skills; National Assembly for Wales; Scottish Executive; Northern Ireland Department for Employment and Learning.

While these numbers give some indication of the scale of this change¹, they mask the fact that the population of young people was declining, especially during the 1980s and early 1990s². The rate of participation of young people in higher education thus rose even more rapidly than these figures suggest from the mid 1980s onwards. The rate and timing of this expansion is evident from Figure 1, which shows

Figure 1 Participation by young people in Higher Education, Age Participation Index (API) Great Britain, 1975/76 to 2000/01



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

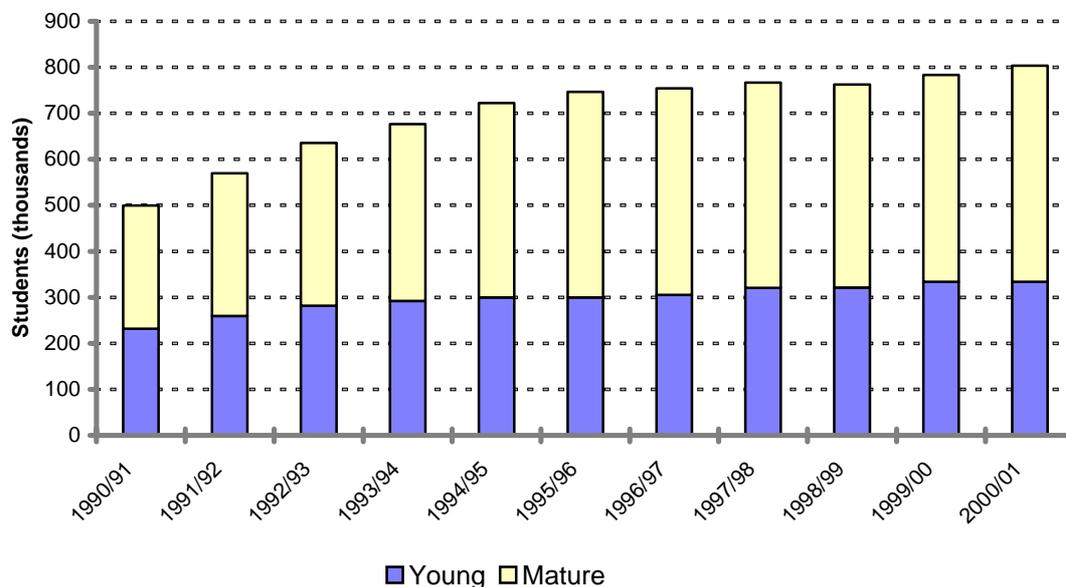
¹ Focussing specifically upon the period 1990/91 – 2000/01, the increase in the population of students within UK Higher Education Institutions (HEIs) by 893 thousand (a 76% increase in 10 years) breaks down as follows: 34% men and 66% women, 80% home and 20% overseas students, 7% Open University and 93 % other HEIs, 59% full-time and 41% part-time, 74% undergraduate and 26% postgraduate.

² The population of 18-24 year olds fell by almost 20 per cent in ten years, from 6.2 million in 1987 to 5 million in 1997 (Bynner *et al.*, 2002).

the growth of the age participation index³ for young people in Higher Education from 1975/76 to 2000/01. It can be seen that the age participation index dipped slightly in 1998/99, the year in which tuition fees were introduced, but has started to climb again towards 35 per cent.

In addition to this major increase in participation in HE by young people, a significant part of the growth in home entrants to higher education arises from mature students⁴. Figure 2 indicates that, over the past ten years, the number of young home-domiciled full-time and part-time HE students rose by just over 100 thousand, compared with a rise of nearly 200 thousand mature students over this same period. Mature students have constituted the major part of the growth in entrants to higher education over the decade of the 90s.

Figure 2 Home entrants to HE by age group, Great Britain, 1990/91 to 2000/01 (thousands)



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

These changes has 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 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). 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

³ The age participation index is the number of domestically domiciled 19 year olds in higher education institutions as a percentage of the resident population of 19 year olds.

⁴ Mature students are defined here as those who are over age 26 when they enter HE.

1987, Keep and Mayhew 1996, 1997). At the same time, employers in areas requiring certain graduate skills (particularly with reference to numeracy-based subjects), continued to report skill shortages (AGR 1999; Mason 1999). 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. Conversely, 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.

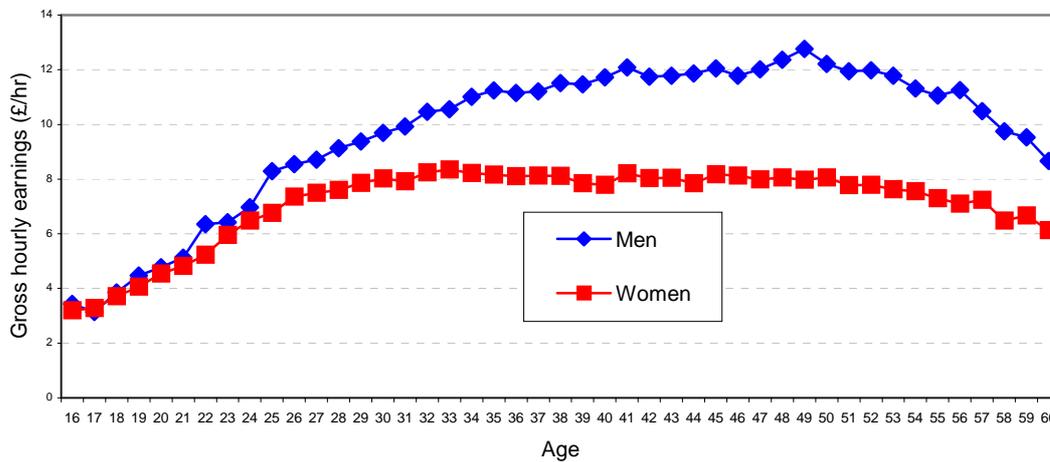
Alongside these concerns about oversupply of graduates and potential underutilisation of their education, little is known about the changing nature of the labour market. Are the jobs being done by graduates 'new' jobs in the sense that they lie within developing sectors such as ICT? Are graduates 'colonising' areas of work that were previously the domain of non-graduates – and, if so, why is this happening, where is it located and do the jobs so 'colonised' change as a result? In terms of the demand for highly qualified labour, it has been argued that employers face changes that relate to their technological and organisational responses to global economic forces, better communications and changes in consumer preferences. Research among employers to investigate graduate recruitment and deployment indicates both the growth of new demand for graduate skills and graduate 'underemployment', which reflects supply rather than demand-led change (Mason *op. cit*), but also reveals increasing confusion among employers about the value of degrees (Purcell *et al.*, 2002).

The 1998/99 survey was undertaken to address these issues (Elias *et al.*, 1999). The survey collected information on graduate careers from a nationally representative sample of graduates who gained their first degree in 1995, many of whom went on to enter the labour market at some stage over the next three years. Although this survey could only reveal the early stages of graduates' careers, some of the findings were surprising. First, and contrary to the expectations of many, a significant and continuing advantage was experienced by graduates compared to non-graduates. Graduate unemployment appeared to be a short-run transitional problem. Within two years of graduating the experience of unemployment was lower than for almost any other group within the labour market. For those in employment, their earnings in 1998/99 were, on average, considerably higher than for non-graduates. Three and a half years after finishing their first-degree course, the career paths of these graduates were still evolving. The proportion working in what we classed as non-graduate jobs was low and falling. While there was evidence of variations in these findings according to the subject studied and by degree class, the general picture emerging from graduates across the wide spectrum of higher education institutions that participated in this study was both positive and encouraging.

The second major finding was less positive. The study revealed evidence of diverging patterns of earnings for young graduate men and women (those under 30). Across the whole economy the scale of the gender difference in pay is closely monitored by those with an interest in equality of opportunities between men and women. The gender gap in earnings has been attributed variously to occupational segregation,

discrimination in recruitment and promotion, and lifestyle preferences. An indication of the scale of the difference across all jobs is shown in Figure 3. Using information from the Labour Force Survey for the period 1993 to 1999, the figure illustrates how the gender gap in pay varies with age, beginning to appear in the early 20s and reaching a maximum in the late 40s when women's earnings are about 60 per cent of men's.

Figure 3 Age profile of hourly earnings by gender (averages over period 1993 – 1999), Great Britain



Source: Labour Force Surveys, 1993 – 1999.

For two reasons we expected that the gender gap in pay would not be evident within the early career paths of young graduates. First, we assumed that these young graduates would tend to work in occupations in which women were now less likely to face discriminatory practices related to their recruitment and promotion. Second, the graduates in the survey were predominantly aged between 25 and 27 years and few had children. The impact of family formation and childcare responsibilities on career patterns was likely to be less significant for women in this age range. Hence it was surprising to discover a significant gender differential in pay, even at this early stage in the careers of graduates. In part, this related to subjects studied and the subsequent occupations and sectors entered. Nevertheless, a substantial differential (approximately 10 per cent) in annual earnings remained unrelated to any other factor than gender (*ibid.* 1999, Purcell 2002).

In this report we return to these issues to explore them in more depth than has hitherto been possible. In the following section we describe the development of a new typology of graduate jobs, then use this in section four to analyse the changes in occupational structure that have taken place over the past 25 years. We review the latest evidence on the changing nature of the link between possession of a degree and its impact upon earnings. Here we explore not just the graduate premium, but also the evolution of the gender pay gap and its relationship with the growth of graduate employment.

3. Defining graduate jobs

A good understanding of the career paths of graduates requires a classification of the kind of work that graduates do – a classification that reflects both the demand for their graduate skills and qualifications and the extent to which these are used within their jobs. In previous research on this survey, a three-fold classification of occupations was used for this purpose⁵. On reflection it was decided that this did not yield sufficient information about the nature of graduate employment. A new classification was required. Creating a broad classification of occupations to reflect the utilisation of graduate skills is not a straightforward task. Clearly a 'graduate job', defined with reference to the criteria mentioned above, is more than simply a job in which a graduate works. Equally, occupational classifications are, in places, fairly heterogeneous. Graduates and employers may use job titles for graduate jobs that do not reflect changes in the nature and organisation of the associated tasks and the utilisation of graduate skills within them. We needed access to detailed information about the kind of work graduates do in their jobs, the extent to which they use their degrees and to identify the areas in which changes in work organisation are creating new opportunities for graduates.

To tackle this issue a variety of extensive information sources were processed. First, for employees observed within the Labour Force Survey between 1993 and 1999 and aged 25-34 or 45-54, a detailed tabulation was prepared showing the proportion of employees holding degrees within these two age groups, for each 3-digit occupation unit group of the 1990 Standard Occupational Classification. This source yielded information from over 300 thousand individuals on the change in the proportion within each occupational group holding a degree. A second source was the text descriptions of the nature of their work and the qualifications required to undertake such work as recorded by respondents to the Winter quarter of the 1996/97 Labour Force Survey. In total, more than 65 thousand job titles and job descriptions were available from this source. A third source was the respondents to the survey of 1995 graduates, each of whom gave information about every job they had held since graduating; detailing whether they had been required to have a degree for the job, and whether or not the job required them to use the knowledge and skills acquired on their 1995 degree course. Through a careful and detailed analysis of these three sources of information and for the wide variety of jobs in which graduates work, a five-fold classification of occupations was developed. Table 2 describes these categories and gives some typical examples of the kinds of jobs that fit into each.

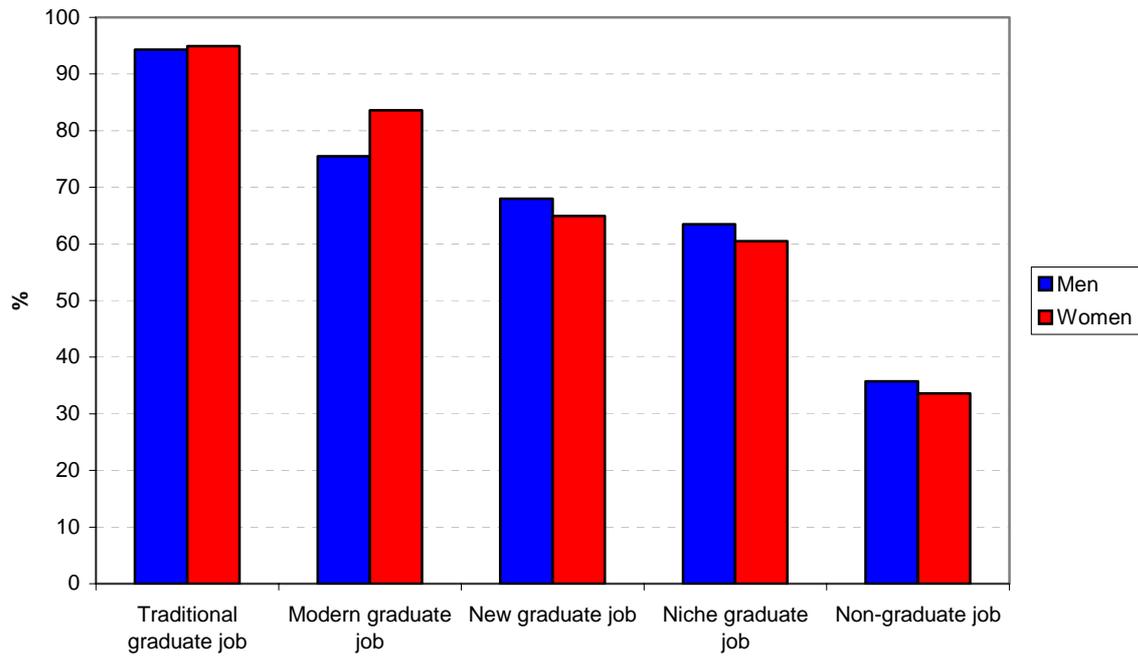
⁵ The classification used in earlier research had three categories: 'graduate' occupations, 'graduate track' occupations and 'non-graduate' occupations. These distinctions were made within unit groups of the 1990 Standard Occupational Classification, allocating unit groups according to the proportions within the Labour Force Survey who reported that they held a degree.

Table 2 A Classification of Graduate Occupations (based upon the 1990 Standard Classification of Occupations)

Type of occupation	Description	Examples
<i>Traditional graduate occupations</i>	The established professions, for which, historically, the normal route has been via an undergraduate degree programme.	Solicitors Medical practitioners HE, FE and secondary education teachers Biological scientists/biochemists
<i>Modern graduate occupations</i>	The newer professions, particularly in management, IT and creative vocational areas, which graduates have been entering increasingly since educational expansion in the 1960s.	Chartered and certified accountants Software engineers, computer programmers Primary school and nursery teachers Authors/writers/journalists
<i>New graduate occupations</i>	Areas of employment to which graduates have increasingly been recruited in large numbers; mainly new administrative, technical and 'caring' occupations.	Marketing & sales, advertising managers Physiotherapists, occupational hygienists Social workers, probation, welfare officers Clothing designers
<i>Niche graduate occupations</i>	Occupations where the majority of incumbents are not graduates, but within which there are stable or growing specialist <i>niches</i> which require higher education skills and knowledge.	Entertainment and sports managers Hotel, accommodation managers Midwives Buyers (non-retail)
<i>Non-graduate occupations</i>	Graduates are also found in jobs that are likely to constitute under-utilisation of their higher education skills and knowledge.	Sales assistants Filing and record clerks Routine laboratory testers Debt, rent and cash collectors

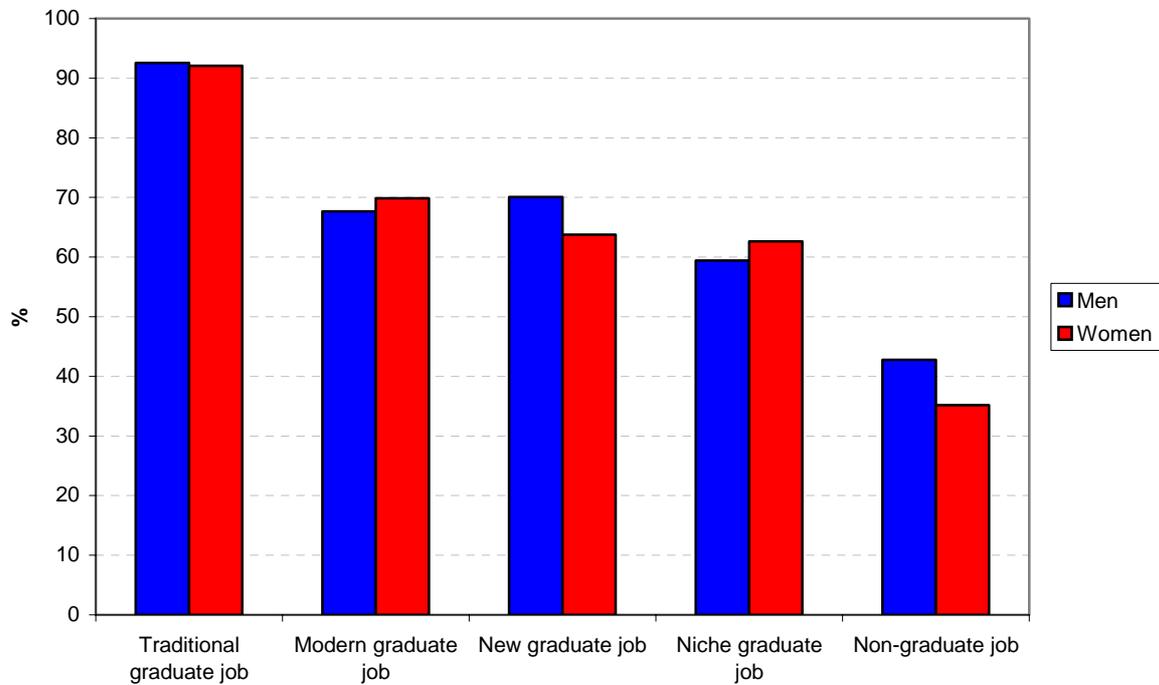
The first four groups represent areas of work in which there is a strong probability that a graduate employed in these areas will be making use of their degree skills and knowledge. This is illustrated in Figure 4, which shows for each of the five occupational groups the proportion of 1995 graduates who stated that their academic qualifications were required for the job in which they were working at the time of the survey in 1998/99. There is a clear gradient evident here. For both men and women the proportion stating that their degree was required declines from approximately 95 per cent in the *traditional graduate* occupations to a low of 33 per cent in *non-graduate* occupations. Figures 5 and 6 show the responses to questions about whether or not these same graduates were using the subject/discipline knowledge acquired on their 1995 course and their use of skills developed during their degree programme. In the latter case it can be seen that those working in what we classify as *non-graduate* occupations are significantly less likely than other graduates to state that they are using such skills in their current job.

Figure 4 Percentage of 1995 graduates stating that their academic qualifications were required for their 1998/99 jobs



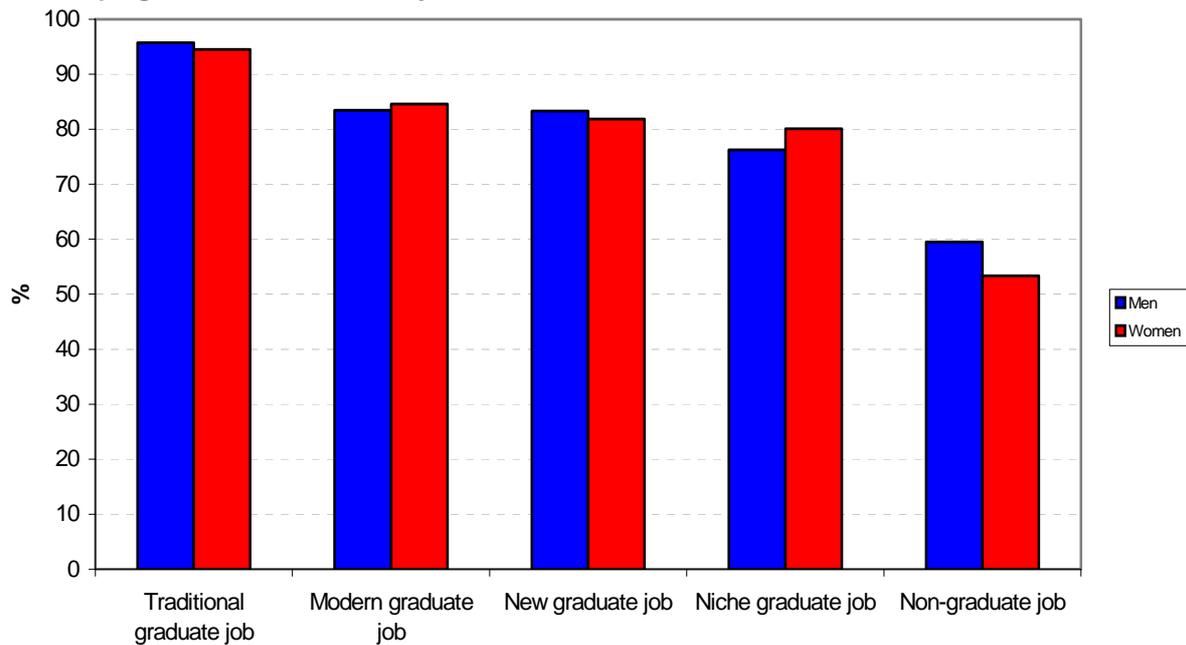
Source: Survey of the Career Paths of 1995 Graduates.

Figure 5 Percentage of 1995 graduates stating that they were using the subject/discipline knowledge acquired on their degree course in their 1998/99 jobs



Source: Survey of the Career Paths of 1995 Graduates.

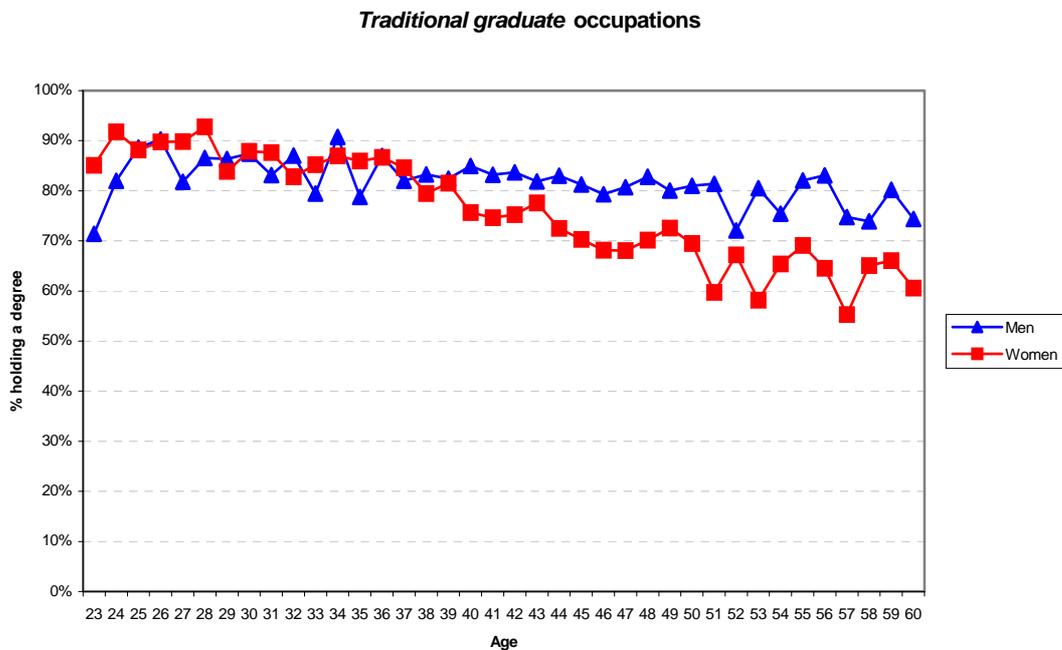
Figure 6 Percentage of 1995 graduates stating that they were using skills developed during their degree programme in their 1998/99 job



Source: Survey of the Career Paths of 1995 Graduates.

Some idea of the extent to which graduates have ‘colonised’ certain of these groups of occupations can be obtained from Figure 7. Here we make use of all of the Labour Force Surveys⁶ conducted between 1993 and 1999, showing the relationship between single years of age and possession of a degree for each of the five occupation groups.

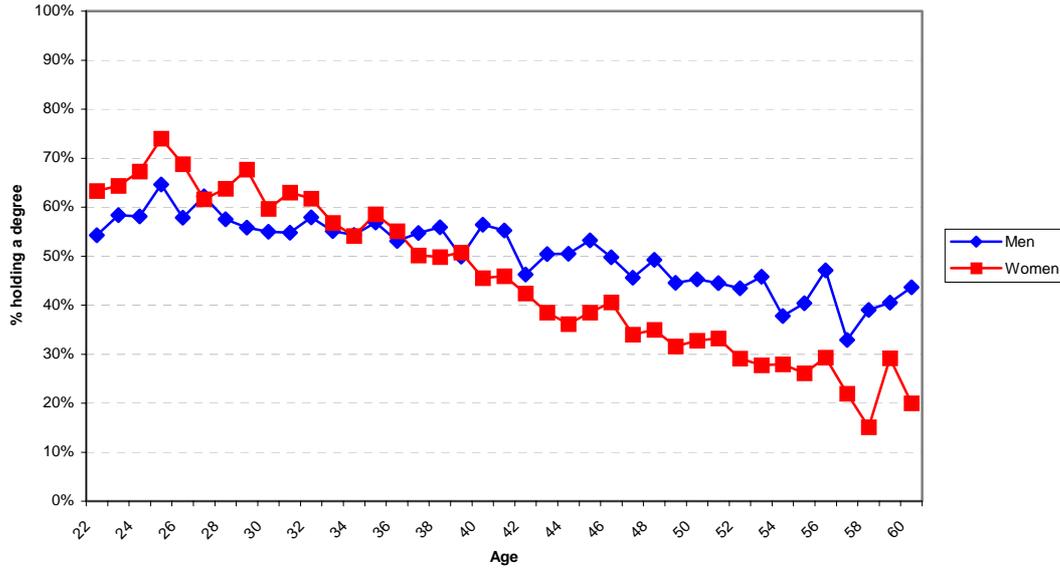
Figure 7 Percentage of degree holders in occupational groups, by age and gender



Source: Labour Force Surveys, 1993 – 1999.

⁶ Due to the rotating nature of the Labour Force Survey sample frame, individuals can appear up to five times in successive surveys. The composite survey analysed here removes all repeat observations on the same individuals.

Modern graduate occupations



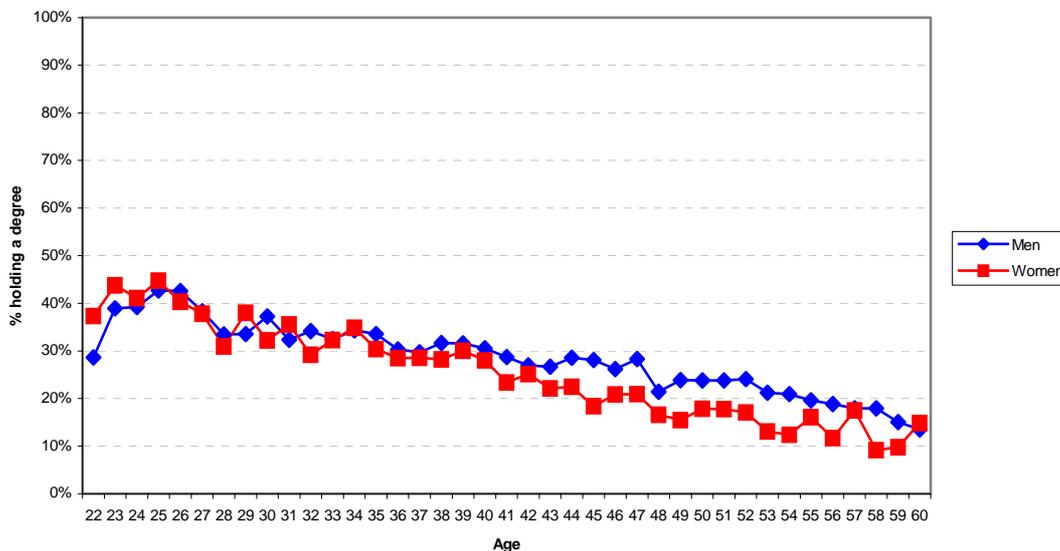
Source: Labour Force Surveys, 1993 – 1999.

Given that most graduates obtain their first degree before the age of 30, the contrast between the younger and older age groups gives a good indication of the extent to which recent graduates have been absorbed within these occupations. For men in *traditional graduate* occupations, the proportion holding degrees is well over 80 per cent for both young and older workers. For young women in similar occupations the proportion holding degrees exceeds that for young men, and this proportion is significantly higher than for older women.

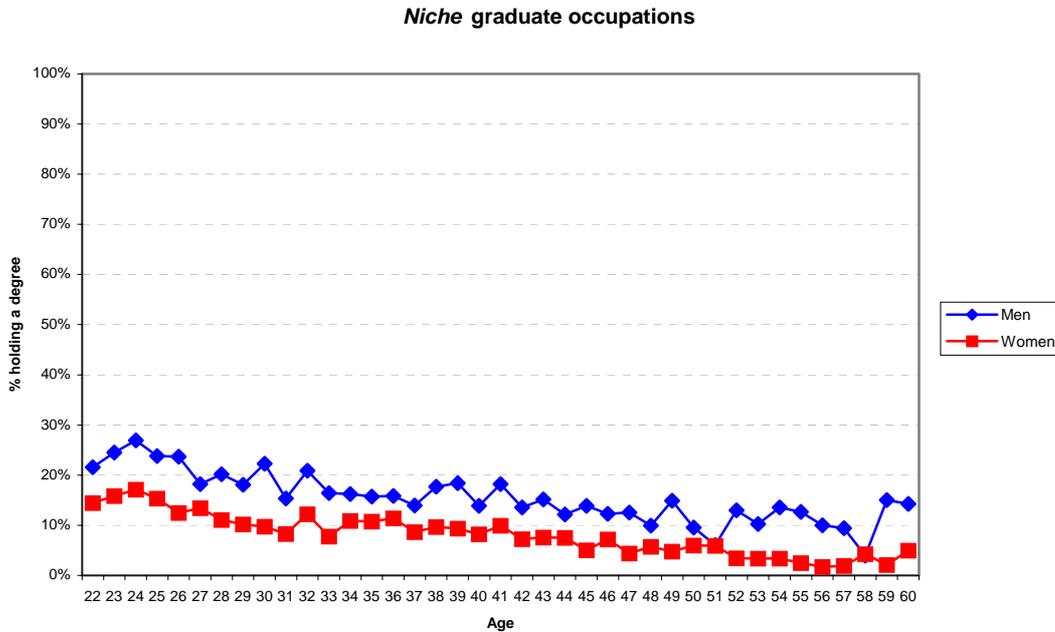
In *modern graduate* occupations, the extent to which these types of jobs have become 'graduate jobs' is quite remarkable, especially so for women with as many as 75 per cent of young women holding degrees compared with fewer than 30 per cent of women aged over 50 years.

Figure 7 (contd.) Percentage of degree holders in occupational groups, by age and gender (contd.)

New graduate occupations

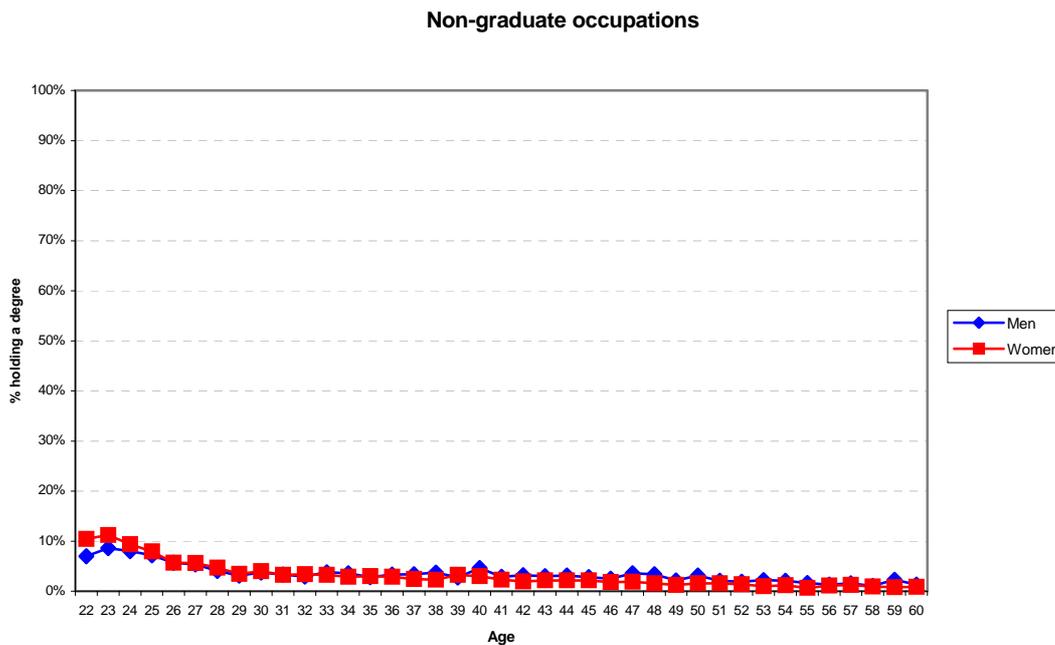


A similar, though not so pronounced trend is in evidence among those working in *new graduate* occupations. Over 40 per cent of young men and women working in these jobs during the period 1993-99 hold a first degree, compared with less than half this proportion among older workers. For *niche graduate* occupations the proportions of men and women holding degrees shows some evidence of an increase among the younger age groups, but the incidence of degree holding remains fairly low at 15 to 25 per cent.



Source: Labour Force Surveys, 1993 – 1999.

Figure 7 Percentage of degree holders in occupational groups, by age and gender (contd.)

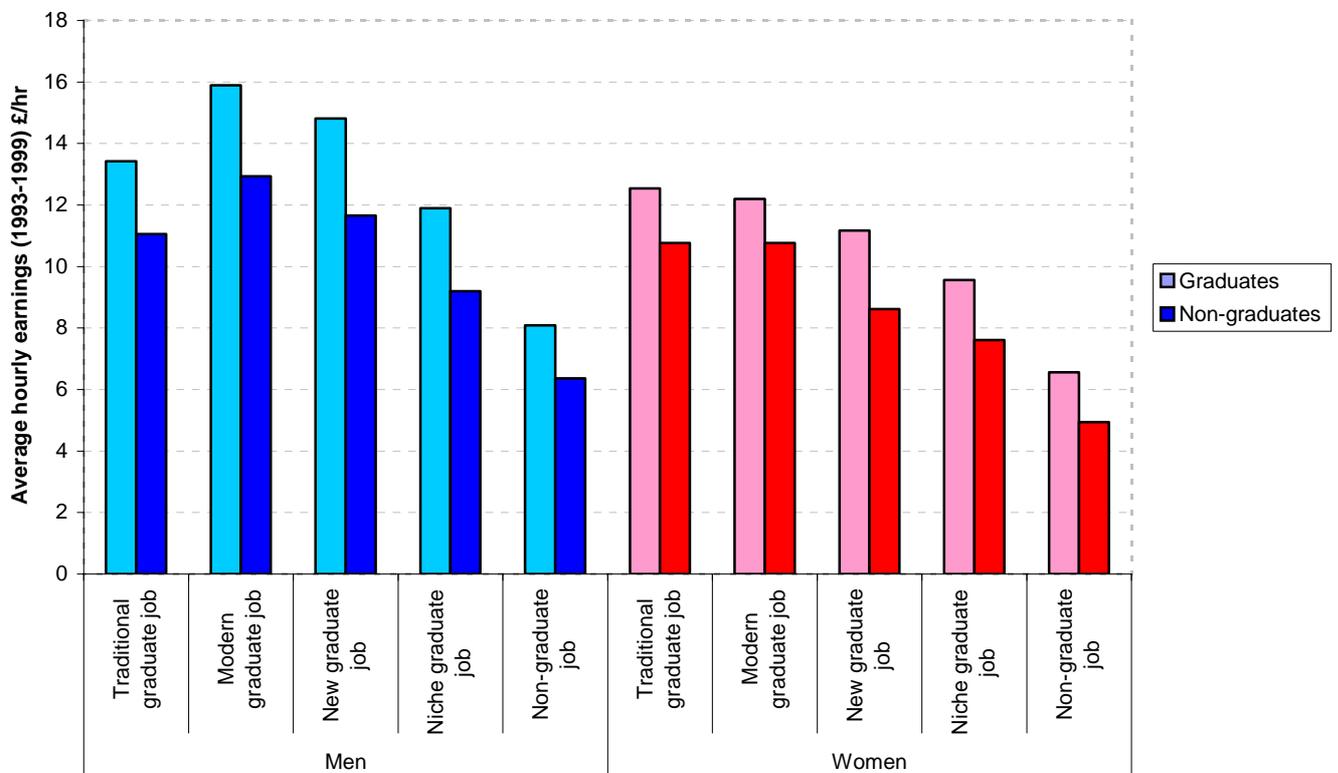


Source: Labour Force Surveys, 1993 – 1999.

Finally, we show the proportion of degree holders among those jobs we classify as *non-graduate* occupations. We will show later that the slightly higher proportion of degree-holders observed among men and women aged under 30 years is probably related to the fact that graduates tend to take non-graduate jobs whilst searching for employment which could make use of their degree skills and knowledge, rather than any 'displacement' of graduates into non-graduate jobs on a more permanent basis.

From this evidence, we see that both graduates and non-graduates hold jobs in each of these occupational groups, but the proportion that hold degrees in both modern and new graduate occupations has been rising rapidly. This raises questions about the earnings of graduates and non-graduates in these various occupational groups. Are graduates who work in *new graduate* occupations paid less than those who work in traditional or modern graduate jobs, and what is the nature of the graduate premium (the difference between the earnings of graduates compared with non-graduates) in these jobs? Figure 8 shows the averages (for 1993 to 1999) of hourly earnings across all employees for each of the occupation groups, comparing graduates and non-graduates and for men and women. In each occupation group and for men and women the graduate premium is apparent and is significant. Apart for men working in the traditional graduate occupations, a significant 'gradient' in earnings is again evident. While it appears that graduates earn more than non-graduates in each occupational area, it is clear that the *new graduate* occupations are not paid as much as graduates working in modern or traditional graduate jobs.

Figure 8 Average hourly earnings of graduates and non-graduates by occupational groups and by gender



Source: Labour Force Surveys, 1993 – 1999.

In summary, this new classification of graduate occupations illustrates a number of important characteristics of the changing nature of work. It identifies the *traditional* occupations for which a degree is an essential prerequisite. It distinguishes two separate groups of occupations where the proportion of graduates has risen rapidly over the past twenty-five years, *modern graduate* occupations and *new graduate* occupations. The latter category has slightly lower earnings compared with the former, but both are areas in which well over 80 per cent of those who graduated in 1995 stated that they were using skills developed during their degree programme some three years later. We have identified also a set of occupations where the proportion of jobholders with degrees is relatively low, but in which the heterogeneity of the group may mask the fact that a *niche* exists within which graduates may utilise their skills and knowledge gained from their higher education. Finally, and perhaps the most important outcome of this work, we thereby delineate a set of occupations in which we consider it unlikely that graduates will be making full and good use of their higher education in the course of their employment. The movement of graduates into and out of non-graduate occupations over recent years is of considerable interest as an indicator of the extent to which the expansion of higher education has been accommodated within the labour market.

4. The changing nature of the labour market

While this new classification indicates the areas of employment that graduates have entered in increasing numbers over the past twenty-five years, it does not show how the structure of employment has changed. To understand this we need a source of occupational information that maps these changes at the national level for a long and continuous period. Only one source can provide such detail for the whole time period, the New Earnings Survey (NES). The NES is approximately a one per cent sample of employees, covering the United Kingdom and available for each year since 1975. We have transformed the occupational information it contains for the period from 1975 to 1989 in to a form consistent with the definition of our new classification of graduate occupations⁷.

Table 3 Changes in employment in the UK by gender and full-time/part-time status, 1975-2000

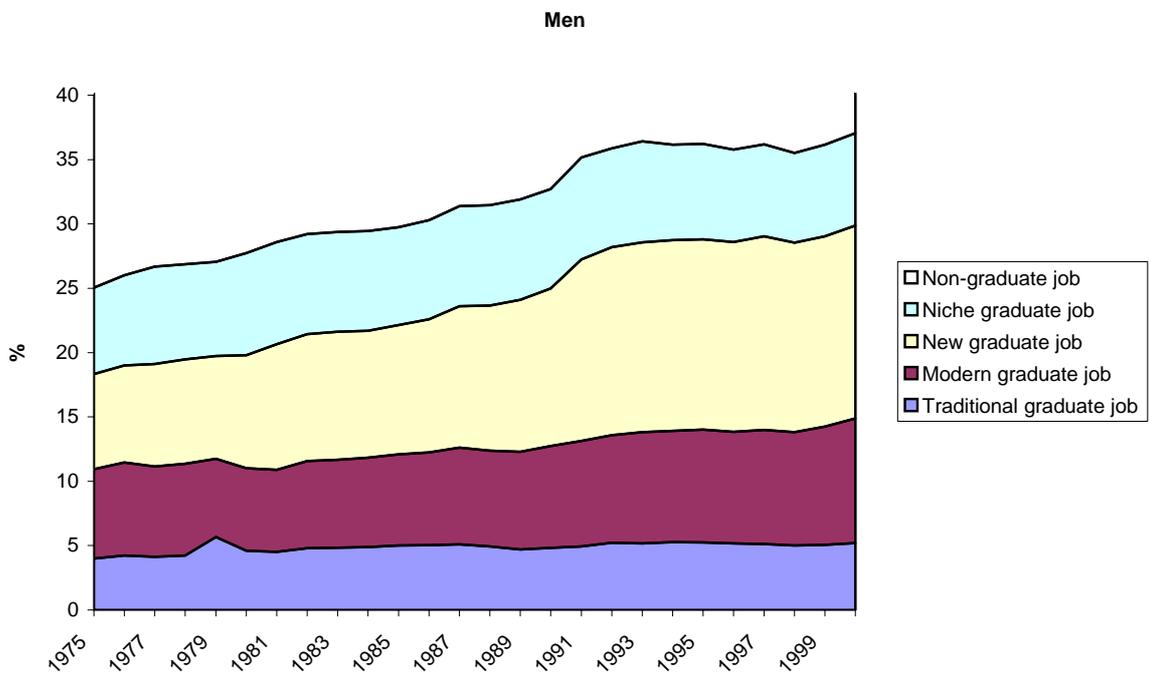
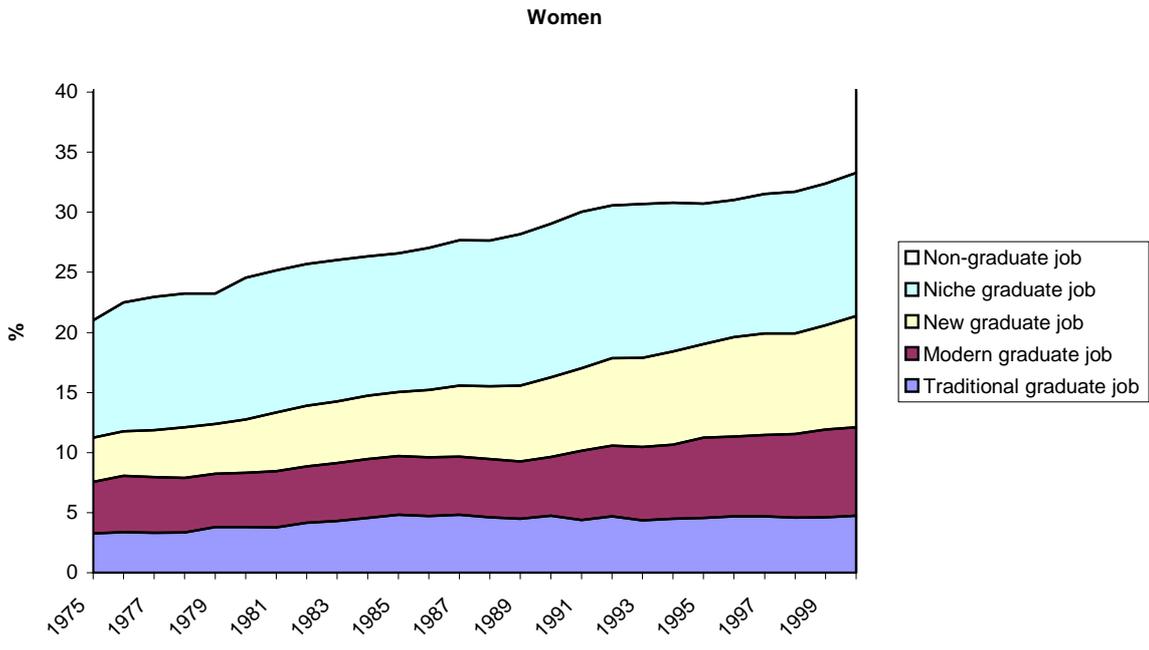
	1975	2000	growth p.a. %
	(thousands)		
Men	13,239	12,466	-0.2%
Women	8,973	12,175	1.2%
Full-time	17,964	17,164	-0.2%
Part-time	4,248	7,477	2.3%
Total	22,212	24,641	0.4%

Sources: DE Historical Abstract of Labour Statistics, Labour Market Trends October 2001.

⁷ From 1975 to 1990 the New Earnings Survey utilised a classification of occupations known as the Key List of Occupations for Statistical Purpose (KOS). In 1990, occupations were coded to both KOS and the 1990 Standard Occupational Classification (SOC 90). Using this cross-classification, earlier years were reclassified to unit groups of SOC90. These unit groups map to our graduate occupational classification.

Before investigating how the structure of employment has changed, we show in Table 3 how employment levels have shifted between 1975 and 2000. Full-time jobs have declined slightly over this period from 18 million to 17.2 million, but this decline has been more than offset by the growth of part-time employment from 4.2 million to 7.5 million. This growth in part-time employment is associated with the general rise in the number of jobs held by women, showing a growth rate in excess of 1 per cent per annum. In summary, therefore, the total *volume* of employment has expanded significantly over this period, possibly by almost one million equivalent full-time jobs. Bearing this expansion in mind, Figure 9 shows the changing occupational composition of employment in the five groups of occupations we are utilising for our analysis of the graduate labour market. Interestingly, for both men and women the proportion of jobs that we classify as *traditional graduate* occupations has remained virtually constant over the period 1975-2000. *Modern graduate* occupations have displayed some growth, but the major part of the general rise in the proportion of total employment accounted for by our four 'graduate' categories of occupations stems from the increasing proportion of *new graduate* occupations. These are the jobs that have absorbed the major part of the growing output of graduates from HE. For women, the proportion of employee jobs across the whole economy, which we classify as areas that can accommodate graduates and are likely to make use of their skills and qualifications, has risen from one fifth of all jobs held by women to one third. For men the rise is from 25 per cent to 36 per cent. Given that the total volume of employment has grown by almost one million jobs, these figures indicate that the number of jobs in the UK economy that we classify within our four graduate categories has increased by well over 3 million between 1975 and 2000. This indicates the sheer scale of the process of upgrading and reskilling at work within the UK labour market.

Figure 9 **Changing composition of employment, 1975-2000**



Source: New Earnings Survey Panel Dataset, 1975 - 2000

5. Tracking graduate career paths

From the analysis of the changing occupational structure of the UK economy presented in the preceding section, we have indicated something of the potential that exists within the labour market to absorb a major increase in the supply of highly qualified people within a relatively short period of time. We now seek further evidence for this hypothesis. We do this by examining the career paths of successive cohorts of new graduates entering employment over this period.

If it is the case that the occupational structure of the UK economy has moved so much in favour of jobs that utilise graduate skills and experience, we ought to be able to observe the same rate of movement of different cohorts of graduates out of the non-graduate jobs they tend to occupy in their first few years after graduation. If the increased supply of graduates has not been matched by an increase in demand (arising from growth in those occupational areas in which graduate skills are utilised) then an increasing proportion of graduates in the later cohort will be left working in non-graduate occupations. To test this hypothesis we make use of information from three cohorts: those who graduated in 1979/80⁸, graduates from 1992⁹ and graduates from 1995¹⁰.

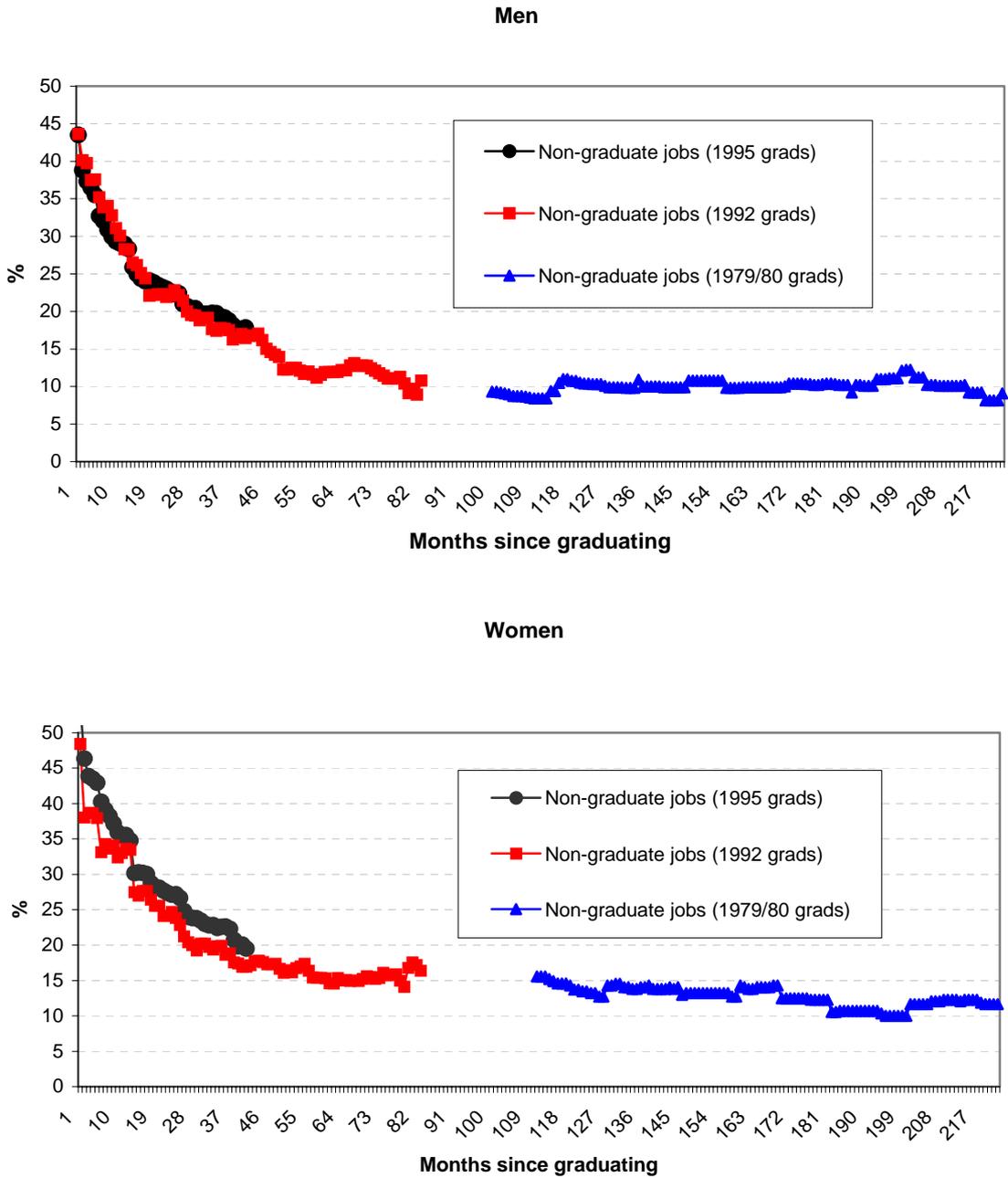
Figure 10 reveals the movement of graduates out of non-graduate jobs – jobs for which a degree is not a requirement and in which graduates are unlikely to be utilising the skills and knowledge developed at university. The three lines on each graph figure chart the movement after graduation for three cohorts of graduates, comparing information from the survey of 1995 graduates and contrasting this with similar information from 1992 graduates and a group who graduated in 1979/80. For men we observe that the movement has been essentially the same over the fifteen years separating the three cohorts. It appears to take about seven years after graduating before the proportion of graduates working in non-graduate occupations stabilises, with about 10 per cent of male graduates and 15 per cent of females remaining in jobs that may make little use of their higher education. There is no evidence that, for the younger cohorts, the proportion left in non-graduate occupations has been rising.

⁸ These are graduates from the National Child Development Study – all born in one week in 1958.

⁹ These are graduates from the British Cohort Study – all born in one week in 1970.

¹⁰ Respondents from the 1998/99 survey of the Career Paths of 1995 graduates, restricted to persons aged under 30 years.

Figure 10 Movement of graduates out of non-graduate occupations



Sources: Survey of the Career Paths of 1995 Graduates: British Cohort Study (1999 survey); National Child Development Study (1999 survey)

For women the situation is not so clear. First, we note that the proportion of women who appear to remain in non-graduate occupations is higher than for men. In the two younger cohorts, the proportion remaining in non-graduate occupations appears to level out at about 15 per cent, compared with 10 per cent for men. Secondly, there is some evidence that graduates in the 1995 cohort are leaving non-graduate jobs at a slower rate than was the case for the 1992 cohort.

6. Graduate earnings and gender

The final evidence we present relates to the earnings of graduates. An important indicator of the balance between the demand for graduates and the supply of highly qualified labour is the so-called 'graduate earnings premium' - the gain in earnings associated with 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 graduate earnings premium. In this section we address two issues. First, we examine recent evidence to see whether or not there has been a decline in the graduate earnings premium. Second, we make use of our new typology of graduate occupations to investigate trends in the gender pay gap for graduates and to locate the types of graduate jobs in which any adverse trends may be evident.

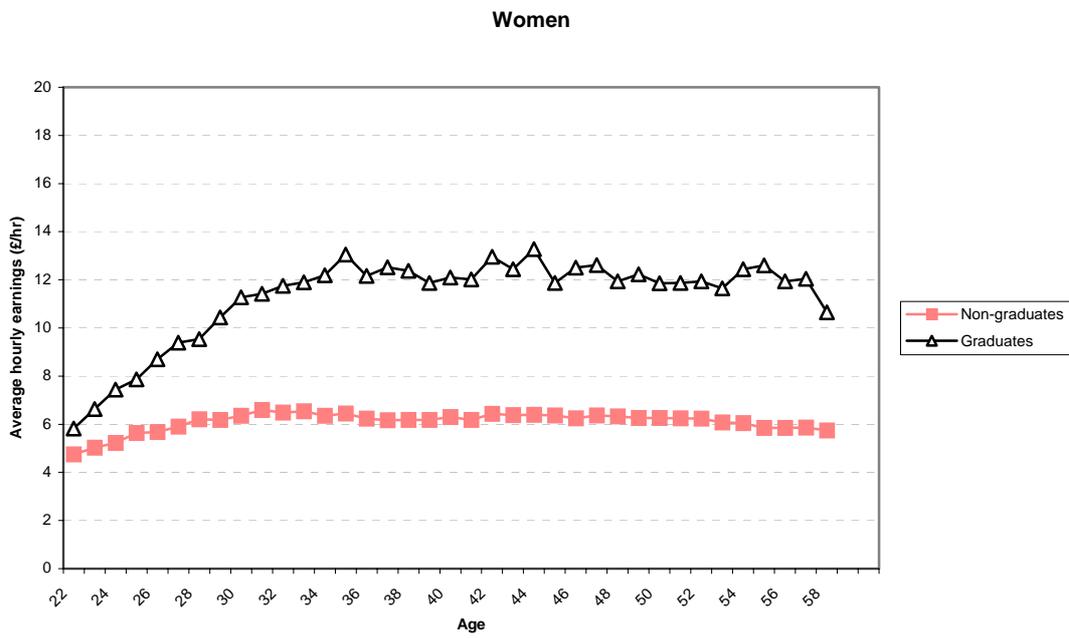
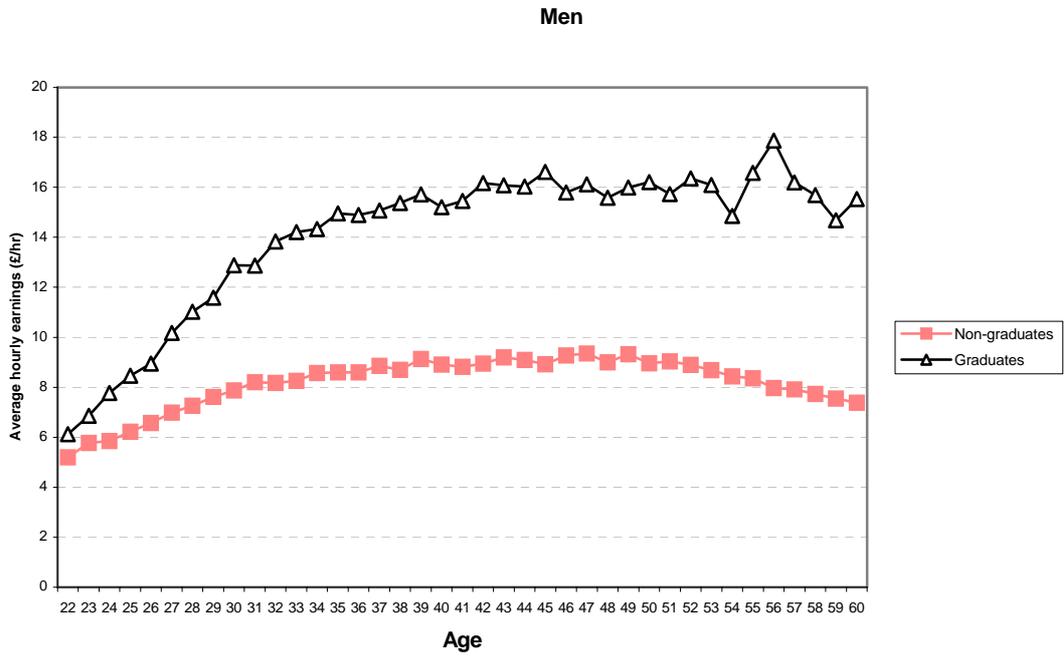
Measurement of the graduate earnings premium has to take account of the fact that graduate earnings rise more rapidly with age and job tenure than do the earnings of non-graduates. Evidence to this effect can be seen in Figure 11, which draws upon the earnings information collected in the UK Labour Force Surveys between 1993 and 1999, showing the variation in hourly earnings by single years of age for graduates and non-graduates, for men and women.

There are two different interpretations that can be put upon the age/earnings profiles shown in Figure 11. First, it is possible that older graduates experienced a faster rate of growth of their earnings than is the case for those who graduated more recently (the so-called 'cohort' effect). An alternative interpretation is that graduate earnings grow with experience gained after graduating, and at a faster rate than for non-graduates (the 'age/experience' effect). In other words, the information shown in Figure 11 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.

McIntosh (2002) shows that the profile of graduate earnings by age is essentially an age/experience effect. This is done by estimating the graduate earnings premium from 'pseudo-cohort' data built up from the Labour Force Surveys. For all people in the 1993 Labour Force Survey aged 21-25 years he determines the size of the graduate earnings premium, then repeats this estimation procedure for 22-26 year olds in the 1994 Labour Force Survey, followed by 23-27 year olds in the 1995 Labour Force Survey, etc., through to 29-33 year olds in the 2001 LFS. By shifting the range of the selected age group analysed in the LFS data by exactly one year, for LFS data collected at one-year intervals, the results replicate what would have been obtained from a true cohort¹¹. Via statistical methods, which account for other influences upon earnings, he estimates the premium associated with possession of a first degree for this 'pseudo-cohort' of 21-25 year olds as it gains in age and experience from 1993 to 2001.

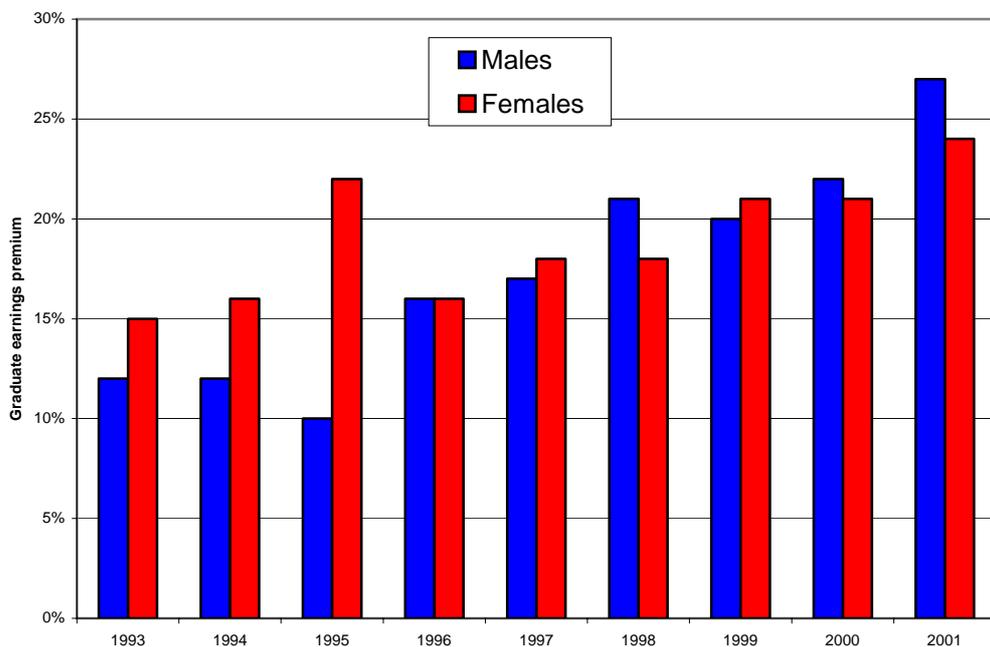
¹¹ The difference between a 'true' cohort and a 'pseudo' cohort is that the former yields information from exactly the same group of people as they age, whereas the latter gives information from different people in each year, selected so as to be representative of the true cohort. 'Pseudo' cohorts suffer 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.

Figure 11 Average hourly earnings of graduates and non-graduates, by age and gender



Source: Labour Force Surveys, 1993 - 1999

Figure 12 The returns to a First Degree, full-time employees aged 21-25 on January 1st 1993, by gender



Source: McIntosh (2002), tables 8 and 9

Figure 12 shows the results that McIntosh obtains. Each bar records the rate of return to a first degree for this age group, as it gains in age and work experience from 1993 to 2001. While there is some variation in this premium apparent for women, it can be seen that 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. In this same study McIntosh shows that, across the whole population, the graduate premium has fallen from 26 per cent in 1993 to 23 per cent in 2001 for males, and from 31 per cent to 24 per cent for women graduates over this same period. In other words, the profiles shown in Figure 11 probably do combine both influences. They reveal that graduate earnings grow with age and experience, which accounts for the growing age difference in earnings between graduates and non-graduates. On the basis of McIntosh's evidence though, the younger graduates (particularly young women) are probably on a lower growth path for their earnings compared with their older counterparts.

Further support for this evidence, again showing a recent decline in graduate earnings, 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 4.

Table 4 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, 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, 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 comparisons must 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.

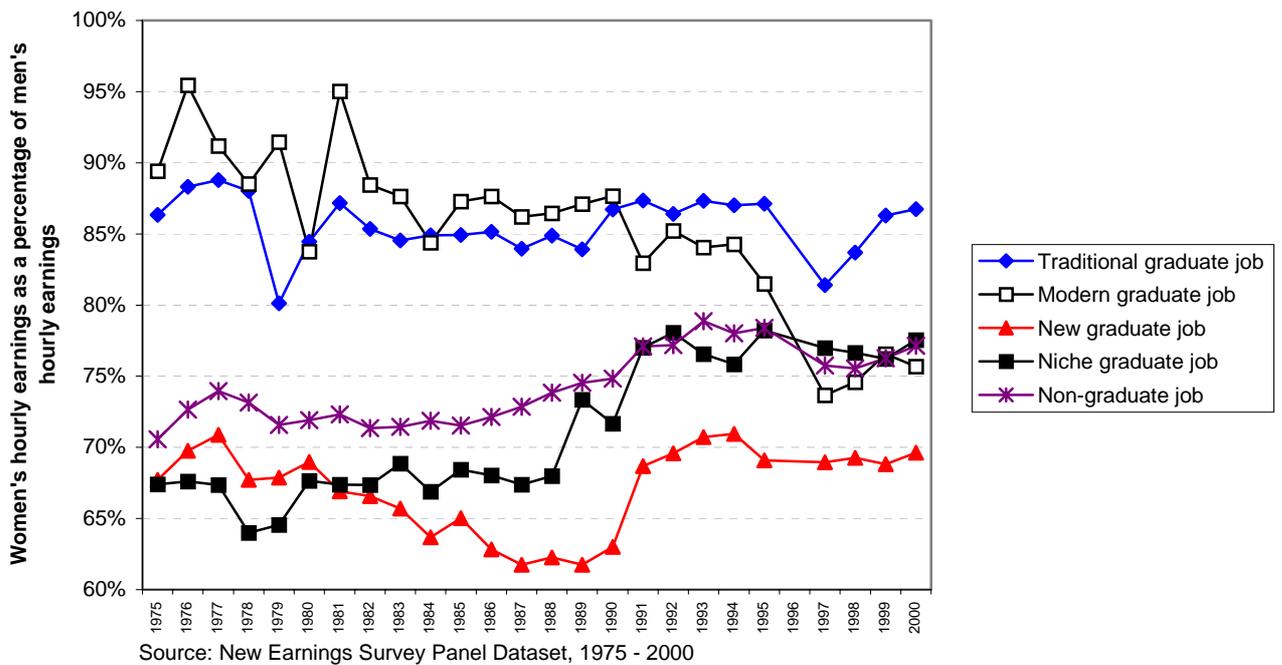
These estimates confirm that the graduate earnings premium received by women has been falling for some time. Between 1981 and 1996 it probably fell slightly. From 1991 to 1999 for older female graduates the premium dropped sharply from 45 per cent to about 30 per cent. For men a similar finding holds, 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 shows the graduate premium to be falling, the premium remains large and significant. However, the evidence we have for both earnings and for the movement out of non-graduate occupations does show that the situation for women graduates requires further careful monitoring.

Finally, we return to the issue of the gender gap in pay. For this purpose the New Earnings Survey provides the most accurate and detailed source of information on the gap in hourly earnings. We apply the classification of graduate occupations to this source, then construct the ratio of men's hourly earnings to women's. Figure 13 shows how these 'gender gaps' have moved over the past twenty-five years.

Looking first at *non-graduate* occupations, the gender ratio in pay moved slowly upwards beginning in the mid 1980s, then stalled in the early 1990s at about 77 per cent. In *traditional graduate* occupations the gender pay gap has remained fairly constant over the twenty-five year period, with women's hourly earnings in these jobs at about 85 per cent of men's. In the *niche graduate* occupations the gender pay ratio has risen quite significantly over this period, from around 67 per cent in the 70s and 80s to about 77 per cent by 2000. In *new graduate* occupations, the ratio remains well below that for non-graduate occupations. Most disappointingly, in *modern graduate* occupations, any progress women have made in terms of equal pay appear to have been reversed. Since 1991 the ratio had declined, from approximately 87 per cent to 75 per cent by 2000.

Figure 13: Trends in the gender pay gap, 1975 - 2000



7. Conclusions

In compiling this report we have examined evidence from a wide range of survey sources, spanning the whole of the UK population and covering the last 25 years. The evidence that we have discussed shows unequivocally that HE participation has increased dramatically, particularly over the last 15 years leading to a substantial increase in the number of UK labour market participants with degrees. This reflects successive government policies to improve the UK's capacity to compete in the global 'knowledge economy' (Brown *et al.* 2001, Leadbeater 1999, DfEE 1997, Reich 1991). The net effect is that the UK workforce is now more highly qualified than it was at the beginning of the period under review - and it is safe to assume that, on average, skills levels are higher. However, questions remain about whether the skills developed by higher education match the needs of the economy and how far they are being utilised effectively, in the interests of both employers and graduates themselves. It is not sufficient simply to demonstrate that the potential exists within the economy. It is necessary to demonstrate clearly, by comparing and contrasting the labour market experiences of various cohorts of graduates, that the more recent graduate entrants to the labour market are following similar career paths to those of their older counterparts (in terms of their movement into occupational areas which can utilise their degree level skills). Does achievement of a UK undergraduate degree still provide access to careers rather than jobs, and the probability of achieving substantially higher lifetime earnings than non-graduates? Higher education is an investment, nationally and individually, and its utility depends upon its value to employers and to the individuals who participate in it: the output and the outcomes.

To address these issues, the new graduate occupational classification that we have developed was used to interrogate national survey data in order to assess whether the balance of occupations has been changing as a result of increased educational achievement. Our analysis reveals that the proportion of employees working in what we labelled as non-graduate occupations had fallen from just over 79 per cent of the workforce in 1975 to approximately two-thirds in 2000. Thus, the proportion in 'graduate' occupational categories has increased, particularly in *modern graduate* and *new graduate* jobs, where the proportions doubled.

This analysis shows, as we have argued, that the occupational structure has changed in a way that could well have absorbed the increased supply of graduates produced by the HE system in the last 25 years. It also suggests that, in many occupational areas, a degree has become a pre-requisite for an increasing range of jobs. However, it provides evidence of the increasingly indistinct boundaries of the graduate labour market. Possession of a degree in the past generally provided access to occupations where particular skill, knowledge and credentials were required or where it was assumed by employers to be a proxy for potential to do work which might be entirely unrelated to the subject of degree. Earlier studies of young graduates in the first few years of their careers indicated that significant proportions claimed to be under-employed or to be doing jobs that did not directly use their higher education experience (Belfield *et al.* 1997, Dolton and Makepeace 1992, Tarsh 1992). The difference, for more recent graduate labour

market entrants, is that the graduate labour market is larger, more amorphous, and overlaps with and merges into the non-graduate labour market more than has been the case in the past.

Graduates now work in a much wider range of occupations than was the case 25 years earlier. To a large extent, we believe that this is because the nature of work has changed in ways that have accommodated the huge rise in the number of graduates. In some areas of work this reflects the growth of sectors and occupations that make use of graduates (e.g. the information and communication technology sector and software engineering occupations). In other areas it relates to the perceived need within organisations to recruit those who have relevant high-level qualifications into occupations where no such pool of highly qualified labour previously existed (e.g. the wide range of junior and middle management jobs which now recruit graduates). In part it stems from the growth of particular occupational specialisms (e.g. in many areas of health care, education, construction, engineering, technical sales). Undoubtedly it must also reflect the increasing diversity and wider ability range of the graduate labour supply and a growth in credentialism – the recruitment and employment of graduates simply because there are more graduates available for work than was ever the case in the late 1970s or early 1980s, and fewer bright secondary school leavers entering the labour market instead of progressing to tertiary education.

The evidence presented here nevertheless suggests that most of the recent graduate labour market entrants are in jobs that build on the foundation of their educational experience in a way that is recognised by employers. The most robust evidence of this is the graduate earnings premium revealed by comparing graduate and non-graduate pay in each of the graduate occupational groups (Figure 8). Even in non-graduate occupations, it appears that graduates' contributions are more highly rewarded than those of non-graduates. This may mean that graduate and non-graduate incumbents of such jobs may be doing different work, in the same way as those in niche graduate occupations contrast with the majority of people in the wider occupational groups of which they are a part.

The survey evidence gathered in 1998/99 from 1995 graduates reveals some confusion between the requirement to possess a degree to obtain the job and the use of graduate knowledge and skills within the job. Higher proportions of the 1995 graduate respondents considered that they were using the subject knowledge and skills acquired on their undergraduate programmes than had been required to have a degree to obtain their current jobs. This ambivalence about whether they were, in fact, employed in 'graduate' jobs was most common in the newer and growing areas of graduate employment; particularly in new graduate occupations, where just over half of those who stated that a degree had not been required for their jobs claimed to be using their subject knowledge and 69 per cent to be using their graduate skills.

On balance, therefore, our analysis suggests that a graduate level education is still a profitable route to follow, both for the individual and for society in general. The graduate earnings premium remains substantial and there is little evidence to suggest that more graduates nowadays are ending up in non-graduate jobs than was the case 20 years ago. But we need to inject two notes of caution, in relation to gender differences in experience and to the newer areas of graduate employment growth:

First, for women, the expansion of the graduate population has almost certainly brought about a decline in the very high graduate premium in pay female graduates earned in the past. In addition, the extent to which earnings differ for men and women - particularly in the *modern graduate* occupational areas - raises challenging questions that will be addressed throughout this project. Worryingly, there is some indication that among the latest (1995) cohort of graduates for which we have information, women's movement out of non-graduate occupations after graduation has been slowing down.

Second, we have defined a group of occupations to which graduates have been recruited in significant numbers in recent years and in which there were very small proportions of graduates in the past. These jobs, which we call *new graduate* occupations, are jobs in which a majority of recent graduates tell us they are making use of their degree level skills and qualifications. They are also the jobs that have expanded rapidly over the last 25 years. They account for a significant part of the growth in graduate employment. We need to understand better just how well the employers of graduates in these jobs make use of them and how well graduates make use of their education within these jobs.

It is clear from our analysis that non-graduate jobs, for the great majority of those who graduated in 1995 and for the earlier graduate cohorts we have studied, constitute a temporary stage through which many pass en route to employment which makes better use of their degree-level knowledge and skills. Revisiting the 1995 graduate cohort, (the current study which we term 'Seven Years On') will reveal how far new graduate occupations fulfil a similar function, providing experience to complement qualifications for new labour market entrants that will enable them to access more established graduate jobs - or whether they are, indeed, new and expanding areas of graduate career development opportunities. In short, are they *new graduate* occupations or *new graduate* occupations? We are continuing to explore this, in both the existing Moving On data, in the Seven Years On survey and, perhaps most revealingly, in the follow-up interviews with graduates, where we engage in detailed exploration about what graduates do in the course of their work. The new longitudinal and qualitative data will enable us to address these questions.

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