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THE CHANGING STRUCTURE OF MALE EARNINGS IN BRITAIN, 1974-88

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ABSTRACT

The paper uses data from the annual British General Household Survey to examine changes in the structure of weekly earnings for full-time male employees aged 16 to 64 during the period 1974-1988. The principal findings are: (1) earnings inequality fell slightly in the second half of the 1970s only to grow sharply during the 1980s; (2) rising financial returns to education and labor market experience in the 1980s account for between one-third and one-half of the growth in earnings inequality during the 1980s; (3) the earnings of low-skilled workers increased by over 15 percent in real terms between 1974 and 1988. Rising returns to skills in the face of large increase in the supply of skilled labor suggest a substantial shift in labor demand in favor of skilled workers. Changes in British labor market institutions, particularly the decline in trade union density may also help to explain part of the rise in inequality during the 1980s.

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I. Introduction

While many of the changes in the U.S. wage structure during the 1970s and 1980s have been well-documented[2], little comparable work exists for Britain[3]. This paper uses data on male, full-time employees from the annual General Household Survey (GHS) to examine developments in the British wage structure during the period 1974-88.

The GHS data indicate that the British wage structure was far from stable during 1970s and 1980s. Earnings inequality fell slightly during the 1970s only to rise rapidly in the 1980s. Returns to labor market skills such as education and experience declined dramatically in the 1970s and then recovered in the 1980s, though not always enough to compensate the earlier losses. Meanwhile, earnings for low-skilled workers increased in real terms over the entire period 1974-88.

The increases in earnings inequality and returns to skills during the 1980s parallel developments in the United States. However, the decline in British earnings inequality and skill differentials through the end of the 1970s, and particularly the real earnings successes of low-skilled British workers over both decades, stand in strong contrast to the U.S. experience.

This paper documents some of the key developments of the British wage structure sketched above. It also attempts to explain these changes in the context of a simple relative supply and demand framework which takes into account the role of labor market institutions. It seeks to use the similarities and differences between

the U.S. and Britain to shed light on the forces producing the upheavals in the wage structures of both countries.

The main conclusion is that a simple supply and demand analysis can plausibly explain most of the developments in the British wage structure during the 1970s and 1980s. A large rise in the relative supply of skilled labor during the 1970s drove skill differentials down and indirectly contributed to wage compression. In the 1980s, a large rise in the relative demand for skilled labor forced skill differentials and earnings inequality up despite continued strong growth in the supply of skilled labor. The GHS evidence, however, lends little support to the idea that the cause of the increasing relative demand for skills was a decline in the manufacturing sector in favor of services. Instead, it seems that technological or work-organization related changes within industrial sectors were more likely to be driving the increase in demand for skilled workers.

Labor market institutions, which moderate the workings of the market to a much greater degree in Britain than in the U.S., may play an important role in explaining the differences between the two countries. In the U.S., low-skilled workers saw absolute declines in real earnings with only moderate rises in relative unemployment; in Britain, the low-skilled experienced increases in real earnings and much higher unemployment rates. In the context of a supply and demand model, both countries may have faced the same shift in relative demand. The "free-market" in the U.S. led workers to a "low-wage, high-employment" outcome, while British labor market institutions, particularly trade unions, may have allowed workers to "choose" a "high-pay, low-employment" point on the same relative demand curve. The relative strength of British trade unions, Wages Councils, and incomes policies

may also have delayed the onset of the rise in wage inequality in Britain, relative to the U.S.

II. The Data

The principle source of data is the annual General Household Survey (GHS) for the years 1974-88. The GHS is a survey of between 10,000 and 12,000 households in England, Scotland and Wales conducted continuously throughout the year. It provides detailed, nationally-representative information on individuals. Throughout this paper, I analyze a sub-sample of the GHS comprised of males aged 16 (the legal minimum age for leaving school) to 64 (the retirement age for males).[4]

The wage variable is the log of weekly earnings for full-time employees deflated using the appropriate monthly Retail Price Index (RPI) with January, 1974 as the base. The questions used to calculate weekly earnings underwent some change between the 1974-78 and the 1979-88 periods. For the years 1974-78, weekly earnings were derived from all earnings including wages, salaries, tips, bonuses and commissions in all jobs held in the previous twelve months. To calculate weekly earnings, I divided these total earnings by total weeks worked in the previous twelve months. In the 1979-88 surveys, weekly earnings were estimated as the usual gross earnings including tips and bonuses per pay period from the worker's main job, divided by the usual number of weeks covered in each pay period. These changes may affect comparisons of earnings between the two periods, but no discontinuity is evident and the GHS weekly earnings data appear to be consistent with data from the New Earnings Survey (NES). Unfortunately, no hourly wage series is available due to substantial changes in work hours information collected after 1983.

The education variables are based on the highest educational qualification earned by the respondent. The use of qualification-based variables offers two advantages over education measures based on years of schooling. First, the qualification variables outperform years variables in standard human capital equations (see Schmitt, 1991a). Second, the value of different types of qualifications, particularly vocational versus academic qualifications, may shed more light on the workings of the supply and demand for skills than an undifferentiated years variable.

A complete list and brief description of the educational variables appears in Table 1. The large number of categories reflects the relatively complicated structure of British educational qualifications. All British children must attend full-time education until the age of 16, the age when a large portion of them leave school.[5] Those who leave school without earning a qualification join the "No Qualifications" (NO QUAL) group. This is by far the largest group in the sample, compromising approximately 54 percent of the male labor force in 1974 and 32 percent in 1988.

Those who earn qualifications, broadly speaking, follow either a vocational or an academic track. Workers generally earn vocational qualifications while they work, through apprenticeship schemes, part-time study, or relatively short periods of full-time study "sandwiched" between spells of employment, often with the same employer. The vocational qualifications increase in skill from miscellaneous, relatively low-skilled apprenticeships (VOC-OTHER) through incremented, nationally-recognized apprenticeships (VOC-LOW, VOC-MIDDLE, and VOC-HIGH). The highest level vocational qualifications can involve some instruction at what in the U.S. would be college level. Some of the qualifications in Table 1 usually facilitate entry into female-dominated occupations such as teaching, nursing, and clerical jobs

(CLERICAL, OLEV&CLER, NURSING, TEACHING). Few men earn these qualifications.

School children following the "academic track" prepare for and sit a series of national tests by academic subject. Passing grades on these exams, generally taken around age 16, lead to qualifications that would place individuals in the OTHER, O-LEVEL 1-4, O-LEV&CLER, and O-LEVEL 5+ categories. The "Ordinary Level" examination categories distinguish between students who pass between one and four examinations, and those who attempt and pass five or more. The distinction is important for some employers and for further study. After "O-levels", some students (usually around age 18) take further national examinations at "Advanced level". For some students, "A-levels" are a terminal qualification; for others they are only a prerequisite for university admission. The UNIVERSITY category here includes all students who successfully complete the standard three year university course as well as those who study further. The group with university qualifications represents about 5 percent of the total male labor force in 1974, rising to approximately 11 percent by 1988.

The other principal human capital variable (EXP) measures potential labor market experience, defined in the standard way as age minus age left full-time education.[6] The GHS contains no measure of actual labor market experience, but limiting the sample to males age 16 to 64 should reduce some of the difficulties associated with using potential rather than actual experience.

A significant drawback of the GHS data is the poor information on workers' industry characteristics. From 1974 to 1980, the GHS reports 24 consistent industry classifications. From 1981 to 1988, the industry classification system is reduced to 10

one-digit SIC categories, which can't be matched consistently with the earlier classification. As a result, I have been forced to reduce the industrial categories to only 7 groupings in order to find a definition which is consistent over the 15 year sample. The seven categories, however, do allow for a distinction between manufacturing (3 categories) and services, the two sectors which have featured prominently in much of the discussion of the changing wage structure in Britain and the U.S.

III. Changes in the British Wage Structure

A. Earnings inequality

Earnings inequality in Britain fell slightly during the 1970s only to rise rapidly during the 1980s. Meanwhile in the U.S., inequality grew continuously over both decades (see, for example, Juhn, Murphy and Pierce, 1989, Table 1 and Figure 3).

The data in panel (a) of Table 2 summarize the British earnings distribution at three periods of the GHS sample, 1974-76, 1978-80, and 1986-88. Following much of the work in the U.S., the basic measure of inequality in Table 2 is the difference between the log earnings of workers in different percentiles of the earnings distribution. Table 2 also reports the standard deviation of log earnings, another measure of earnings dispersion.

Both measures of inequality paint the same picture. The 90-10 differential (the difference between the log earnings of workers in the 90th and the 10th percentiles of the distribution) and the standard deviation of log earnings show a slight decline (0.01 log points) between 1974-76 and 1978-80. Both measures, however, increased by approximately 20 percent between 1978-80 and 1986-88 (the

90-10 differential by 0.22 log points, and the standard deviation of log earnings by 0.11 log points). The rise in dispersion in the 1980s does not appear to be simply a phenomenon of the tails of the distribution since the data also indicate a steep rise in the 75-25 differential during the 1980s.

Figure 1 makes the same point more dramatically. The figure shows the log point change, relative to 1974, in real earnings for the 10th, 50th and 90th percentiles of the earnings distribution. From 1974 to 1980, earnings of the 10th percentile grew faster than those in the 50th and 90th percentiles; the earnings of the 90th percentile grew at the slowest rate. After 1980, the growth positions reversed with 10th percentile earnings remaining flat over most of the rest of the sample and the 90th percentile making large gains.

B. Educational and experience differentials

A portion of the changes in overall inequality in Britain during the 1970s and 1980s was due to the decline and subsequent recovery of financial returns to labor market skills. Education and experience differentials fell steeply between the mid- and late-1970s. By 1986-88, however, education differentials had made a strong recovery, and experience differentials had more than made up for ground lost in the previous decade. In the U.S., education differentials reached historic lows in the mid-1970s and grew rapidly through the late 1980s (see Blackburn, Bloom and Freeman, 1991, Table 2 and Figure 2). Experience differentials in the U.S. increased steadily after 1970, especially during the 1980s (see Juhn, Murphy and Pierce, 1989, Table 3).

To measure the change in returns to labor market skills in Britain, I have estimated identical human capital weekly earnings equations for fifteen consecutive years of General Household Survey data. Each equation explains the log of real

weekly earnings as a function of 13 education qualification dummy variables, their full interactions with years of potential experience and its square, and 9 regional dummies. Due to the omission of ability, family background and other variables, the human capital equations may yield biased estimates of the level of returns to skills in the individual regressions. However, assuming that the effects of these biases are constant over time, the difference in estimated returns from one year to the next should provide a consistent estimate of the change in the returns.

The education differentials in panel (a) of Table 3A are calculated as the sum of the coefficient for the qualification-specific dummy variable, plus the value of the qualification-specific experience differential evaluated at 20 years of experience, minus the experience differential for a worker with no qualifications also evaluated at 20 years. This formulation of the differential allows a simple yet flexible representation of the returns to a qualification: qualifications can provide a once-and-for all boost (through the qualification dummy), and a different earnings profile (through the qualification-specific experience terms). The returns to high- and mid-level qualifications (UNIVERSITY, VOC-HIGH, A-LEVEL, VOC-MIDDLE, and O-LEVEL 5+) in Table 3A all decline between the first and second periods. In the 1980s, however, the differentials for these qualifications increase strongly, although generally not enough to offset the declines of the 1970s. The returns to the low-level qualifications (VOC-LOW, O-LEVEL 1-4, and VOC-OTHER) manage modest gains in the 1980s which exceed losses during the 1970s.

Figure 2 plots the estimated returns at 20 years experience for condensed educational qualifications (UNIV, MIDDLE and LOW) over all 15 years in the sample.[7] The returns to university and mid-level qualifications fall through 1979-80,

rise again until 1984, and then remain approximately constant through the end of the sample.

Panel (b) of Table 3A shows the estimated differentials for years of potential experience. The figures reported are the fixed weighted averages of the experience differentials for all 14 education categories evaluated at the number of years indicated in the label. The weights used were the average employment shares of the education categories for the period 1974-88. The experience differentials show declines in the 1970s followed by strong gains in the 1980s. By the late 1980s, experience premia were well above the levels prevailing in the mid-1970s.

Similar estimates of changes in education and experience differentials for workers age 16 to 30 appear in Table 3B. Since younger workers have shorter tenure with the firms where they work, their earnings are likely to be more responsive to market forces changing the earnings structure. In the U.S., for example, increases in experience and education differentials were higher among younger workers than the population as a whole. The regression results summarized in Table 3B show that the rise in skill differentials was also more marked among young British workers.

C. Residual Inequality

Education and experience differentials can explain only a portion of the change in overall inequality in Britain during the 1970s and 1980s. As earnings differentials rose between education and experience groups in the 1980s, earnings dispersion was also increasing within these same groups. The same is true for the U.S. where changes in education and experience differentials can account for only about one-half of the increase in overall inequality since the mid-1970s (see, for example, Juhn, Murphy, Pierce, 1989, Table 4).

The regression residuals from the earnings equations in the previous section clearly establish that changes in education and experience differentials fail to explain most of the rise in overall inequality. Panel (b) of Table 2 summarizes the distribution of these residuals for the three key time periods. The residuals can be interpreted as individual earnings purged of any systematic differences between "groups" defined by the explanatory variables in the regression (education and experience). If the increase in overall inequality were due solely to rising inequality between education-experience groups, we would expect the residual distribution to show no tendency toward greater inequality: the overall inequality would stem from changing endowments, or market valuations of human capital which the earnings regression would "remove" from the data. In fact, residual inequality rises considerably. The 90-10 differential for residual earnings grew 0.138 log points between 1978-80 and 1986-88, versus a 0.223 log points rise for raw earnings. By this crude measure, changes in returns to education and experience can account for only 40 percent of the rise in British earnings inequality during the 1980s. Approximately 60 percent of the increase occurred within education and experience groups.

D. Real earnings of low-skilled workers

While inequality increased substantially in Britain during the 1980s, the real earnings of employed, full-time, low-skilled workers were also growing. In the U.S., on the other hand, inequality increased in large measure because the real earnings of low-skilled workers fell. High school drop-outs or workers in the 10th percentile of the U.S. earnings distribution, for example, suffered steady and significant reductions in real annual and weekly earnings after the late 1960s (see, for example, Blackburn, Bloom and Freeman, 1991, Table 1 and Juhn, Murphy and Pierce, 1989, Figure 3).

The median real weekly earnings of British workers with no qualifications increased by approximately 0.30 log points between 1974 and 1988. Since this results stands in such contrast with the experience of the U.S., I have made several attempts to check the robustness of the result to different ways of defining low-skilled workers, and to confirm the GHS results using other data sources.

While those without educational qualification may be a natural choice to represent "low-skilled" workers, they may not be entirely representative of the low-skilled. One important reason is that workers with no qualifications tend to be older than those with qualifications. On average, workers without qualifications may have been able to improve their earnings position by capturing some of the rise in returns to experience during the 1980s. One way to reduce the potential for this experience effect is to choose workers in the 10th percentile of the distribution as a proxy for low-skilled workers. As Figure 1 shows, real earnings for workers in the 10th percentile increased by approximately 0.20 log points over the sample period.

At between one-third and one-half of the total sample in each year, the no qualifications group is also much larger than the natural low-skilled groupings in the U.S. such as high school dropouts. It could be that even as median real earnings for the no qualification group were rising, the earnings of the less-skilled among those without qualifications were dropping. However, by 1988 real earnings for the 10th percentile of the no qualification group were approximately 0.15 log points above their level in 1974.

The GHS results are also consistent with other publicly available data on British earnings. Published data from the New Earnings Survey, an annual survey of approximately one percent of the British labor force collected through their

employers, indicates that the weekly and hourly wages of workers in the 10th percentile of the male earnings distribution, both increased by between 10 and 13 percent between 1974 and 1988 (see, for example, Katz, Loveman, and Blanchflower (this volume), and Schmitt, 1992).[8]

E. Employment rates

One of the most striking features of the British wage structure over the period 1974-88 was the large number of people who fell out of it entirely. The unemployment rate quadrupled between the mid-1970s and the mid-1980s -- from under 3 percent to over 12 percent. The incidence of unemployment fell much more heavily on the low-skilled than the population as a whole. The unemployment rate for workers with no qualifications exceeded 15 percent in the mid-1980s, with long-term unemployment especially high among those with no qualifications. In the U.S., low-skilled workers also bore the brunt of rising unemployment in the 1970s and early 1980s, but the overall and skill-specific unemployment rates were much lower than in Britain (see, for example, Blackburn, Bloom and Freeman, 1991, Table 3).

To measure the relative unemployment experience of British workers, I have estimated unemployment rates by educational qualification using separate binary probit equations for each of the years of the GHS. Panel (a) of Table 4 summarizes the probit-predicted unemployment rates for the three sub-periods assuming all workers were 40 years old. The unemployment rates for nearly all qualifications closely track changes in the overall unemployment rate: little change between 1974-76 and 1978-80, followed by large increases through 1986-88. Figure 3 graphs the complete unemployment series for the four condensed education categories introduced earlier.

In a world with involuntary unemployment, the return to education has two components -- a higher wage while employed and a higher probability of finding and keeping a job. In this simple framework, we can adjust the earlier education differentials to include the differential employment probability associated with a given qualification. Defining the employment probability as one minus the estimated unemployment rate, the relative employment rate for qualification i is then $(1 - u_i)/(1 - u_{NOQUAL})$. While relative employment rates were low and constant during the 1970s, they rose substantially in the 1980s. Adjusting the changes in education differentials for the changes in relative employment substantially increases the returns to education during the 1980s. Among university graduates, for example, the rise in the education differential between 1978-80 and 1986-88 increases from 0.067 to 0.113 log points after factoring in the change in employment probabilities over the period.[9]

Given the large drop in labor force participation rates among working age males during the 1980s, the unemployment rates in panel (a) of Table 4 tell only part of the story of the decline in employment rates. Panel (b) of Table 4 lists the sample employment-population ratios calculated from the raw GHS data. They show an even sharper drop in relative employment probabilities than implied by the unemployment rates. Except for A-LEVEL and O-LEVEL 5+, employment-population rates in the 1974-76 clustered around 90 percent.[10] By 1986-88, employment-population rates fell off by a few percentage points for highly skilled workers and plummeted by 14 percentage points for workers with no qualifications.

IV. Supply, demand, and labor market institutions

Simple models of relative supply and demand for workers of different skill levels have been quite successful in explaining changes in skill differentials in the U.S.[11] A relative supply and demand model also seems a natural benchmark for an analysis of British skill differentials. In this section, I examine the market for skilled labor in Britain taking into account the evolving role of several British labor market institutions.

A. Relative supply of skills

In Britain, the rise in supply of workers with educational qualifications during the 1970s and 1980s was dramatic. A breakdown of the male labor force by educational qualifications for the three sub-periods of the GHS sample appears in Table 5. In 1974-76, workers with no qualifications comprised over half of the male labor force. By 1986-88 they were less than one-third of the total. Over the same period, workers with university degrees more than doubled from about 5 to 11 percent of the total labor force. Interestingly, the share of workers with the highest levels of vocational qualifications (VOC-HIGH and VOC-MIDDLE) also doubled over the three periods. Only two of the educational groups failed to increase their share of the labor force over the full sample: five or more O-levels (O-LEVEL 5+) and the lowest vocational qualification (VOC-OTHER). Given the fall in workers with no qualifications, these declines probably reflect decisions by individuals not to end their education after achieving these qualifications, but instead to use them to gain access to further education.

In a competitive labor market with constant relative demand, an increase in the relative supply of skilled labor would reduce the relative wages of skilled labor.

The large increase in the relative supply of skilled labor is consistent with the observed decline in returns to education in Britain during the 1970s, but makes more difficult a coherent explanation of the recovery of education differentials in the 1980s. The coincident rise in supplies of, and differentials for skilled works during the 1980s strongly suggests that the relative demand for skilled workers must have grown substantially over the decade.

One of the major developments of the post-war period in both Britain and the U.S. was the enormous increase in female participation in the paid work force. New female workers may have competed disproportionately with low-skilled male workers, thus helping to widen skill differentials. Panel (b) of Table 5 reports the ratio of females to males by educational qualification for the three sub-periods. In 1974-76, there was approximately one female graduate for every four male graduates. By 1986-88, the ratio had doubled to nearly 1 female graduate for every 2 male graduates. In comparison, the ratio of females to males among workers with no qualifications increased from 81 percent to 86 percent in the same period. The rise in female participation, therefore, led to a disproportionate rise in competition for qualified workers.[12] The rise in female participation actually makes it more difficult to explain widening differentials in the 1980s.

The large growth in the relative supply of skilled labor may lie behind the decline in skill differentials and inequality in the 1970s. In the absence of new sources of competition, the declining relative share of male low-skilled workers may also help to explain the rise in absolute earnings for low-skilled workers over both decades. However, relative supply movements clearly make the rise in differentials in the 1980s a more puzzling phenomenon.

B. Relative demand for skills

The supply analysis implies an important role for relative demand changes in the 1980s. Most previous research on the U.S. economy has usefully divided relative demand changes into two categories: "between industry" factors which affect product demand, and thus labor demand, across industries (e.g., the rise in services versus manufacturing, or the rise in foreign versus domestic sources for manufacturing goods); and "within industry" factors which affect the valuation of skills independently of changes in product demand (e.g. skills-biased technological innovations, or organizational developments favoring skilled-workers). While the debate in the U.S. generally agrees on the importance of demand shifts, no clear conclusions have been reached about these two, not necessarily competing explanations.

Given international trade in goods and production technology, the demand shifts hypothesized in the U.S. are also likely to have been operating in Britain. The dramatic decline in the share of manufacturing employment in total employment evident in Figure 4 certainly makes a case for a careful examination of the role of "between" industry effects in the growth of inequality during the 1980s. While the relatively poor range of industrial variables makes the GHS data set less than ideal for analyzing relative demand shifts, I have nevertheless conducted some crude tests of the principal demand shift hypotheses. The GHS data do allow us to distinguish workers in three separate manufacturing categories from workers in agriculture, services, and two other generally non-traded sectors (transport and communications, and construction). I will use these simple categories to attempt to estimate the effect

of the general decline in domestic manufacturing on skill differentials and overall earnings inequality.

Following Blackburn, Bloom and Freeman (1991), I use two methods to estimate the role of industrial shifts in the rise in skill differentials between 1978-80 and 1986-88. The first is a shift-share decomposition of the change in educational differentials between the two periods. The second is a regression-based decomposition of education and experience differentials.

The shift-share decomposition divides the change in education differentials into three components: (1) the portion due to between industry changes in the distribution of employment by qualification; (2) the portion due to within-industry changes in the earnings for workers with different qualifications; and (3) the interaction of these two effects.

The decomposition involves several stages of calculations. First, the raw earnings data are used to calculate educational differentials, d_{qst}, for each qualification (q) within each industrial sector (s), in each year (t):

(1) $$d_{qst} = \overline{\ln w_{qst}} - \overline{\ln w_{0st}}$$

where w refers to real wages, 0 is the base group with no qualifications, and a bar indicates a sample mean. Second, the qualification differentials in each sector are used to produce an economy-wide "raw differential", d_{qt}, for each qualification as a weighted-average of the qualification differential in each of the sectors:

(2) $$d_{qt} = \sum_{s} d_{qst} \cdot x_{qst}$$

where x is the proportion of all workers with qualification q working in industry s at time t. Third, the "between" industry effect is removed from the differential by re-estimating d_{qt} using the average employment share for the period 1974-88:

(3)
$$\hat{d}_{qt} = \sum_{s} d_{qst} \cdot \bar{x}_{qs}$$

Fourth, in a similar way the "within" industry effect is removed from the differential by re-estimating d_{qt} using the average industry-specific differential for each qualification over the full sample:

(4)
$$\tilde{d}_{qt} = \sum_{s} \bar{d}_{qs} \cdot x_{qst}$$

Finally, the changes in the three differentials are calculated for the three sub-periods. The interaction of the "between" and "within" industry effects is defined as the signed difference between the change in the raw differential and the sum of the changes of the two "controlled" differentials.

The results of this shift-share decomposition for the 1980s appear in panel (b) of Table 6. The first column shows the actual change in the education differentials. Note that these estimates differ slightly from earlier ones since the differentials here are calculated using the raw data without controlling for compositional effects. The shifts in employment from manufacturing to the other sectors make only a negligible

contribution toward the rise in differentials during the 1980s (see column 2 of panel (b)). The within-industry component of the change in differentials (column (3) of panel (b)) accounts for nearly all of the rise in the overall education differentials.

The second decomposition technique attempts to measure the effect of manufacturing-to-service employment changes using a modified human capital earnings equation. To implement this decomposition I pooled the GHS samples for 1978-80 and 1986-1988 (and separately 1974-76 and 1978-80) and used the data to estimate an equation of the form:

(5) $$\ln w_i = a + b_1 S_i + b_2 Q_i + b_3 (D_i Q_i) + b_4 R_i + b_5 (D_i R_i) + e_i$$

where S is a vector of six industrial sector dummy variables; Q is a vector of educational qualification dummy variables and their complete interactions with experience and experience-squared; R is a vector of 9 region dummies; D is a dummy variable equal to one if the observation belongs to the later sub-period; e is an error term; and a and b are parameters to be estimated. In this specification, the coefficients, b_3, represent the change between the first and the second periods in the differential associated with each of the educational qualifications. We can measure the effect of between-industry employment changes by comparing the estimates of b_3 in a regression like (5) with estimates of b_3 in an identical regression which excludes the industry sector dummies.[13] If the decline in relative earnings for the low-skilled is due to their increasing concentration outside the manufacturing sector, then the estimated change in differentials (b_3) should be smaller in the regression which controls for industrial sector. The difference between the b_3 coefficients in the

regressions with and without the industry controls, therefore, should give an estimate of the importance of industry shifts.

Panel (b) of Table 7 reports results of the regression decomposition of the industry shift for the 1980s. Column 1 presents the estimated increase in the differential in a regression like (5) which excludes industrial sector controls. These differentials are nearly identical to those in column 2, estimated using six industry dummies. The resulting estimated cross-industry effects in column 3 are tiny, reinforcing the conclusions from the shift-share analysis.[14]

The evidence from both decompositions suggests that the decline in the manufacturing employment share was probably not the main source of widening skill differentials. This is not entirely surprising given that the manufacturing employment share was falling in the 1970s as skill differentials and earnings inequality were also dropping.

The decomposition results point strongly toward "within" industry factors. Data on the breakdown of skill-group employment by industrial sector in Tables 8A and 8B indicate that the pattern of labor demand within industries including manufacturing changed significantly over the sample. The share of manufacturing employees with a university degree (see panel (a) of Table 8A) almost tripled from 3.0 to 8.6 percent between 1974-76 and 1986-88. The share of university graduates in services (see panel (b)) did not quite double over the same period. These numbers suggest a sharp rise in demand for skilled workers <u>within</u> manufacturing, one which in relative terms was actually greater than in services.

The employment share of university graduates, however, may not reflect a rise in demand so much as the greater abundance of university graduates by the end

of the sample. Jobs that had been filled by workers with less than university education in 1974-76 may have been filled by university graduates in 1986-88 simply because more workers had university degrees. In this respect, the occupational employment shares in Table 8B argue more persuasively that production methods changed within manufacturing in ways that favored high-skilled workers. Non-manual employment (defined by job classification, not a worker's personal characteristics) increased from approximately 26 percent of total manufacturing employment in 1974-76 to 36 percent in 1986-88 -- with all of the increase stemming from a higher share of professional employees.

A comparison of the 90-10 differentials in manufacturing and services provides a final piece of evidence supporting the importance of "within" industry effects. Over the entire period 1974-88, the 90-10 differential for services was on average about 0.30 log points larger than in manufacturing. All else constant, the shift in employment from manufacturing to services would have contributed to a rise in inequality. However, the 90-10 differential for manufacturing grew faster than in services over the 1980s -- a 0.200 log point rise versus 0.178 -- a phenomonen that the "between" industry hypothesis cannot explain.

To summarize the importance of relative supply and demand factors, I have regressed the log of the university differential against the log of the relative supply of university graduates and a quadratic trend term (to proxy shifts in relative demand and other factors affecting the differential). Estimating the equation using Ordinary Least Squares on the sample 1974-88 gives an estimate of -0.29 for the elasticity of the university differential with respect to the relative supply of university graduates.[15] This supply elasticity can help to predict what might have happened to

differentials during the 1980s in the absence of a continued expansion of supply. Restricting relative supplies of university graduates to their average level over the 1974-88 period and using the estimated supply elasticity yields an estimate of the differential under the assumption that relative supplies were constant through the 1980s. Under these assumptions the differential would have increased by 0.207 log points (versus 0.067) between 1978-80 and 1986-88. An alternative interpretation is, of course, that relative demand shifts during the 1980s must have been very large to make their effects felt despite large increases in relative supplies.

C. Labor market institutions

Labor supply and demand shifts can explain many of the similarities in the development of the U.S. and British wage structures. However, supply and demand are less illuminating when it comes to explaining differences. Labor market institutions may be in a better position to account for the divergences, especially in the experiences of low-skilled workers and the timing of the rise in inequality. I therefore now examine the role of several British labor market institutions: the extensive use of incomes policies in Britain during the 1970s; the industry and occupation-specific minimum wages set by national Wage Councils; the unemployment benefit system; and trade unions.

1. Incomes policies of the 1970s

Five incomes policies were in effect during the first five years of the GHS sample. Two of these limited pay increases to a uniform nominal amount (the same, fixed pounds-per-week ceiling applicable to workers at all pay levels); a third policy prescribed proportional increases that may have impeded any underlying tendency toward wage dispersion. In an analysis which pays particular attention to wage

differentials, Ashenfelter and Layard (1983) conclude that the incomes policies of the 1970s achieved some of their implicit wage compression targets and probably prevented dispersion from increasing as fast as it would have in the absence of such policies. The effects, however, are difficult to quantify and incomes policies in the 1970s probably tell use little about the period of widening inequality in the 1980s.

2. Wage Councils

Britain did not have a statutory national minimum wage in force at any time during the period 1974-88. However, approximately 10 percent of the national labor force worked in industries covered by Wages Councils which set minimum pay rates by occupation for workers under their jurisdiction. Anecdotal evidence suggests that a serious erosion in the scope, enforcement, and "bite" of Wage Council minimums took place after the election of the Conservative government in 1979. By the time the Wage Act of 1986 restricted councils to setting a single minimum for all occupations within a covered industry and removed workers under the age of 21 from councils jurisdiction, Wage Councils had lost a great deal of their previous influence on wages.

In a broader study of the effects of minimum pay rates on employment, Machin and Manning (1992) examined the impact of Wage Councils on hourly wage dispersion. Their estimates suggest that the decline in Wage Council minimums relative to industry averages resulted in an 8 percent increase in the coefficient of variation of wages for covered workers.[16] Since this estimate excludes the effects of reduction in coverage and enforcement, it is probably an underestimate of the effect of the decline in councils on dispersion.

The demise of Wages Councils during the 1980s may have played an important role in rising inequality during the 1980s. Nevertheless, the dismantling of Wages Councils, which disproportionately protect the wages of low-earners, makes it more difficult to explain the rise in real earnings for low-skilled workers.

3. Unemployment benefits

Real earnings for the low-skilled may have increased in Britain over the sample because the benefit system placed an ever-rising floor on earnings. A rise in the real value of benefit could account for the simultaneous increase in low-skilled earnings and unemployment.

A careful analysis of the effect of the complex British benefit system on low-skilled workers over the 15 year period of the sample is well beyond the scope of this paper. As a quick check on the possible effects of benefits on low-skilled earnings, I have graphed the indexed value of real unemployment benefits and the real earnings of workers in the 10th percentile over the sample years in Figure 5. Unemployment Benefit is an unemployment insurance program covering most unemployed workers in the first year of unemployment. The benefit data graphed in Figure 5 are the log of the real statutory level of unemployment benefits for a single man with no children (see Department of Social Security, 1992, Table C1.01). Figure 5 suggests that the absolute value of unemployment benefit grew slightly over the sample period. However, unemployment benefit failed to keep pace with rises in earnings of workers in the 10th percentile of the full-time earnings distribution.

In absolute terms the unemployment benefit system was not much more generous in 1988 than it was in 1974. However, in relative terms it was actually less generous. While the analysis is far from complete, the idea that the benefit system

pushed real earnings of low-skilled workers up in absolute terms over the 1970s and 1980s does not appear to be consistent with evidence on unemployment benefit.

4. Trade unions

Perhaps the most striking institutional difference between Britain and the U.S. is the much higher degree of unionization in Britain. In Britain, union membership grew rapidly during the 1970s to an historic peak of just under 60 percent of the work force in 1979. Union density in the U.S., on the other hand, declined steadily in the 1970s, falling below 20 percent by the end of the decade. In the 1980s, both countries experienced drops of about 10 percentage points in union density.

Figure 6 shows a strong inverse relationship between trade union density and overall earnings dispersion in Britain. While the figure cannot establish causation, the striking association suggests that the decline in unionization played a crucial role in the development of the British wage structure during the 1980s. In this respect, it may be telling that the continuous decline in union density in the U.S. coincided with a continuous rise in earnings inequality there.

Following Freeman (1991, Table 2), Table 9 estimates the contribution of the decline in union membership to the change in skill differentials from 1978-80 to 1986-88 using microdata from the GHS. Column 1 presents cross-section estimates of the union differential from the GHS data for 1983 (the only year where the GHS asks workers about their union affiliation). As in the U.S., union differentials are small for skilled workers and much larger for less-skilled workers. Since no estimates of British union membership by education or occupation exist for the skill groups and time period in Table 9, column 2 uses the change in union membership in the whole economy (-10.3 percentage points) to estimate the decline in union membership in

each skill group. Multiplying the change in membership by the union differential for each skill group gives an estimate of the effect of union decline on the earnings of each skill group. A comparison of these union earnings effects across complementary skill groups yields an estimate of the total effect of union decline on the corresponding skill differential. On this basis, union membership losses account for about 21 percent of the rise in the university differential and 13 percent of the rise in the non-manual differential during the 1980s.[17]

As with Wage Councils, the decline in union membership does not make it any easier to account for the rise in low-skilled earnings. However, it may be that the divergent earnings experiences of low-skilled workers in the U.S. and Britain have less to do with changes in institutions within the two countries over time and more to do with cross-country differences in the levels of influence of the institutions. Skill differentials and overall inequality may have increased in Britain due to the weakening of some labor market institutions, but low-skilled workers may have been able to protect absolute earnings more effectively in Britain than in the U.S. due to the much greater level of influence exerted by the British institutions. Freeman (1991) finds some evidence for this institutional "levels" effect in cross-sections of OECD countries. Countries with high union density have lower variances of earnings. They also experienced smaller changes in earnings differentials between 1978 and 1987.[18]

V. Some Conclusions

The 1970s and 1980s were tumultuous times for the British earnings structure. The GHS data indicate that skill differentials and overall earnings inequality fell slightly during the 1970s and then rose sharply in the 1980s.

A simple relative supply and demand framework can explain many of these developments. Large increases in supplies of skilled labor helped to narrow skill differentials during the 1970s. During the 1980s, a strong rise in the demand for skilled labor led to widening skill differentials despite a continued expansion in the relative supply of skilled labor. The GHS data provide little support for the hypothesis that the decline in British manufacturing employment lies behind changing relative demand for labor or the increase in inequality. The GHS data, however, do support the view that a rise in demand for skills within industries -- including manufacturing -- has made an important contribution to the rise in inequality.

Labor market institutions also appear to have played an important role in the changing earnings structure. Incomes policies may have checked an underlying tendency toward wage compression during the mid-1970s and delayed the onset of rising inequality until the late 1970s. The declining importance of Wages Councils, and especially trade unions, also probably allowed for greated inequality during the 1980s.

What does the evidence from the 1970s and 1980s say about the 1990s? Despite a British institutional framework which attenuates the effects of supply and demand changes to a much greater degree than in the U.S., the same market forces which led to widening differentials during the 1980s could act to close them in the

1990s. The rising differentials are providing a strong financial incentive for individuals to acquire formal education and skills training. The number of new graduates, for example, increased steadily from approximately 95,000 in 1980 to over 120,000 in 1988 (Highly Qualified People: Supply and Demand, 1990). Particularly if Wages Councils and unions avoid further declines in influence, continuing supply responses could conceivably undo many of the developments of the 1980s.

Endnotes

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2. See, for example, Blackburn, Bloom and Freeman (1991), Blackburn and Bloom (1987), Bluestone (1990), Bluestone and Harrison (1988), Bound and Johnson (1989), Juhn, Murphy and Pierce (1989), Katz and Murphy, (1992), Katz and Revenga (1989), and Murphy and Welch (1992).

3. Three other papers address some of the issues discussed here. Moghadam (1990) examines changes in the returns to education in a much broader analysis of wage determination using data from the Family Expenditure Survey for the years 1978 to 1985. Katz, Loveman and Blanchflower (1992) compare changes in the wage structure in four OECD countries using published data from the New Earnings Survey (NES) and microdata from the GHS for their discussion of the U.K. Bell, Rimmer and Rimmer (1992) examine the role of age in overall wage inequality among full-time male employees using micro-data from the NES.

4. For a detailed description of the GHS, see the annual reports on the GHS published by the Office of Population and Census Surveys. For a detailed description of variables used in this paper, see Schmitt (1992).

5. The school leaving age was 14 until 1946, and then 15 until 1972. This may present some problems with interpretation of the data since the lowest skilled group does not have a uniform absolute number of years of schooling over time. However, I find no difference in the basic results on skills premia and earnings dispersion when I conduct the work reported here on a fixed membership sub-sample defined by year of birth. This cohort approach keeps the composition of absolute years of schooling constant for the group

with no qualifications (see Schmitt, 1991).

6. The determination of years of full-time education is problematic. The GHS asks respondents their age when they last left full-time education, not the total number of years of full-time education. Each of the 15 surveys has several hundred (of 4,000 to 6,000 valid male) respondents who report leaving their last period of full-time after the age of 30. The experience definition here assumes that anyone leaving full-time education after 27 has not studied continuously. In these cases, years of schooling is calculated as age minus age left secondary school plus 3.

7. The condensed qualifications are defined as follows: UNIVERSITY is UNIVERSITY; MIDDLE is VOC-HIGH, TEACHING, NURSING, A-LEVEL, VOC-MIDDLE and O-LEVEL 5+; LOW is VOC-LOW, OLEV&CLER, O-LEVEL 1-4, CLERICAL, VOC-OTHER and OTHER; NO QUAL is NO QUAL.

8. Meghir and Whitehouse (1992), however, do find a slight decline in real hourly earnings between 1975 and 1986 for the 10th percentile of the distribution of non-union, full- and part-time, manual male employees aged 22 to 56 using data from the Family Expenditure Survey (see their Figure 6). But even in this fairly disadvantaged segment of the British labor market, the 25th percentile managed to hold it own between 1975 and 1986. Furthermore, as they note, the variables they use to divide their sample into union and non-union sectors are only indirect measures of union status and may not be completely consistent over time.

9. To calculate the change in the employment probability adjusted differential, multiply the average university differential from Table 3 for 1978-80 by the relative university employment probability $(1 - u_{UNIV})/(1 - u_{NOQUAL})$ for the same period (1.044 x 0.576 = 0.601); do the same for 1986-88 (1.120 x 0.643 = 0.720); and then subtract the first from the second (0.720 - 0.601 = 0.113).

10. A-levels are normally a prerequisite for university admission; students taking A-levels generally have 5 or more O-levels. Therefore the large expansion in university education in the 1970s and 1980s probably explains the low employment rates among individuals with these qualifications.

11. See, for example, Freeman (1978), Bound and Johnson (1989), Blackburn, Bloom and Freeman (1991), Katz and Murphy (1992), Murphy and Welch (1992).

12. Unless females with educational qualifications substituted for males with no qualifications. However, given the employment structure and occupational gender segmentation in Britain during the sample period this is probably not an important factor.

13. The qualification differentials are constructed exactly as in Table 3.

14. While the two decompositions are related, it is important to be clear about how they differ. The shift-share decomposition does not control for compositional effects due to experience or region, but it does allow for education differentials to vary across sectors. The regression decomposition controls for compositional effects, but imposes the restriction that educational differentials are identical across industries.

15. The standard error of the supply elasticity is (0.093) making it significant at the 1 percent level; the R^2 is 0.456; and the Durbin Watson statistic is 1.64 (critical value d^L=0.95 and ^{U}d =0.1.54) providing no indication of serial correlation.

16. For the decline in the industry minimum relative to the industry average see their Figure 4. For wage dispersion see their Figure 5. The dispersion-to-elasticity figure is based on their Table 2, columns 3 and 4.

17. These estimates lie very close to the 25 percent figure for the U.S. by Freeman (1991). Table 9 makes two assumptions which bias the estimates in different directions. The assumption that declines in membership were uniform across skill groups probably significantly reduces the union effect. Declines in membership were almost certainly much greater among low-skilled workers. In the U.S., for example, unionization rates among college graduates fell 3 percentage points between 1978 and 1988 and while those for high school graduates dropped 12 percentage points (Freeman, 1991, Table 2). On the other hand, the assumption of a constant union markup probably inflates the union effect given some evidence that the union differential fell slightly in Britain during the 1980s. Using plausible values for both missing numbers suggests that Table 9 probably underestimates the union effect on differentials.

18. Freeman (1991), Tables 8 and 9, pp. 36-37.

Table 1

Education qualification variables

Variable	Description
UNIVERSITY	UNIVERSITY: Higher degree (Census Level A), first degree, university diploma or certificate, qualifications obtained from colleges of further education or from professional institutions of degree standard (Census Level B)
VOC-HIGH	HIGHEST VOCATIONAL: Higher National Certificate (HNC) or Diploma (HND), BEC/TEC Higher Certificate or Higher Diploma, City and Guilds Full Technological Certificate, qualifications obtained from colleges of further education or professional institutions below degree level but above GCE A level standard
TEACHING	TEACHING: Non-graduate teaching qualifications (Census Level C)
NURSING	NURSING: Nursing qualifications (e.g. SEN, SRN, SCM)
A-LEVEL	A LEVEL: GCE A level, Scottish Leaving Certificate (SLC), Scottish Certificate of Education (SCE), Scottish University Preliminary Examination (SUPE) at Higher Grade, Certificate of Sixth Year Studies
VOC-MIDDLE	MIDDLE VOCATIONAL: City and Guilds Advanced or Final, Ordinary National Certificate (ONC) or Diploma (OND), BEC/TEC National, General or Ordinary
O-LEVEL 5+	FIVE OR MORE O LEVELS: Five or more subjects at GCE O level obtained before 1975 or in grades A to C if obtained later, 5 or more subjects at SCE Ordinary obtained before 1973 or in bands A to C if obtained later, 5 or more subjects at CSE grade 1 or at School Certificate, SLC Lower, or SUPE Lower
VOC-LOW	LOWER-MIDDLE VOCATIONAL: City and Guilds Craft or Ordinary
O-LEV & CLER	LESS THAN FIVE O LEVELS WITH CLERICAL OR COMMERCIAL QUALIFICATION: One to four subjects at GCE O level or equivalent with clerical or commercial qualification such as typing, shorthand, book-keeping, commerce

O-LEVEL 1-4	LESS THAN 5 O LEVELS WITHOUT CLERICAL OR COMMERCIAL QUALIFICATION
CLERICAL	CLERICAL OR COMMERCIAL QUALIFICATION WITHOUT O LEVELS
VOC-OTHER	LOWEST VOCATIONAL: Miscellaneous apprenticeships
OTHER	MISCELLANEOUS, NON-VOCATIONAL QUALIFICATIONS: Other qualifications including CSE Grades 2-5, all remaining qualifications which consist mainly of local or regional school leaving certificates and college or professional awards not regarded as 'higher education' (not above GCE A level standard)
NO QUAL	NO QUALIFICATIONS: Including those with no formal schooling

Table 2

Log real weekly earnings deciles and quartiles

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Raw earnings					
90-10	0.957	0.947	1.170	-0.010	0.223
90-50	0.471	0.469	0.586	-0.003	0.117
50-10	0.486	0.479	0.583	-0.007	0.104
75-25	0.468	0.476	0.615	0.008	0.139
Standard Deviation	0.422	0.412	0.524	-0.011	0.112
(b) Residual earnings					
90-10	0.753	0.750	0.888	-0.003	0.138
90-50	0.379	0.388	0.446	0.009	0.057
50-10	0.374	0.362	0.442	-0.012	0.080
75-25	0.388	0.378	0.445	-0.009	0.067
Standard Deviation	0.318	0.313	0.378	-0.006	0.066

Source: General Household Survey.

Table 3A

Skill differentials: 16-64 year olds

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Educational Qualifications (20 years experience)					
UNIVERSITY	0.700	0.576	0.643	-0.124	0.067
VOC-HIGH	0.400	0.306	0.382	-0.094	0.076
A-LEVEL	0.529	0.395	0.494	-0.134	0.098
VOC-MIDDLE	0.266	0.193	0.282	-0.073	0.089
O-LEVEL 5+	0.471	0.312	0.351	-0.160	0.039
VOC-LOW	0.199	0.153	0.202	-0.046	0.048
O-LEVEL 1-4	0.312	0.285	0.331	-0.027	0.046
VOC-OTHER	0.085	0.079	0.096	-0.006	0.017
NO-QUAL	0.000	0.000	0.000	0.000	0.000
(b) Years of potential experience					
0 YEARS	0.000	0.000	0.000	0.000	0.000
5 YEARS	0.219	0.192	0.258	-0.027	0.066
10 YEARS	0.396	0.346	0.468	-0.049	0.121
20 YEARS	0.620	0.542	0.739	-0.078	0.196
30 YEARS	0.674	0.588	0.813	-0.087	0.225
40 YEARS	0.558	0.483	0.690	-0.075	0.207

Source: General Household Survey.

Notes:

(1) Average values implied by annual regressions of log real weekly pay against 13 education dummies, experience and its square fully interacted with education dummies, and 9 regional dummies.

(2) Education differential is the value of the qualification-specific dummy variable, plus the qualification-specific experience differential evaluated at 20 years, minus the experience differential at 20 years for workers with no qualifications.

(3) Experience differential is the fixed weighted average over all education groups. Weights are the average employment share for each qualification over the period 1974-88.

Table 3B

Skill differentials: 16-30 year olds

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Educational Qualifications (5 years experience)					
UNIVERSITY	0.622	0.526	0.744	-0.096	0.218
VOC-HIGH	0.447	0.375	0.578	-0.072	0.203
A-LEVEL	0.237	0.333	0.405	0.096	0.072
VOC-MIDDLE	0.264	0.384	0.333	0.120	-0.052
O-LEVEL 5+	0.166	0.100	0.246	-0.066	0.145
VOC-LOW	0.127	0.307	0.158	0.180	-0.148
O-LEVEL 1-4	-0.002	0.051	0.116	0.054	0.065
VOC-OTHER	0.353	0.336	0.365	-0.017	0.030
NO-QUAL	0.000	0.000	0.000	0.000	0.000
(b) Years of potential experience					
0 YEARS	0.000	0.000	0.000	0.000	0.000
5 YEARS	0.291	0.228	0.322	-0.063	0.094
10 YEARS	0.581	0.456	0.643	0.125	0.187

Source: General Household Survey.

Notes:

(1) Average values implied by annual regressions of log real weekly pay against 13 education dummies, years of experience fully interacted with education dummies, and 9 regional dummies.

(2) Education differential is the value of the qualification-specific dummy variable, plus the qualification-specific experience differential evaluated at 5 years, minus the experience differential at 5 years for workers with no qualifications.

(3) Experience differential is the fixed weighted average over all education groups. Weights are the average employment share for each qualification over the period 1974-88.

Table 4

Unemployment and relative employment rates

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Estimated unemployment rate					
UNIVERSITY	0.014	0.013	0.027	-0.001	0.014
VOC-HIGH	0.010	0.009	0.028	-0.001	0.019
A-LEVEL	0.020	0.014	0.050	-0.007	0.037
VOC-MIDDLE	0.006	0.017	0.042	0.011	0.025
O-LEVEL 5+	0.011	0.016	0.040	0.005	0.024
VOC-LOW	0.014	0.021	0.054	0.007	0.033
O-LEVEL 1-4	0.017	0.019	0.049	0.002	0.030
VOC-OTHER	0.026	0.036	0.085	0.010	0.049
NO QUAL	0.041	0.055	0.131	0.014	0.077
(b) Employment to population ratio					
UNIVERSITY	0.928	0.941	0.912	0.012	-0.029
VOC-HIGH	0.961	0.957	0.924	-0.004	-0.033
A-LEVEL	0.786	0.752	0.779	-0.034	-0.027
VOC-MIDDLE	0.971	0.957	0.895	-0.014	-0.063
O-LEVEL 5+	0.834	0.835	0.764	0.001	-0.071
VOC-LOW	0.960	0.939	0.889	-0.021	-0.051
O-LEVEL 1-4	0.909	0.878	0.855	-0.031	-0.023
VOC-OTHER	0.942	0.908	0.796	-0.034	-0.112
NO QUAL	0.886	0.845	0.704	-0.040	-0.142

Source: General Household Survey.

Notes:

(1) Unemployment rates implied by probit regression of employment status against 9 education dummies, age and its square, and 9 region dummies. The 9 qualifications are the 8 here plus an "other" category not shown. Predicted rates evaluated at age 40.

(2) Employment-population ratio calculated as GHS sample share of all 16 to 64 year old males in full- or part-time employment.

Table 5

Relative supply of skills

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Relative supply of males, 16-64					
UNIVERSITY	0.048	0.079	0.109	0.030	0.031
VOC-HIGH	0.044	0.065	0.097	0.022	0.032
A-LEVEL	0.030	0.021	0.045	-0.015	0.024
VOC-MIDDLE	0.042	0.043	0.076	0.001	0.033
O-LEVEL 5+	0.058	0.066	0.043	0.008	-0.023
VOC-LOW	0.048	0.046	0.063	0.002	0.017
O-LEVEL 1-4	0.051	0.058	0.085	0.008	0.027
VOC-OTHER	0.095	0.100	0.071	0.006	-0.029
NO QUAL	0.517	0.464	0.323	-0.053	-0.141
(b) Ratio of females to males, 16-64					
UNIVERSITY	0.272	0.314	0.455	0.041	0.142
VOC-HIGH	0.107	0.139	0.172	0.032	0.033
A-LEVEL	0.584	0.574	0.819	-0.010	0.245
VOC-MIDDLE	0.062	0.083	0.252	0.021	0.169
O-LEVEL 5+	0.971	1.045	1.446	0.074	0.401
VOC-LOW	0.114	0.135	0.311	0.021	0.176
O-LEVEL 1-4	0.701	0.827	0.828	0.126	0.001
VOC-OTHER	0.095	0.119	0.143	0.024	0.024
NO QUAL	0.812	0.852	0.857	0.040	0.005

Source: General Household Survey.
Note:
Columns in panel (a) do not total to one due to the exclusion of workers with qualifications not shown.

Table 6

Industry-based shift-share decomposition

	Change in Raw Differential	Change in Differential Due To: Between Industry Shifts	Within Industry Shifts	Inter-action
(a) 1974-76 to 1978-80				
UNIVERSITY	-0.074	0.006	-0.078	-0.002
VOC-HIGH	-0.109	-0.003	-0.105	-0.001
A-LEVEL	0.161	0.004	0.166	-0.008
VOC-MIDDLE	0.040	0.000	0.040	-0.001
O-LEVEL 5+	-0.194	-0.022	-0.174	0.001
VOC-LOW	0.128	0.001	0.128	-0.001
O-LEVEL 1-4	0.004	0.006	0.003	-0.005
VOC-OTHER	-0.003	-0.001	-0.003	0.001
(b) 1978-80 to 1986-88				
UNIVERSITY	0.080	0.001	0.074	0.004
VOC-HIGH	0.048	0.004	0.042	0.002
A-LEVEL	-0.068	0.005	-0.075	0.003
VOC-MIDDLE	-0.053	0.004	-0.061	0.004
O-LEVEL 5+	0.161	0.036	0.128	-0.003
VOC-LOW	-0.139	-0.003	-0.132	-0.004
O-LEVEL 1-4	0.016	0.007	0.005	0.004
VOC-OTHER	0.008	-0.002	0.009	0.001

Source: General Household Survey.

Table 7

Industry-based regression decomposition

	Change in Regression Est'd Differential		
	No Industry Controls	6 Industry Controls	Estimated Industry Effect
(a) 1974-76 to 1978-80			
UNIVERSITY	-0.121	-0.113	-0.008
VOC-HIGH	-0.090	-0.098	-0.008
A-LEVEL	-0.142	-0.138	-0.004
VOC-MIDDLE	-0.071	-0.064	-0.007
O-LEVEL 5+	-0.168	-0.174	0.006
VOC-LOW	-0.052	-0.052	0.001
O-LEVEL 1-4	-0.025	-0.020	-0.005
VOC-OTHER	-0.009	-0.012	0.003
(b) 1978-80 to 1986-88			
UNIVERSITY	0.066	0.063	-0.003
VOC-HIGH	0.077	0.075	0.002
A-LEVEL	0.106	0.099	0.007
VOC-MIDDLE	0.084	0.083	-0.001
O-LEVEL 5+	0.046	0.050	-0.004
VOC-LOW	0.052	0.053	-0.002
O-LEVEL 1-4	0.050	0.041	0.010
VOC-OTHER	0.013	0.018	-0.005

Source: General Household Survey.

Table 8A

Skills distribution by industry: education

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Manufacturing					
UNIVERSITY	0.030	0.051	0.086	0.021	0.035
VOC-HIGH	0.043	0.068	0.128	0.026	0.059
A-LEVEL	0.016	0.009	0.028	-0.007	0.019
VOC-MIDDLE	0.056	0.046	0.090	-0.010	0.044
O-LEVEL 5+	0.039	0.056	0.029	0.016	-0.027
VOC-LOW	0.052	0.046	0.070	-0.006	0.023
O-LEVEL 1-4	0.044	0.049	0.079	0.005	0.030
VOC-OTHER	0.120	0.130	0.093	0.010	-0.037
NO QUAL	0.546	0.483	0.324	-0.063	-0.160
(b) Services					
UNIVERSITY	0.096	0.154	0.179	0.058	0.025
VOC-HIGH	0.058	0.078	0.097	0.021	0.019
A-LEVEL	0.056	0.028	0.071	-0.028	0.044
VOC-MIDDLE	0.030	0.029	0.067	-0.001	0.038
O-LEVEL 5+	0.100	0.090	0.065	-0.010	-0.025
VOC-LOW	0.034	0.030	0.047	-0.004	0.018
O-LEVEL 1-4	0.068	0.079	0.095	0.011	0.017
VOC-OTHER	0.057	0.061	0.043	0.004	-0.018
NO QUAL	0.404	0.358	0.238	-0.046	-0.120

Source: General Household Survey.

Note:

Skills shares within each industry grouping do not total to one due to exclusion of workers with qualifications not listed.

Table 8B

Skills distribution by industry: occupation

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Manufacturing					
Non-manual					
Prof	0.136	0.150	0.243	0.013	0.093
Other	0.119	0.114	0.112	-0.004	-0.003
Manual					
Skilled	0.519	0.518	0.459	-0.002	-0.058
Semi-sk'd	0.191	0.185	0.159	-0.007	-0.026
Unsk'd	0.033	0.033	0.027	-0.000	-0.006
(b) Services					
Non-manual					
Prof	0.337	0.328	0.378	-0.009	0.050
Other	0.325	0.329	0.287	0.004	-0.042
Manual					
Skilled	0.203	0.208	0.206	0.006	-0.002
Semi-sk'd	0.083	0.077	0.071	-0.006	-0.006
Unsk'd	0.035	0.038	0.034	0.004	-0.004

Source: General Household Survey.
Note:
Skills shares within each industry grouping do not total to one due to exclusion of workers in "personal services" occupation.

Table 9

Unions and skill differentials, 1978-80 to 1986-88

	Union Diff'l (1983)	Change Union Mem'ship	Effect on Earnings	Change Skill Diff'l	Share of Change Explained
(a) Education differentials					
UNIV	0.031	-0.103	-0.003		
NOQUAL	0.170	-0.103	-0.018		
Total			0.014	0.067	0.21
(b) Occupation differentials					
Non-manual	0.078	-0.103	-0.008		
Manual	0.227	-0.103	-0.023		
Total			0.014	0.110	0.13

Notes:

(1) Union differentials for 1983 estimated using GHS data with the model from Table 3, augmented by a trade union membership dummy variable and its interaction with relevant skill categories.

(2) The change in union membership is the change in overall union membership. For membership data 1974-78, see CSO, Social Trends 18, 1988, Table 11.8, p.172; and 1979-88, see Bird, Stevens and Yates (1991), p. 337. The working population is employees in employment in June of each year from the Department of Employment, Gazette.

(3) Change in university differential from Table 3. Change in non-manual differential from OLS regressions of natural log of real pay against a dummy variable for non-manual job, experience and experience-squared and their interactions with the non-manual dummy, and 9 region dummies.

Figure 1

'Indexed' real weekly earnings

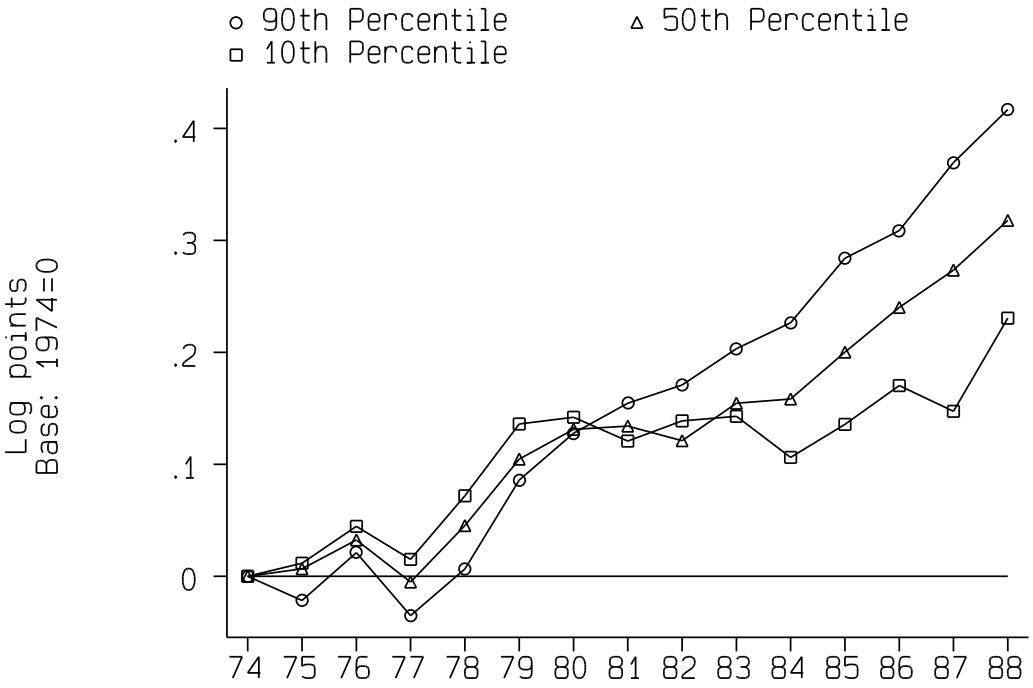


Figure 2

Education differential, 20 years experience

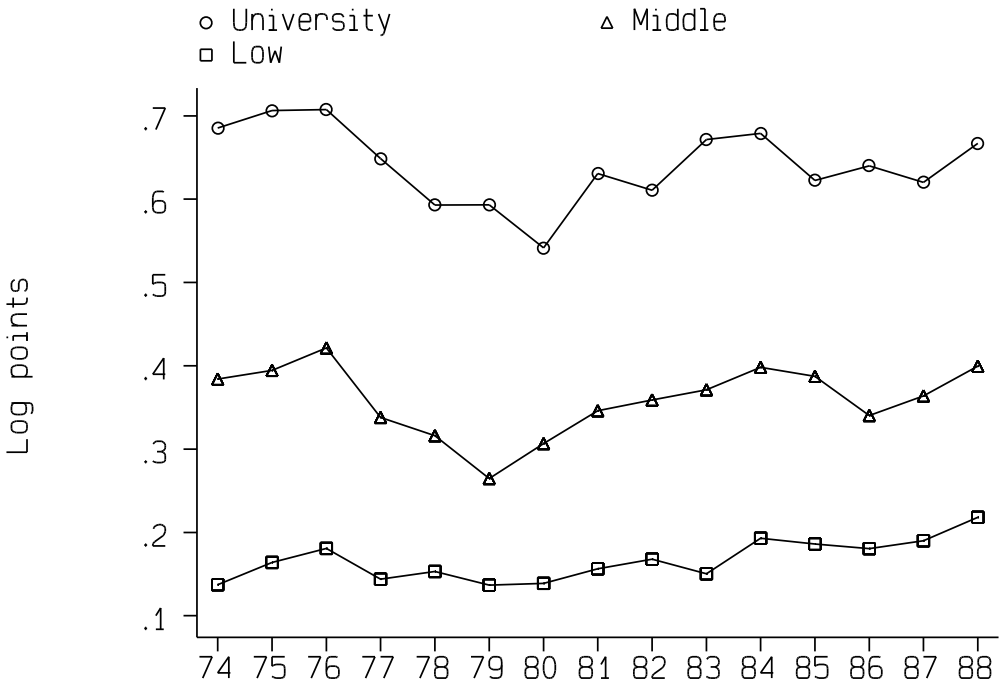


Figure 3

Unemployment rate

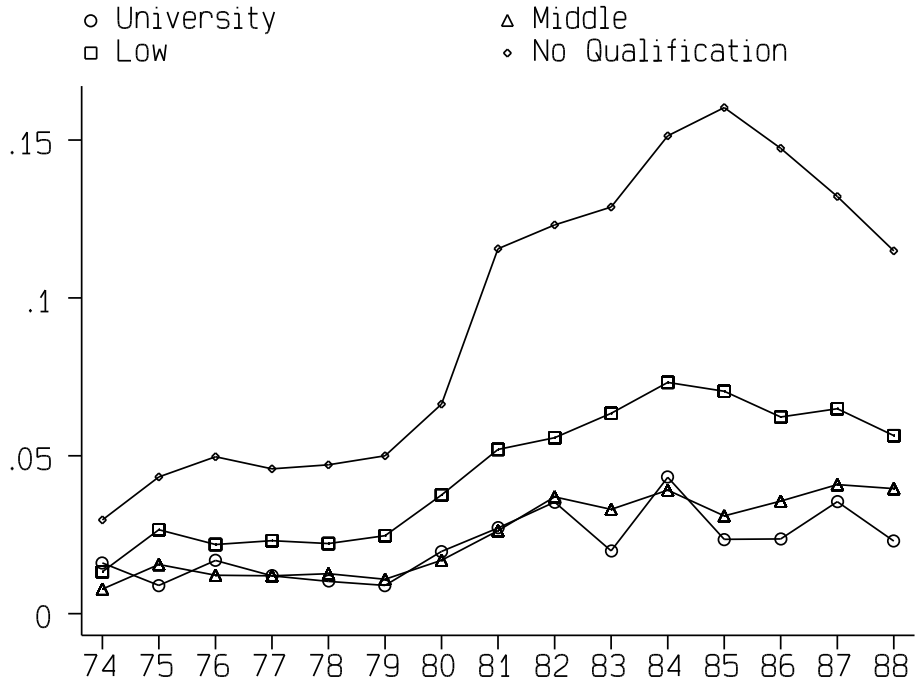


Figure 4

Share in total employment

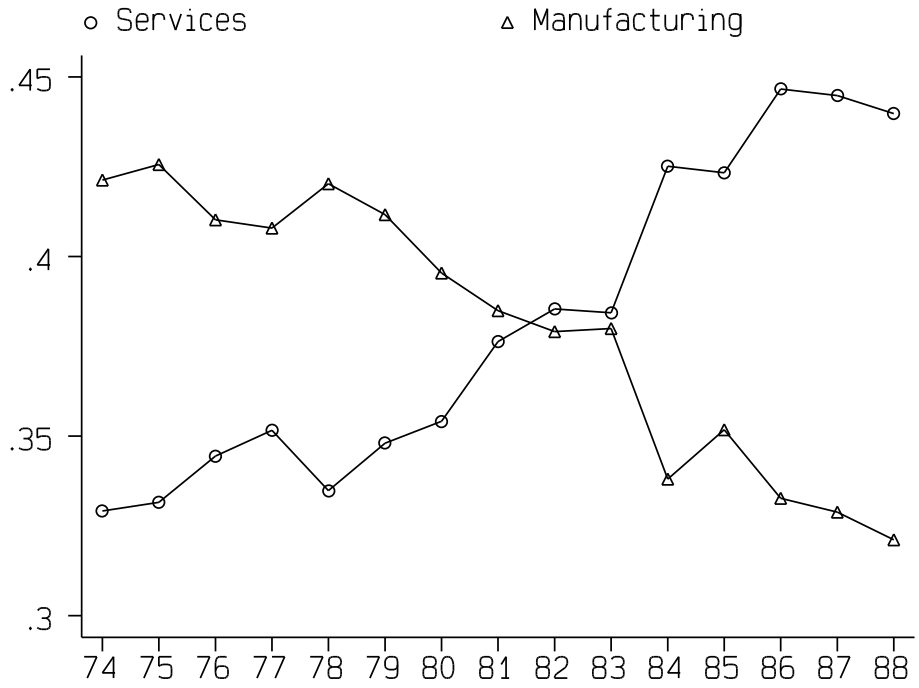


Figure 5

'Indexed' benefit and earnings

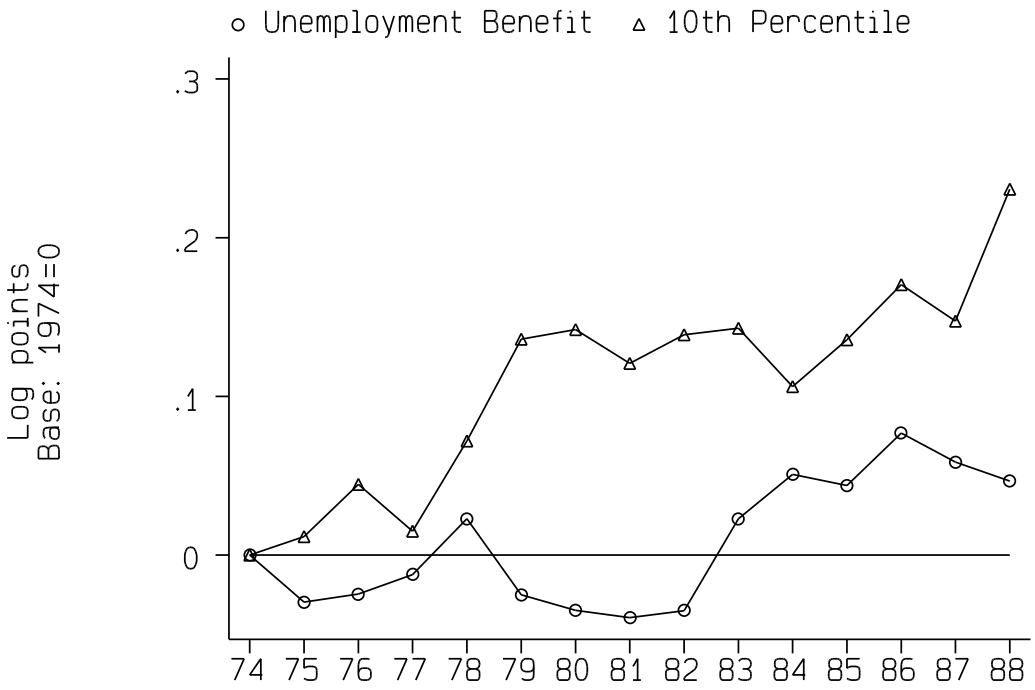
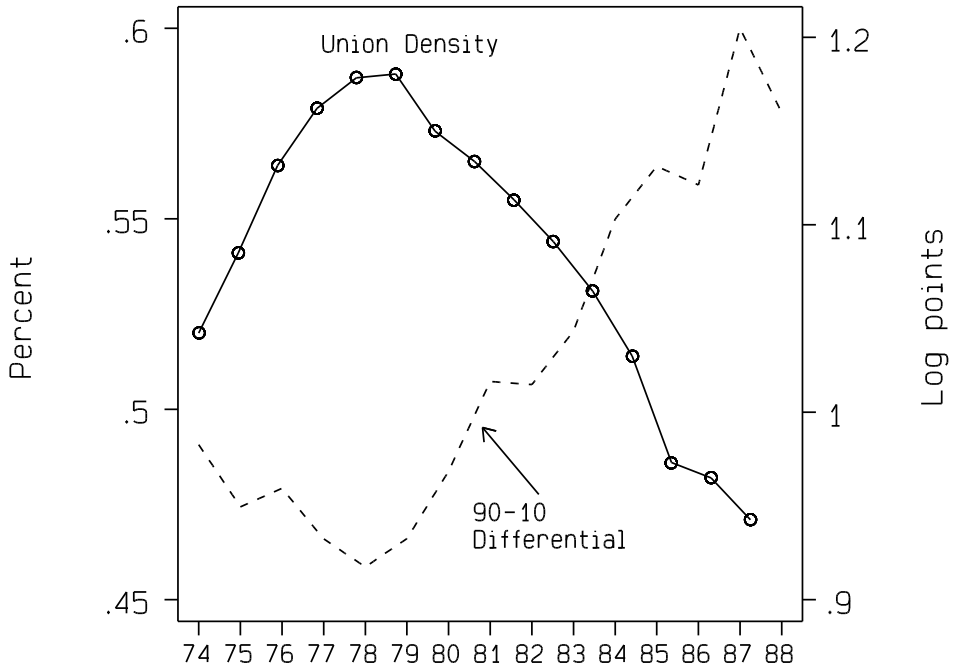


Figure 6

Union density and earnings dispersion



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