EARNINGS AND UNEMPLOYMENT IN BRITAIN 1974-1988: EVIDENCE FROM A TIMES SERIES OF GENERAL HOUSEHOLD SURVEYS

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Abstract

This thesis constructs a consistent data set of labour market variables from the annual British General Household Survey for the years 1974 to 1988. It uses this data to investigate the nature and causes of key developments in the distribution of earnings and incidence of unemployment for working age males.

The principal findings of the thesis are:

(1) Financial returns to education and experience increased substantially during the 1980s, probably due to a large increase in demand for skilled labour. Despite relative losses, real earnings for workers without educational qualifications increased by about 15 percent between 1974 and 1988.

(2) After declining slightly during the 1970s, overall earnings inequality increased sharply in the 1980s. The increase in education and experience differentials accounted for only one-third to one-half of the increase in overall inequality. The rest of the rise occurred within education and experience groups. A shift in relative labour demand in favour of workers with high levels of labour market skills again appears to be the most likely explanation.

(3) Education and experience levels have an important impact on an individuals probability of becoming and remaining unemployed. Adjusting conventional estimates of the returns to education and experience significantly increases the measured returns to these skills.

(4) Once unemployed, changes in the level of unemployment benefits over the range prevailing in Britain during 1979-82 have no measurable effect on the search effort of unemployed benefit claimants.

Notice

Portions of Chapters 3, 4, and 5 of this thesis will appear in "The changing structure of male earnings in Britain, 1974-88," in Richard Freeman and Lawrence Katz (eds.) Changes and Differences in Wage Structure, University of Chicago Press, 1993. Chapter 6 presents joint work with Dr. Jonathan Wadsworth to be published as "Unemployment benefit levels and search effort," in The Oxford Bulletin of Economics and Statistics, February 1993.

Table of Contents

Table of Contents (continued)

List of Tables

List of Tables (continued)

Appendix Tables

List of Figures

Appendix Figures

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Chapter 1: Introduction

This thesis explores two themes. The first is the rise in aspects of inequality in Britain during the 1980s, in particular, the dramatic growth in earnings inequality and the increasingly unequal distribution of the incidence of unemployment among working-age males. The second theme is a methodological one. Throughout, the analysis relies on the use of repeated cross-sectional surveys, which introduce an element of time-series variation into otherwise conventional cross-sections. In the absence of large-scale, long-term panel data sets, repeated cross-sections offer the best insight available into the structural changes in the British economy over the last two decades.

One of the principal contributions of the thesis is the construction of a consistent data set of forty-seven labour market variables from the fifteen annual General Household Surveys taken between 1974 and 1988. The data set, described in detail in Chapter 2, serves as the basis for most of the subsequent analysis. I hope it will also provide a platform for further research into the development of the British economy in the 1970s and 1980s.

Chapters 3, 4 and 5 use the consistent data set to document and, in part, to explain the rise in inequality along three dimensions: earnings between groups defined by educational qualifications and experience levels (Chapter 3); earnings within these same groups (Chapter 4); and the probability of experiencing unemployment as a function of educational qualifications and years of work experience

(Chapter 5). The magnitude of the increase in overall earnings inequality was substantial. Workers in the 90th percentile of the earnings distribution for full-time, male employees, for example, earned 1.5 times more than workers in the 10th percentile during the period 1978-80; by 1986-88, the 90th percentile earned 2.2 times more than the 10th percentile. Factoring in the unequal distribution of growing unemployment during the 1980s exaggerates this tendency toward inequality.

The sharp rise in inequality between education and experience groups manifests itself in the substantial growth in the financial returns to education and experience that took place in Britain during the 1980s (see Chapter 3). The increase in relative earnings of high-skilled workers was a key cause of the rise in overall earnings inequality. Nevertheless, the GHS evidence also indicate that low-skilled workers experienced increases in real level of their earnings. This result stands in strong contrast to developments in the United States where earnings inequality rose over the same period largely due to declines in the real earnings of low-skilled workers.

The rise in returns to education and experience, however, explain only a portion -- somewhere between one-third and one-half -- of the overall rise in earnings inequality. Chapter 4 goes beyond the increase in "between group" inequality, documenting an even larger increase in inequality <u>within</u> education, experience, region and industry groups.

One of the most striking features of the British earnings structure over the 1980s was the large number of people who fell out of it entirely. The unemployment rate quadrupled -- from under 3 percent to over 12 percent -- between the mid-1970s and the mid-1980s. Chapter 5 demonstrates that the burden of higher unemployment fell much more heavily on the low-skilled than on the population as a whole. Adjusting the returns to education and experience calculated in Chapter 3 for the corresponding unemployment probability significantly increases the returns to these skills. Moreover, the size of these adjustments grew during the 1980s, compounding the growth in between-group inequality documented in Chapter 3.

The rise in between- and within-group inequality as well as the increasingly unequal distribution of unemployment during the 1980s appear to reflect an underlying shift in the relative demand for labour in favour of high-skilled workers and against those with fewer labour markets skills. Evidence presented in Chapters 3 and 4 indicates that this shift in relative labour demand did not stem from the decline in British manufacturing employment or growing regional inequality, but rather from broad changes in the technology and organization of production which cut across industries and regions. The decline in influence of trade unions and wage councils, and the abandonment of incomes policies, also played some role in the widening inequality of the 1980s.

The final chapter of the thesis turns attention to the behaviour of workers once they became unemployed. This

chapter pools data from the GHS for 1979-82 and examines the determinants of the types and number of search methods used by unemployed benefit claimants. The principal issue under investigation is how the level of unemployment benefits influences the search activity of claimants. The repeated nature of the GHS, in particular the fact that it is conducted continuously throughout the year, introduces a crucial element of time-series variation in the real level of benefit. The main conclusion of the chapter is that variations in real benefit over the levels obtained during the early 1980s had no discernible effect on the search activity of unemployed claimants.

Chapter 2: Creating a consistent data set of labour market variables from the General Household Survey, 1974-88

I. Introduction

The principal source of data in this thesis is the annual General Household Survey (GHS) for the years 1974 to 1988. The GHS is a government sponsored 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 and their families. However, in their original form, the fifteen annual versions of the GHS used here differ substantially from each other. Variables come and go, definitions evolve, the meanings of coded computer responses change, and even the sample size and regional scope vary signficantly. This paper explains, in detail, the procedures used to create a single, nearly-consisent data set of labour market variables from the GHS for the years 1974-88 (see Table 2.1 for a complete variable list).

The next section provides an introduction to the main contents of the data set. Two appendices give more detailed information on the contents of the data set. Appendix 2.1 contains a complete listing of the consistent variables and their coding. Appendix 2.2 provides specific definitions of these variables.[1]

II. Overview of the Consistent Data Set

A. Labour Force Status

The GHS allows consistent identification of at least three labour market states during the period 1974-88: "employed", "unemployed" and "economically inactive" (LFSTAT).[2] The GHS classifies respondents that have done paid work for any number of hours during the week prior to the GHS interview as "employed". The "unemployed" are all those out of work but looking for work in the week preceding their interview, including those waiting to take up a job, and those who are sick or injured who would otherwise have been seeking work. Respondents that don't meet either of these definitions are classified as "economically inactive".

The consistent data set reports the type of employment and the normal hours worked for all "employed" respondents. According to self-description, the employed are divided into "employees" and "self-employed" (EMPLOYEE). Workers are further classified as "full-time" if they usually work 31 hours or more per week (26 or more hours if they are teachers); and "part-time" if they work 30 or fewer hours per week (25 or fewer hours if they are teachers) (WORKHRS, TEACHER, FULLTIME). Between 1974 and 1983, the GHS also asked workers about the number of hours of paid and unpaid overtime they usually worked per week (OTPAID, OTUNPAID, OTHRSPD, OTHRSUN). After 1983, the GHS discontinued all questions relating to overtime hours. The consistent data set also indicates whether workers held any jobs in addition to their main job (SECJOB).[3]

The consistent data set reports the duration of unemployment for all workers classified as "unemployed" (LTU). Unfortunately, significant changes in the GHS coding of the duration variable limit the consistent data set to two duration bands: less than one year; and one year or more.

B. Earnings

The consistent data set reports the usual nominal gross weekly earnings of employed respondents (WKEARNGR). Since the GHS discontinued the collection of information on over-time hours after 1983, no consistent hourly earnings variable is available for the whole period 1974-88. The data set does, however, include the raw material to create an hourly earnings series for the period 1974-83 (WKEARNGR, WORKHRS, OTPAID, OTUNPAID, OTHRSPD, OTHRSUN).

The GHS gathered information on employed respondents' earnings in two different ways over the full sample period. From 1974 to 1979, the GHS asked workers for their total earnings in the last twelve months from all jobs including wages, salaries, tips, bonuses, and commissions (YREARN). Dividing this figure by the reported number of weeks worked in the previous twelve months (WKSWORK), yields an estimate of usual weekly earnings for the first six years of the GHS sample. From 1979 to 1988, the GHS asked workers for their usual gross earnings including tips and bonuses from their current job. These estimates used the workers most recent pay period as a reference, dividing the usual pay (not necessarily the most recent pay) by the number of weeks covered in each pay period to calculate usual gross weekly earnings.

The two methodologies, and the fact that the 1974-79 period included incomes from second jobs, do not appear to have affected the estimates of earnings across the different sub-periods.[4] Comparing the GHS estimates of median weekly earnings for male full-time employees aged 21 and over with comparable estimates from the New Earnings Survey, in Figure 2.1, shows a very similar pattern over time, with no obvious discontinuity between 1974-79 and 1980-88. Comparisons of the earnings of workers in the 90th and 10th percentile of both distributions also follow each other closely other the full sample.

To facilitate conversion from nominal to real earnings, the consistent data set also reports the Retail Price Index for the month in which each respondent was interviewed (RPI) as well as the month in which the interview took place (MONTH).

C. Labour market skills: education and experience

The GHS is the only British survey which has gathered information on both workers' earnings and their level of education from 1972 to the present.[5] The consistent data set, therefore, pays special attention to constructing education related variables. These variables include conventional measures of schooling based on years of schooling, as well as educational measures based on the highest educational qualifications earned by respondents.

The GHS data on years of schooling are less than completely satisfactory. The GHS does not ask repondents how many years of full-time education they have completed.

Instead, it asks respondents at what age they finished "school" (AGELFTSC), where "school" refers to primary and secondary education only. If respondents continued studies beyond "school" level, the GHS asks at what age they completed their last spell of full-time education (AGELFTFT). This idiosyncracy of the GHS can lead to measurement problems if conventional formulas for determining years of schooling are used. Measuring "years of schooling" as "age left full-time education minus five", for example, will systematically overestimate the years of schooling for those who finished full-time education after spells of full-time employment. Unfortunately, the measurement problem cannot be brushed aside even if investigators decide to abandon the years of schooling variable in favour of qualifications-based measures of education. The determination of "potential years of experience" (see below), usually defined as "age minus years of schooling minus five", also hangs on the determination of years of schooling.

Several possible solutions, none of them entirely satisfactory, present themselves. The first would be to designate a number of years of schooling to each educational qualification, based on some "average" number of years required to earn each qualification, and then to assign this number to each respondent according to their qualification. The most obvious disadvantage to this scheme is that it eliminates the variation in years of schooling that different individuals may require to complete a given educational qualification. This could have a further important impact on

the measurement of labour market experience since some respondents will have earned educational qualifications part-time while working full-time. From a practical perspective it could also prove difficult to implement given the wide variety in generation-specific educational experiences.[6]

A second approach, implemented to create the YRSCH variable in the consistent data set, is to use the reported age left full-time education, unless that figure lies outside an arbitrarily determined "plausible" range. If, for example, a respondent indicates that they finished full-time education at age 47, it is not likely that that individual studied continuously from age 5, for a total of 42 years of full-time education. Implementing this procedure involves making two decisions: first, the age to use as a cut-off; and second, what to do with those who exceed it. The consistent data set uses the following procedure.[7] All individuals reporting that they finished full-time education by age 26 were assigned years of schooling as that age minus 5.[8] Respondents who last left full-time education at age 27 or older, were assumed to have interrupted their full-time studies. These respondents were assigned years of schooling as their age when they left "school" (this assumes that individuals first educational spell was continuous) plus an arbitrary figure of three years to allow for further education minus five.[9] For details on the exact procedure used, see Appendix 2.2 and Schmitt (1992), Appendix 3. The data set contains sufficient information on each respondent to construct a number of

alternative measures of years of schooling (AGELFTSC, AGELFTFT, TEA, YRSCH, HIGHQUAL, and MAPHD).

The consistent data set also measures education level using respondents' highest educational qualification (HIGHQUAL). The hierarchy of qualifications, which closely follows the classification system used by the Census, includes 14 educational categories ranging from those with a university degree to those with no educational qualifications (see Table 2.2). An important feature of the classification scheme is that it distinguishes between academic and vocational qualifications.[10] Since the HIGHQUAL variable does not distinguish between workers with undergraduate degrees and those with post-graduate degrees, the consistent data set includes a variable, MAPHD, which takes the value one if the respondent has a post-graduate degree and zero otherwise.

From 1974-84, the GHS asked younger workers if they were undertaking an apprenticeship at their workplace (APPRENT). Beginning in 1981, the consistent data set also reports whether young respondents were participating in the Youth Training Scheme or a similar government programme (YTSYOP).

The consistent data set also contains information on workers labour market experience and tenure at their current job. Since the GHS does not ask workers about actual years of work experience, the experience variable (EXP) in the consistent set only estimates potential labour market experience. The specific definition is: age minus years of schooling (YRSCH) minus five. The consistent measure of job tenure, available from 1975 to 1988, is limited to three

"bands": less than one year; one year to less than five years; and five or more years.

D. Industrial Classification

The consistent data set reports the industry group in which each "employed" respondent worked. The GHS decision, made in 1981, to switch from an industrial classification scheme based on the 1968 Standard Industrial Classification (SIC) system to one based on the 1980 SIC, however, has made it difficult to create a single industry variable consistent over the entire sample. The consistent data set therefore offers three separate industry variables. For the period 1974-80, the consistent data set reports twenty-four industry categories based on the SIC 1968 (SIC68); for 1981-88 the consistent data set provides ten groupings, based on the SIC 1980 (SIC80). For the full sample from 1974-88, the SICC variable divides workers into only seven industry categories (agriculture, three manufacturing industries, construction, transportation, and services).

E. Occupation

The GHS reports on each employed worker's occupation according to two classification schemes: the Office of Population and Census Survey's Classification of Occupation (1970, 1980); and the Key Occupations for Statistical Purposes (KOS), which superseded the closely related Classification of Occupations and Directory of Occupational Titles (CODOT). The first classification system forms the basis of the 19 occupational categories reported in the variable SEG. Since many of the 19 categories contain

relatively few workers in each year, the consistent data set also includes a more aggregated version of the same information (SOC) which contains only six sub-groups (professionals, non-manual non-professionals, personal service workers, skilled manuals, semi-skilled manuals, and unskilled manuals). The second classification system, based on CODOT and KOS, groups workers into 16 categories which differ conceptually from the 19 SEG groupings (KOS).[11]

F. Other Personal Characteristics

The consistent data set also contains information on a variety of personal characteristics that may be important in certain labour market contexts. These variables include region of residence, marital status, race, number of children, health status, age and sex.

The regional variable (REG) places respondents in the ten standard British regions according to where they live (not necessarily where they work). The variable, LONDON, takes the value one if respondents live in Greater London and zero otherwise.

The variable, MARSTAT, indicates whether respondents fall into one of six civil states: married, single, widowed, divorced, separated, or cohabiting. The cohabiting response is only available between 1986 and 1988. Prior to 1986 cohabiting individuals were assigned a marital status based on their self-description of their living situation.

The GHS assigns respondents to racial groups based on the visual assessment of interviewers. In most years, interviewers place respondents into one of five categories:

white, not white, probably white, probably not white, and unseen. The race variable in the consistent data set (NOTWHITE) takes the value one if the respondent is classified as "not white" or "probably not white"; zero if the respondent is described as "white" or "probably white"; and missing if the interviewer did not see the respondent (due to a proxy interview).

The consistent data set also includes a variable (NCHILD) which gives the number of the respondent's children under the age of 16 that are currently living in the respondent's household.

The GHS contains many questions about respondents' health status. The consistent data set summarizes a part of this information in three variables. The first (LONGILL) takes the value one if the respondent reports suffering from a long-standing illness. The second (LIMITACT), not available in 1977, takes the value one if the long-standing illness limited the respondent's activity. The third (HEALTH), available only from 1977 onward, gives the response to a self-evaluation of health status: good, fairly good, not good.

G. Other Workplace Characteristics

Finally, the consistent data set contains limited information, on several other workplace characteristics. In 1983 only, two variables report on union activity: TUATWORK takes the value one if a union operates at the respondent's workplace and zero otherwise; TUMEMBER takes the value one if the respondent is a trade union member. In 1983, 1985, and 1987, the GHS asked workers whether their jobs were in the

public or private sector. If they were employed in the public sector, the variable PUBSEC takes the value one (zero, otherwise).[12] In 1983, 1985, 1987, and 1988, the GHS also asked respondents about the number of employees working for their employer. The EMPSIZE variable lists the answers to this question according to the five size bands used by the GHS (1-2, 3-24, 25-99, 100-999, 1000+).

Appendix 2.1
Variable coding for consistent GHS data set

1.	LFSTAT	Labour force status	1974-88
	(1)	EMPLOYED	
	(2)	UNEMPLOYED	
	(3)	NOT IN LABOUR FORCE	
2.	EMPLOYEE	Employee or self-employed	1974-88
	(0)	SELF-EMPLOYED	
	(1)	EMPLOYEE	
3.	WORKHRS	Usual hours worked per week	1974-88
		CONTINUOUS	
4.	OTPAID	If usually works paid overtime	1974-83
	(0)	NO	
	(1)	YES	
5.	OTUNPAID	If usually works unpaid overtime	1974-83
	(0)	NO	
	(1)	YES	
6.	OTHRSPD	Usual hours paid overtime	1974-83
		CONTINUOUS	
7.	OTHRSUN	Usual hours unpaid overtime	1974-83
		CONTINUOUS	
8.	TEACHER	If works as teacher	1974-88
	(0)	NO	
	(1)	YES	
9.	FULLTIME	If full-time or part-time	1974-88
	(0)	PART TIME	
	(1)	FULL TIME	
10.	SECJOB	If holds second job	1974-88
	(0)	NO SECOND JOB	
	(1)	HAS SECOND JOB	
11.	LTU	If long-term unemployed	1974-88
	(0)	UNEMPLOYED LESS THAN ONE YEAR	
	(1)	UNEMPLOYED ONE YEAR OR MORE	

12.	WKEARNGR	Usual nominal gross weekly pay	1974-88
		CONTINUOUS	
13.	YREARN	Employment earnings in last year	1974-78
		CONTINUOUS	
14.	WKSWORK	Weeks worked in last year	1974-78
		CONTINUOUS	
15.	PAYSLIP	If consulted payslip	1974-88
	(0)	NO	
	(1)	YES	
16.	RPI	Retail price index at interview	1974-88
		CONTINUOUS	
17.	MONTH	Month of GHS Interview	1974-88
	(1)	JANUARY	
	(2)	FEBRUARY	
	(3)	MARCH	
	(4)	APRIL	
	(5)	MAY	
	(6)	JUNE	
	(7)	JULY	
	(8)	AUGUST	
	(9)	SEPTEMBER	
	(10)	OCTOBER	
	(11)	NOVEMBER	
	(12)	DECEMBER	
18.	AGELFTSC	Age left primary/secondary school	1974-88
		CONTINUOUS	
19.	AGELFTFT	Age left post-secondary	1974-88
		CONTINUOUS	
20.	TEA	Terminal education age	1974-88
		CONTINUOUS	
21.	YRSCH	Years of full-time schooling	1974-88
		CONTINUOUS	

22.	HIGHQUAL	Highest educational qualification	1974-88
	(1)	UNIVERSITY	
	(2)	VOC-HIGH	
	(3)	TEACHING	
	(4)	NURSING	
	(5)	A-LEVEL	
	(6)	VOC-MIDDLE	
	(7)	O-LEVEL 5+	
	(8)	VOC-LOW	
	(9)	O-LEV & CLER	
	(10)	O-LEVEL 1-4	
	(11)	CLERICAL	
	(12)	VOC-OTHER	
	(13)	OTHER	
	(14)	NO QUAL	
23.	MAPHD	If has post-graduate degree	1974-88
	(0)	NO	
	(1)	YES	
24.	APPRENT	If doing apprenticeship	1974-84
	(0)	NO	
	(1)	YES	
25.	YTSYOP	If in government youth training	1982-88
	(0)	NO	
	(1)	YES	
26.	EXP	Years of work experience	1974-88
		CONTINUOUS	
27.	TENURE	Years at current job	1975-88
	(1)	LESS THAN ONE YEAR	
	(2)	ONE TO LESS THAN FIVE YEARS	
	(3)	FIVE OR MORE YEARS	
28.	SICC	Industry group	1974-88
	(1)	AGRICULTURE	
	(2)	ENERGY, METALS AND MINING	
	(3)	ENGINEERING AND VEHICLES	
	(4)	OTHER MANUFACTURING	
	(5)	CONSTRUCTION	
	(6)	SERVICES	
	(7)	TRANSPORT AND COMMUNICATIONS	

29. SIC68 Industry group (SIC 1968) 1974-80

(1)	I.	AGRICULTURE, FORESTRY AND FISHING
(2)	II.	MINING AND QUARRYING
(3)	III.	FOOD, DRINK AND TOBACCO
(4)	IV.	COAL AND PETROLEUM PRODUCTS
(5)	V.	CHEMICALS AND ALLIED INDUSTRIES
(6)	VI.	METAL MANUFACTURING
(7)	VII.	MECHANICAL ENGINEERING
	IX.	ELECTRICAL ENGINEERING
	XI.	VEHICLES
	XII.	METAL GOODS NOT ELSEWHERE SPECIFIED
(8)	VIII.	INSTRUMENT ENGINEERING
(9)	X.	SHIPBUILDING AND MARINE ENGINEERING
(10)	XIII.	TEXTILES
(11)	XIV.	LEATHER, LEATHER GOODS AND FUR
(12)	XV.	CLOTHING AND FOOTWEAR
(13)	XVI.	BRICKS, POTTERY, GLASS, CEMENT, ETC.
(14)	XVII.	TIMBER, FURNITURE, ETC.
(15)	XVIII.	PAPER, PRINTING AND PUBLISHING
(16)	XIX.	OTHER MANUFACTURING INDUSTRIES
(17)	XX.	CONSTRUCTION
(18)	XXI.	GAS, ELECTRICITY AND WATER
(19)	XXII.	TRANSPORT AND COMMUNICATION
(20)	XXIII.	DISTRIBUTIVE TRADES (WHOLESALE-RETAIL)
(21)	XXIV.	INSURANCE, BANKING, FINANCE AND BUSINESS SERVICES
(22)	XXV.	PROFESSIONAL AND SCIENTIFIC SERVICES
(23)	XXVI.	MISCELLANEOUS SERVICES
(24)	XXVII.	PUBLIC ADMINISTRATION AND DEFENCE

30. SIC80 Industry group (SIC 1980) 1981-88

(1)	0.	AGRICULTURE, FOREST AND FISHING
(2)	1.	ENERGY AND WATER SUPPLY INDUSTRIES
(3)	2.	EXTRACTION OF MINERALS AND ORES OTHER THAN FUELS; MANUFACTURE OF METALS, MINERAL PRODUCTS AND CHEMICALS
(4)	3.	METAL GOODS, ENGINEERING AND VEHICLE INDUSTRIES
(5)	4.	OTHER MANUFACTURING INDUSTRIES
(6)	5.	CONSTRUCTION
(7)	6.	DISTRIBUTION, HOTELS AND CATERING; REPAIRS
(8)	7.	TRANSPORT AND COMMUNICATION
(9)	8.	BANKING, FINANCE, INSURANCE, BUSINESS SERVICES AND LEASING
(10)	9.	OTHER SERVICES

31. SEG — Socio-economic group — 1974-88

(1)	1.1	EMPLOYERS IN CENTRAL AND LOCAL GOVERNMENT, INDUSTRY, COMMERCE, ETC. -- LARGE ESTABLISHMENTS (25 OR MORE EMPLOYEES)
(2)	1.2	MANAGERS IN CENTRAL AND LOCAL GOVERNMENT, INDUSTRY, COMMERCE, ETC. -- LARGE ESTABLISHMENTS (25 OR MORE EMPLOYEES)
(3)	2.1	EMPLOYERS IN INDUSTRY, COMMERCE, ETC. -- SMALL ESTABLISHMENTS (LESS THAN 25 EMPLOYEES)
(4)	2.2	MANAGERS IN INDUSTRY, COMMERCE, ETC. -- SMALL ESTABLISHMENTS (LESS THAN 25 EMPLOYEES)
(5)	3	PROFESSIONAL WORKERS -- SELF-EMPLOYED
(6)	4	PROFESSIONAL WORKERS -- EMPLOYEES
(7)	5.1	INTERMEDIATE NON-MANUAL WORKERS -- ANCILLARY WORKERS AND ARTISTS
(8)	5.2	INTERMEDIATE NON-MANUAL WORKERS -- FOREMEN AND SUPERVISORS NON-MANUAL
(9)	6	JUNIOR NON-MANUAL WORKERS
(10)	7	PERSONAL SERVICE WORKERS
(11)	8	FOREMEN & SUPERVISORS -- MANUAL
(12)	9	SKILLED MANUAL WORKERS
(13)	10	SEMI-SKILLED MANUAL WORKERS
(14)	11	UNSKILLED MANUAL WORKERS
(15)	12	OWN ACCOUNT WORKERS (OTHER THAN PROFESSIONALS)
(16)	13	FARMERS -- EMPLOYERS AND MANAGERS
(17)	14	FARMERS -- OWN ACCOUNT
(18)	15	AGRICULTURAL WORKERS
(19)	16	MEMBERS OF THE ARMED FORCES

32. SOC — Collapsed SEG — 1974-88

(1)	NON-MANUAL: MANAGERS AND PROFESSIONAL
(2)	NON-MANUAL: NOT MANAGER OR PROFESSIONAL
(3)	PERSONAL SERVICES
(4)	SKILLED MANUAL
(5)	SEMI-SKILLED MANUAL
(6)	UNSKILLED MANUAL

33. KOS — Key Occupations for Statistical Purposes — 1974-88

(1)	PROFESSIONAL AND RELATED OCCUPATIONS SUPPORTING MANAGEMENT; SENIOR NATIONAL AND LOCAL GOVERNMENT MANAGERS
(2)	PROFESSIONAL AND RELATED OCCUPATIONS IN EDUCATION, WELFARE AND HEALTH
(3)	LITERARY, ARTISTIC AND SPORTS OCCUPATIONS
(4)	PROFESSIONAL AND RELATED OCCUPATIONS IN SCIENCE, ENGINEERING, TECHNOLOGY AND SIMILAR FIELDS
(5)	MANAGERIAL OCCUPATIONS
(6)	CLERICAL AND RELATED OCCUPATIONS
(7)	SELLING OCCUPATIONS
(8)	SECURITY AND PROTECTIVE SERVICE OCCUPATIONS
(9)	CATERING, CLEANING, HAIRDRESSING AND OTHER PERSONAL SERVICE OCCUPATIONS
(10)	FARMING, FISHING AND RELATED OCCUPATIONS
(11)	MATERIALS PROCESSING OCCUPATIONS; MAKING AND REPAIRING OCCUPATIONS (EXCLUDING METAL AND ELECTRICAL)
(12)	PROCESSING, MAKING, REPAIRING AND RELATED OCCUPATIONS (METAL AND ELECTRICAL)
(13)	PAINTING, REPETITIVE ASSEMBLING, PRODUCT INSPECTING, PACKAGING AND RELATED OCCUPATIONS
(14)	CONSTRUCTION, MINING AND RELATED OCCUPATIONS NOT ELSEWHERE CLASSIFIED
(15)	TRANSPORT OPERATING, MATERIALS MOVING AND STORING AND RELATED OCCUPATIONS
(16)	MISCELLANEOUS OCCUPATIONS

34. REGION — Region of residence — 1974-88

(1)	NORTH
(2)	YORKSHIRE AND HUMBERSIDE
(3)	NORTH WEST
(4)	EAST MIDLANDS
(5)	WEST MIDLANDS
(6)	EAST ANGLIA
(7)	SOUTH EAST
(8)	SOUTH WEST
(9)	WALES
(10)	SCOTLAND

35. LONDON — If lives in London — 1974-88

(0)	NO
(1)	YES

36.	MARSTAT	Marital status	1974-88
	(1)	MARRIED	
	(2)	SINGLE	
	(3)	WIDOWED	
	(4)	DIVORCED	
	(5)	SEPARATED	
	(6)	COHABITING [ONLY AVAILABLE 1986-88]	
37.	NOTWHITE	If race not white	1974-88
	(0)	WHITE	
	(1)	NOT WHITE	
38.	NCHILD	Number children under 16	1974-88
		CONTINUOUS	
39.	LONGILL	If suffers long-standing illness	1974-88
	(0)	NO	
	(1)	YES	
40.	LIMITACT	If illness limits activity	Not 1977
	(0)	NO	
	(1)	YES	
41.	HEALTH	Self-assessed state of health	1977-88
	(1)	GOOD	
	(2)	FAIRLY GOOD	
	(3)	NOT GOOD	
42.	AGE	Age at interview	1974-88
		CONTINUOUS	
43.	SEX	If male	1974-88
	(0)	FEMALE	
	(1)	MALE	
44.	TUATWORK	If trade union at work	1983
	(0)	NO	
	(1)	YES	
45.	TUMEMBER	If union member	1983
	(0)	NO	
	(1)	YES	

46.	PUBSEC	If works in public sector	1983,85,87
	(0)	NO	
	(1)	YES	
47.	EMPSIZE	Employer size	1983,85,87,88
	(1)	1-2 EMPLOYEES	
	(2)	3-24 EMPLOYEES	
	(3)	25-99 EMPLOYEES	
	(4)	100-999 EMPLOYEES	
	(5)	1000+ EMPLOYEES	

Appendix 2.2
Detailed definitions for consistent GHS data set

1. LFSTAT	Labour force status	1974-88
(1)	EMPLOYED	
(2)	UNEMPLOYED	
(3)	NOT IN LABOUR FORCE	

1974-1978

Were you doing any paid work last week -- that is the 7 days ending last Sunday?

IF NO:
Even though you weren't working did you have a job which you were away from last week?

IF NO:
Last week were you
waiting to take up a job which you had already obtained?
out of employment but looking for work?
or would you have looked for work but for temporary sickness or injury?

None of these

The "in work" category is given priority over all others. Anyone that has worked for any number of hours during the reference week, including casual work, is generally treated as "working". The "in work" category includes: (1) Army and Navy reservists "if the informant received payment and underwent some form of training in the course of the last 12 months"; (2) "mail order agents who have, in lieu of cash, amounts credited to them which are allowed against goods ordered"; (3) "contract workers not paid until completion of the job ... (e.g. writers, evening class teachers)"; (4) "students paid by their employer. teachers or nurses on in-service training"; (5) "people doing odd jobs in the week

prior to interview"; (6) "those absent from work due to illness, strikes, lay-off, holidays, provided they have a job to go back to with the same employer (not necessarily in the same place of work)"; (7) "farmers working their own farm for profit, or businessmen working in their own business"; (8) "interviewers or market researh workers who, while not working the preceding week, had their National Insurance cards held by their employer"; (9) "local government councillors paid an attendance allowance"; (10) "company directors, even if they receive only a small emolument, provided they did actually work during the week prior to the interview" [GHS 1974 Codebook]; (11) "members of limited companies whether working or not"; (12) those "receiving holiday pay for the reference week but who have left their previous employer" [GHS 1975/76 Codebook]; (13) those "on permanent leave from the forces" [GHS 1977 Codebook].

Respondents fall into the economically inactive category only if none of the others apply. It includes: (1) "unpaid voluntary workers"; (2) "unpaid trainees, including handicapped persons and those attending Government Training Centres"; (3) "freelance interviewers without a quota who are not between jobs"; (4) "wives helping in husband's business unpaid -- unless they work 15 hours or more per week"; (5) "persons working for expenses or for payment in kind only (other than mail order agents), including those getting free accomodation in place of wages"; [GHS 1974 Codebook] (6) "women taking in borders"; [GHS 1975/76 Codebook] (7)

"handicapped people attending occupation centres"; and (8) "sleeping partners in businesses" [GHS 1977 Codebook].

1979

Did you do any paid work last week -- that is the 7 days ending last Sunday -- either as an employee or self-employed?

Prior to 1979, the GHS did not explicitly mention employment and self-employment, but either type of work was counted as a valid YES.

The group in work now explicitly includes: (14) "wives working in husband's business unpaid for 15 hours or more"; and (15) those working in a Special Temporary Employment Programme.

The group not in the labour force now includes: (9) those working in a Youth Opportunities Programme; (10) "seasonal workers in their 'off' season" if not unemployed by the GHS definition; (11) those "prevented from looking for work where the current spell of sickness has lasted more than 28 days"; and (12) "self-employed occasional workers (e.g. consultants) who did not work during the reference period."

1980

Beginning in 1980, the Codebook spelled out general guidelines for categorizing respondents as in work. In addition to those described as "in work" in earlier Codebooks, the working category also includes: (16) "anyone who was paid a wage or salary by an employer while attending an educational establishment (even while on holiday) including student nurses, seconded teachers or social workers"; (17) those on a sandwich or block courses; (18) anyone "working in a friend's or relative's business, as long as they (will) receive a share

of the profits"; (19) "those absent from work due to illness, strikes, lay-off, holidays, provided they have a job to go back to with the same employer (not necessarily at the same place of work)" except those receiving redundancy payment; (20) "employees who work regularly but not every week (e.g. every other week)"; (21) "seasonal, occasional or casual workers only if they worked last week"; (22) those in a Community Enterprise Programme.

Those not in the labour force now also included: (13) those "on a government retraining scheme course or run by the Manpower Services Commission e.g. TOPS (Training Opportunities Programme Scheme), YOPS (Youth Opportunities Programme)", which includes the Work Experience on Employer's Premises (WEEP), Community Service, Project-based Work Experience and Employment Induction Course; (14) those on a "sandwich or block release course ... who receive an education grant not pay from employer"; (15) those receiving redundancy payments with no job to return to and who do not qualify as unemployed by the GHS definition.

1981

Beginning in 1981 the questionnaire instructed the interviewer to check that those claiming to be unemployed but not searching due to temporary sickness or injury had not been sick or injured for more than 28 days.

1982

Those in work now included: (23) those working in Community Programme Scheme, Community Industry and Training in Industry and Young Workers Scheme.

1983

Those not in the labour force now included: (16) anyone participating in a Youth Training Scheme (YTS).

1984

Prior to 1984, all Youth Opportunities Programme participants (and similar) were treated as economically inactive. Beginning in 1984, the GHS tried to treat participants in government sponsored, employer-based training schemes in the same way it dealt with other respondents. Interviewers probed YTS participants to determine whether their activity during the week was with an employer (coded as "working") or with a college (coded as "unemployed" or "not in the labour force" as appropriate).

Those in work now included: (24) "self-employed persons receiving Enterprise Allowance".

1985

In 1985, the GHS continued to classify YTS participants, in so far as was possible, in the same way as other respondents. However, the particular instructions to interviewers changed between 1984 and 1985. For details, compare the Codebooks for 1984 (pp. 57-58) and 1985 (pp. 98-99).

1988

Those not in the labour force now included: (17) "unpaid voluntary workers including the Voluntary Project Programme" who are not also actively seeking paid work.

1984-1988

Prior to 1984, all individuals participating in unpaid government training programmes such as Youth Opportunities Programme (YOP) were classified as NOT IN LABOUR FORCE. YOP was phased out from the middle of 1983 and replaced by the more extensive Youth Training Scheme (YTS) for workers age 16-19 (and disabled workers up to age 21). In September 1988, the government instituted Employment Training (ET), another extensive training programme for 18-63 year old long-term unemployed workers. The GHS did not treat YTS and ET participants consistently from year-to-year after 1984 (see the ESRC's SN: 2832 General Household Survey 1989/1990 Coding and Editing Notes for full details). For consistency, anyone on YOP, YTS, ET or similar programme after 1983 is treated here as NOT IN LABOUR FORCE.

2.	EMPLOYEE	Employee or self-employed	1974-88
	(0)	SELF-EMPLOYED	
	(1)	EMPLOYEE	

1974-1984

Main job last week

Employee
Self-employed

The EMPLOYEE variable refers to the respondent's main job in the week prior to the interview. Interviewers are instructed to accept the respondent self-description. Where there is doubt, interviewers are instructed to establish how the individual's job is described for tax purposes.

1985-1988

Main job last week (including employer-based YTS)

Employee
Self-employed

Beginning in 1984, the GHS classifies workers on YTS as EMPLOYEEs. For consistency, however, all YTS EMPLOYEEs, are excluded (see LFSTAT).

3.	WORKHRS	Usual hours worked per week	1974-88
		CONTINUOUS	
4.	OTPAID	If usually works paid overtime	1974-83
	(0)	NO	
	(1)	YES	
5.	OTUNPAID	If usually works unpaid overtime	1974-83
	(0)	NO	
	(1)	YES	
6.	OTHRSPD	Usual hours paid overtime	1974-83
		CONTINUOUS	
7.	OTHRSUN	Usual hours unpaid overtime	1974-83
		CONTINUOUS	

1974-1983

If more than one job refer to main job:

How many hours a week do you usually work (in your main job) excluding meal breaks and overtime?

In addition to this do you usually do any paid overtime, or unpaid overtime?

On average how many hours paid/unpaid overtime do you actually work in a week?

When respondents work patterns are not based on a week, they are asked to give an average figure.

1984-88

After 1983, the GHS no longer asked respondents about over-time hours. Usual hours exclude over-time hours.

8.	TEACHER	If works as teacher	1974-88
	(0)	NO	
	(1)	YES	
9.	FULLTIME	If full-time	1974-88
	(0)	PART TIME	
	(1)	FULL TIME	

Workers are classified as full-time if they usually work 31 or more hours per week, except teachers where full-time work begins at 26 or more hours. The variable is calculated using HOURSWK, the usual number of hours worked per week, together with the occupational variable for teacher status.

1974-1977

Teacher status is determined using a three digit occupation unit code based on the Office of Population Censuses and Surveys Classification of Occupations 1970. The variable is called OCCGROUP in the GHS tapes. Teachers are coded 192-194.

1978-1984

Beginning in 1978, the GHS tapes included a variable which directly indicates that the respondent is a teacher.

1985-1988

In 1985, the GHS discontinued the teacher variable. Teacher status is checked using the three digit occupation codes from the OPCS, Classification of Occupation 1980. The

variable is called OCCUPI in the GHS tapes. Teachers are coded 031, 032 and 033.

10. SECJOB	If holds second job	1974-88
(0)	NO SECOND JOB	
(1)	HAS SECOND JOB	

1974-1978

Last week did you have any other paid job or business in addition to the one you have just told me about?
Yes
No
IF YES
Occupation
Industry
Employee/Self-employed

If the respondent had more than one "second" job the one that was financially most important is coded.

1979

Do you earn any money (from a second job) or from odd jobs or work that you do from time to time (apart from your main job)?
[PROMPT AS NECESSARY: INCLUDING MAIL-ORDER AGENT, BABY-SITTING, ETC.]
Yes
No
IF YES
(a) In this (second) job, are you an employee or are you self-employed?
Employee
Self-employed
DON'T KNOW (EXPLAIN)

(i) Is that a job you do:
regularly each week
or from time to time
OTHER (SPECIFY)

1980

Participation in the Territorial Army counted as second job. Workers could have two jobs which entail the same activity: "eg a GP who also works as a hospital consultant or

a corporation gardener who also does odd gardening jobs in the evenings or weekends." However, "[w]orking as domestic help, jobbing gardener, etc. for several people concurrently is not counted as more than 1 job." (GHS Coding Notes 1980/81)

1981-1984

Last week did you do any other paid work or have any other job or business in addition to the one you have just told me about?
Yes
No
IF YES
Occupation
Industry

---

11. LTU	If long-term unemployed	1974-88
(0)	UNEMPLOYED LESS THAN ONE YEAR	
(1)	UNEMPLOYED ONE YEAR OR MORE	

1974-1980

TO ALL UNEMPLOYED

How long have you been out of employment but wanting work?
Less than a week
1 week but less than 1 month
1 month but less than 3 months
3 months but less than 6 months
6 months but less than 1 year
1 year or more

1981-1982

How long have you been out of employment but wanting work?
Less than a week
1 week but less than 1 month
1 month but less than 3 months
3 months but less than 6 months
6 months but less than 1 year
1 year but less than 2 years
2 years or more

1983

How long have you been out of employment but wanting work in this current period of unemployment, that is, since any time you may have spent on a government training scheme, YOPS or TOPS?

Less than a week
1 week but less than 1 month
1 month but less than 3 months
3 months but less than 6 months
6 months but less than 1 year
1 year but less than 2 years
2 years but less than 5 years
5 years or more

The questionnaire emphasized that periods of training under government schemes such as YOP and TOPS interrupted spells of unemployment.

1984

How long have you been out of employment but wanting work in this current period of unemployment, that is, since any time you may have spent on a government training scheme, YTS, YOPS or TOPS?

The questionnaire added the new YTS programme to the list of government training schemes.

1985-1988

How long have you been out of employment but wanting work?

Less than a week
1 week but less than 1 month
1 month but less than 3 months
3 months but less than 6 months
6 months but less than 1 year
1 year but less than 2 years
2 years but less than 3 years
3 years but less than 5 years
5 years or more

12. WKEARNGR	Usual nominal gross weekly pay	1974-88
	CONTINUOUS	
13. YREARN	Employment earnings in last year	1974-78
	CONTINUOUS	
14. WKSWORK	Weeks worked in last year	1974-78
	CONTINUOUS	
15. PAYSLIP	If consulted payslip	1974-88
(0)	NO	
(1)	YES	

1974-1978

During the last 12 months have you received any money from the following sources?

(a) Earnings as an employee (TOTAL FROM ALL JOBS INCLUDING WAGES, SALARY, TIPS, BONUS, COMMISSION)

(b) Earnings from self-employment (including money drawn for own use)

[Plus additional categories for income from private and state pensions, state benefits, other sources including alimony, income from property rental, and interests and dividends on savings and investments]

Thinking just of your (EACH KIND OF INCOME), how much have you received from that in the last 12 months before any deductions were made?

IF YOU CANNOT GIVE A 12-MONTH FIGURE, PLEASE GIVE AN AVERAGE MONTHLY OR WEEKLY AMOUNT

For how many weeks in the last 12 months did you receive any money from that source?

THIS INFORMATION IS NOT REQUIRED FOR INCOME FROM SELF-EMPLOYMENT

Amounts over £100,000 were coded as £99,999 betwee 1974 and 1977, and £99,997 in 1978. If the respondent could provide only a net figure, the GHS used all available income information to estimate gross income including National Insurance contribution and income tax paid at the appropriate rate.

1979

What was your wage or salary, including overtime, bonus, commission, or tips, but after all deductions, the last time you were paid?

How long a period did your last wage/salary cover?

...

What was your gross pay, before any deductions were made?

Pay slip consulted for correct data, information complete and correct
Pay slip consulted for different date; information acceptable, complete and correct
No pay slip consulted/not coded
Pay slip consulted for correct date, information incomplete and/or incorrect
Pay slip consulted for different date, information unacceptable and/or incomplete and/or incorrect

Your take-home pay last time was £.... Is this the amount you usually receive?

IF NO

(a) How much do you usually receive each time you are paid:
(i) after all deductions?
(ii) and before all deductions?
(b) How often are you usually paid?
(c) May I just check: why was it that your pay last time was different from usual?
Pay usually varies
Holiday pay included
Tax refund included
Absent due to sickness/injury/pregnancy
Other

According to a note in the GHS codebook for 1979, answers to the previous questions (including some not shown) were "examined as a whole and only the information which seems to be the most reliable and accurate is coded."

If the respondent had more than one job, the earnings from the most remunerative were used. If the respondent had started a new job but had not yet received a first pay slip, the amount he or she was to receive was coded.

The interviewer was instructed to accept the respondents assessment of 'usual'. The following guidelines applied, however: "Usual pay" always referred to the respondent's job in the reference week. If the respondent did not earn a usual amount the interviewer enters an average amount. If pay varied for a specific number of weeks in a year the average over the year is coded. If the respondent was off sick during the reference week, the pay when not sick was used.

1980

How much do you usually receive, including overtime, bonus, commission, or tips, each time you are paid?

Beginning in 1980, the question concerning usual gross pay explicitly mentioned overtime, bonuses, commissions and tips, which were included, but not referred to in the 1979 version of the question.

The usual pay guidelines in 1980 explicitly mentioned that if workers were on short-time during the reference week, that "usual pay" should refer to pay when the worker was not on short-time.

1981

What was your wage or salary, including overtime, bonus, commission, tips, or tax refund, but after all deductions, the last time you were paid?

May I just check, did that wage/salary include a refund of income tax?
IF YES
How much was the refund?

Do you usually pay any tax?

Beginning in 1981, the most recent net pay question included tax refunds. The change should not have affected usual gross pay, which was used to calculate the WKEARNGR

variable. In principle, it is possible to correct for the change in this net pay definition.

1982-1988

From 1982, the guidelines for usual pay mentioned that earnings for seasonal workers should refer to the 'current' season. The usual pay guidelines also indicated that if the respondent had a pay rise since the last pay period and was currently working at the new rate of pay, the new rate of pay count as the "usual pay".

16. RPI	Retail price index at interview	1974-88
	CONTINUOUS	
17. MONTH	Month of GHS Interview	1974-88
(1)	JANUARY	
(2)	FEBRUARY	
(3)	MARCH	
(4)	APRIL	
(5)	MAY	
(6)	JUNE	
(7)	JULY	
(8)	AUGUST	
(9)	SEPTEMBER	
(10)	OCTOBER	
(11)	NOVEMBER	
(12)	DECEMBER	

1974-88

The Retail Price Index, 1974=100.0, is calculated using figures from the Central Statistical Office (1992, Table 26). The month variable refers to the month of the year in which the GHS interview took place. In 1987 and 1988, GHS interviews took place from April of the year of the survey through March of the next year. Therefore, the RPI and MONTH figures for the first three months of these two survey years

refer to the first three months of 1988 and 1989, respectively.

18. AGELFTSC	Age left primary/secondary school CONTINUOUS	1974-88
19. AGELFTFT	Age left post-secondary CONTINUOUS	1974-88
20. TEA	Terminal education age CONTINUOUS	1974-88
21. YRSCH	Years of full-time schooling CONTINUOUS	1974-88

1974-1976

What type of school or college did you last attend full-time?

How old were you when you left there?

TO THOSE ATTENDING/WHO LAST ATTENDED A COLLEGE FULL-TIME
Now thinking of your last school, how old were you when you left that school?

"College" includes: **Colleges of Education (Teacher Training College) in UK; University in UK; College or University outside UK; Other college in UK.**

"School" includes: **Primary or elementary school; secondary school; special school for handicapped, ESN, remedial, hospital school, etc.; School outside the UK; Other school in UK.**

Breaks in education were ignored, however long, provided the last course attended was acceptable.

1977

At what age did you leave the last school you attended?
What type of educational establishment did you last attend full-time?
a school
a university

a teacher training college
or some other type of college

How old were you when you left there?

1978

At what age did you leave the last school you attended? (NOT TECHNICAL COLLEGE)

Since leaving school, have you:
attended any educational establishment full-time?
or had any training for a qualification in nursing, midwifery, physiotherapy, or similar medical subject, not counting first aid (or your present course)?
NEITHER

[If attended any educational establishment full-time or had any traing for a medical qualification:]

What type of educational establishment or training school did you last attend full-time?
a university
a nursing or hospital school
a teacher training college
or some other type of college?

How old were you when you left there/ when you finished or stopped your training course?

1979

How old were you when you left school? (NOT TECHNICAL COLLEGE)

Now thinking just of your full-time education: what type of school or college did you last attend full-time? Was it:
elementary or secondary school
nursing school or teaching hospital
university
or some other type of college?
other

How old were you when you left there, or when you finished or stopped your course?

1980-1982

Now thinking just of your full-time education: what type of school or college did you last attend full-time? Was it:
elementary or secondary school
university
nursing school or teaching hospital
or some other type of college?
other

Beginning in 1980, the order of university and nursing school switched.

1983-1988

Now thinking just of your full-time education: what type of school or college did you last attend full-time? Was it:
elementary or secondary school
university
polytechnic (INCLUDE SCOTTISH CENTRAL INSTITUTIONS)
nursing school or teaching hospital
or some other type of college?
other

The GHS did not ask for total years of full-time schooling. The terminal education age (TEA) is defined as the maximum of: age left full-time "school" (AGELFTSC) and age left full-time "college" (AGELFTFT).

YRSCH is defined as: (i) terminal education age (TEA) minus 5, if TEA is less than 27; or (ii) age left school (AGELFTSC) plus 3 (arbitrary extra years of school) minus 5, if TEA is 27 or more.[13]

22. HIGHQUAL		Highest educational qualification	1974-88
	(1)	UNIVERSITY	
	(2)	VOC-HIGH	
	(3)	TEACHING	
	(4)	NURSING	
	(5)	A-LEVEL	
	(6)	VOC-MIDDLE	
	(7)	O-LEVEL 5+	
	(8)	VOC-LOW	
	(9)	O-LEV & CLER	
	(10)	O-LEVEL 1-4	
	(11)	CLERICAL	
	(12)	VOC-OTHER	
	(13)	OTHER	
	(14)	NO QUAL	
23. MAPHD		If has post-graduate degree	1974-88
	(0)	NO	
	(1)	YES	

A description of the qualifications associated with each label appears in Table 2.2. The order, from (1) through (14), is descending following a slightly modified version of the hierarchy used by the GHS.

Each year of the GHS included a derived variable for the respondent's highest educational qualification (HEDQUAL for the 1974-1982 surveys, EDLEV from 1983-1988). The coding for HIGHQUAL is adapted from this variable. Complete details appear in the computer programmes in Schmitt (1992), Appendix 3.

The principal differences between the GHS highest education variable and the one used here are:

(1) The GHS hierarchy groups A Level, and City and Guilds Advanced and Final together. The coding for HIGHQUAL uses information about the exact qualifications earned to distinguish between the academic A Level (A-LEVEL) and the vocational City and Guilds qualifications (VOC-MIDDLE). Similarly, the GHS hierarchy combines five or more O-Levels with City and Guilds Craft and Ordinary. HIGHQUAL treats them separately (O-LEVEL 5+ and VOC-LOW).

(2) HIGHQUAL treats all foreign qualifications as missing. The GHS did not handle foreign qualifications consistently over the full sample. Beginning in 1983, the GHS made no distinction between foreign university degrees and all other foreign degrees.

24. APPRENT	If doing apprenticeship	1974-84
(0)	NO	
(1)	YES	

1974-1978

Are you taking a recognised apprenticeship?

1979-1984

May I just check, are you at present doing a recognized trade apprenticeship as part of your job?
Yes, doing apprenticeship
No, not apprentice

1985-88

Not available.

25. YTSYOP	If in government youth training	1982-88
(0)	NO	
(1)	YES	

1974-1981

Not asked.

1982

The GHS asked all employed respondents the following question:

Is your job organized through the government's Youth Opportunities Programme (YOP), or not?
YES [then code as econonomically inactive]
NO
DON'T KNOW (EXPLAIN)

The answer was used to recode any YOP participants as economically inactive, but the answer was not punched, and does not appear on the GHS tape for 1982.

1983

The GHS asked the same question and followed the same procedure as 1982. Participants in the newly established Youth Training Scheme were grouped with those on YOP.

1984

TO THOSE AGED 16-18 WITH A JOB LAST WEEK
Is your job organized through either the Youth Training Scheme or the Youth Opportunities Programme?
YES
NO

1985

TO THOSE AGED 16-19
(May I check), last week were you on the Youth Training Scheme (YTS)?
YES
NO
CODE FIRST THAT APPLIES
(a) Last week on your YTS were you:
with an employer providing work experience?
employer based
or at a college or training course?
college based
Had a job last week
Unemployed
Others

1986-1988

TO THOSE AGED 16-19
(May I check), last week were you on the Youth Training Scheme (YTS)?
YES
NO
CODE FIRST THAT APPLIES
(a) Last week on your YTS were you:
with an employer providing work experience?
employer based
or at a college or training course?
college based
Had a job last week
Unemployed waiting to take up a job
Unemployed looking for work
Others

26. EXP	Years of work experience	1974-88
	CONTINUOUS	

The GHS did not ask respondents about their actual working experience. EXP estimates potential labour market experience using the formula age (AGE) minus years of full-time schooling (YRSCH) minus five.

27. TENURE	Years at current job	1975-88
(1)	LESS THAN ONE YEAR	
(2)	ONE TO LESS THAN FIVE YEARS	
(3)	FIVE OR MORE YEARS	

1974

How long has ... been with ... present employer/self employed (in ... main job)?
Less than 12 months
12 months or more

1975

How long have you been with your present employer (in your main job)?
Less than 3 months
3 months but less than 12 months
12 months but less than 5 years
5 years or more

1981

FOR EMPLOYEES (MAIN JOB)
How long have you been with your present employer up to last Sunday?
Less than 4 weeks
4 weeks but less than 3 months
3 months but less than 12 months
12 months but less than 5 years
5 years or more

1982

FOR EMPLOYEES (MAIN JOB)
How long have you been with your present employer up to last Sunday?
Less than 4 weeks

4 weeks but less than 3 months
3 months but less than 6 months
6 months but less than 12 months
12 months but less than 5 years
5 years or more

1983

FOR EMPLOYEES (MAIN JOB)
How long have you been with your present employer up to last Sunday?

Less than 4 weeks
4 weeks but less than 3 months
3 months but less than 6 months
6 months but less than 12 months
12 months but less than 5 years
5 years but less than 10 years
10 years but less than 15 years
15 years but less than 20 years
20 years but less than 25 years
25 years but less than 30 years
30 years but less than 35 years
35 years but less than 40 years
40 years or more

1984

How long have you been with your present employer up to last Sunday?

Less than 4 weeks
4 weeks but less than 3 months
3 months but less than 6 months
6 months but less than 12 months
12 months but less than 5 years
5 years or more

1985-1988

FOR EMPLOYEES (MAIN JOB)
How long have you been with your present employer up to last Sunday?

Less than 4 weeks
4 weeks but less than 3 months
3 months but less than 6 months
6 months but less than 12 months
12 months but less than 2 years
2 years but less than 3 years
3 years but less than 5 years
5 years but less than 10 years
10 years but less than 15 years
15 years but less than 20 years
20 years but less than 25 years
25 years but less than 30 years
30 years but less than 35 years
35 years but less than 40 years
40 years or more

28. SICC	Industry group		1974-88
(1)	AGRICULTURE		
(2)	ENERGY, METALS AND MINING		
(3)	ENGINEERING AND VEHICLES		
(4)	OTHER MANUFACTURING		
(5)	CONSTRUCTION		
(6)	SERVICES		
(7)	TRANSPORT AND COMMUNICATIONS		
29. SIC68	Industry group (SIC 1968)		1974-80
(1)	I.	AGRICULTURE, FORESTRY AND FISHING	
(2)	II.	MINING AND QUARRYING	
(3)	III.	FOOD, DRINK AND TOBACCO	
(4)	IV.	COAL AND PETROLEUM PRODUCTS	
(5)	V.	CHEMICALS AND ALLIED INDUSTRIES	
(6)	VI.	METAL MANUFACTURING	
(7)	VII.	MECHANICAL ENGINEERING	
	IX.	ELECTRICAL ENGINEERING	
	XI.	VEHICLES	
	XII.	METAL GOODS NOT ELSEWHERE SPECIFIED	
(8)	VIII.	INSTRUMENT ENGINEERING	
(9)	X.	SHIPBUILDING AND MARINE ENGINEERING	
(10)	XIII.	TEXTILES	
(11)	XIV.	LEATHER, LEATHER GOODS AND FUR	
(12)	XV.	CLOTHING AND FOOTWEAR	
(13)	XVI.	BRICKS, POTTERY, GLASS, CEMENT, ETC.	
(14)	XVII.	TIMBER, FURNITURE, ETC.	
(15)	XVIII.	PAPER, PRTINTING AND PUBLISHING	
(16)	XIX.	OTHER MANUFACTURING INDUSTRIES	
(17)	XX.	CONSTRUCTION	
(18)	XXI.	GAS, ELECTRICITY AND WATER	
(19)	XXII.	TRANSPORT AND COMMUNICATION	
(20)	XXIII.	DISTRIBUTIVE TRADES (WHOLESALE-RETAIL)	
(21)	XXIV.	INSURANCE, BANKING, FINANCE AND BUSINESS SERVICES	
(22)	XXV.	PROFESSIONAL AND SCIENTIFIC SERVICES	
(23)	XXVI.	MISCELLANEOUS SERVICES	
(24)	XXVII.	PUBLIC ADMINISTRATION AND DEFENCE	
30. SIC80	Industry group (SIC 1980)		1981-88
(0)	0.	AGRICULTURE, FOREST AND FISHING	
(1)	1.	ENERGY AND WATER SUPPLY INDUSTRIES	
(2)	2.	EXTRACTION OF MINERALS AND ORES OTHER THAN FUELS; MANUFACTURE OF METALS, MINERAL PRODUCTS AND CHEMICALS	
(3)	3.	METAL GOODS, ENGINEERING AND VEHICLE INDUSTRIES	
(4)	4.	OTHER MANUFACTURING INDUSTRIES	
(5)	5.	CONSTRUCTION	
(6)	6.	DISTRIBUTION, HOTELS AND CATERING; REPAIRS	

(7)	7.	TRANSPORT AND COMMUNICATION
(8)	8.	BANKING, FINANCE, INSURANCE, BUSINESS SERVICES AND LEASING
(9)	9.	OTHER SERVICES

1974-1988

The industrial classification scheme refers to the respondents main job during the reference week, or most recent job if the repondent was not employed during the reference week. The GHS changed classification systems between the 1980 and 1981 surveys. For the period 1974-1980, the GHS used 24 industrial categories based on the 1968 Standard Industrial Classification (SIC) scheme. In 1981, the GHS converted to a 10 category system based on the 1980 SIC. The 1968 and 1980 systems have been collapsed to produce a consistent series of 7 industrial sectors according to the following scheme:

SICC	SIC68	SIC80
(1) AGRICULTURE	(1)	(0)
(2) ENERGY, METALS AND MINING	(2),(4)-(6), (13), (18)	(1),(2)
(3) ENGINEERING AND VEHICLES	(7)-(9)	(3)
(4) OTHER MANUFACTURING	(3),(10)-(12) (14)-(16)	(4)
(5) CONSTRUCTION	(17)	(5)
(6) SERVICES	(20)-(24)	(6),(8),(9)
(7) TRANSPORT AND COMMUNICATIONS	(19)	(7)

31. SEG		Socio-economic group	1974-88
	(1)	1.1	EMPLOYERS IN CENTRAL AND LOCAL GOVERNMENT, INDUSTRY, COMMERCE, ETC. -- LARGE ESTABLISHMENTS (25 OR MORE EMPLOYEES)
	(2)	1.2	MANAGERS IN CENTRAL AND LOCAL GOVERNMENT, INDUSTRY, COMMERCE, ETC. -- LARGE ESTABLISHMENTS (25 OR MORE EMPLOYEES)
	(3)	2.1	EMPLOYERS IN INDUSTRY, COMMERCE, ETC. -- SMALL ESTABLISHMENTS (LESS THAN 25 EMPLOYEES)
	(4)	2.2	MANAGERS IN INDUSTRY, COMMERCE, ETC. -- SMALL ESTABLISHMENTS (LESS THAN 25 EMPLOYEES)
	(5)	3	PROFESSIONAL WORKERS -- SELF-EMPLOYED
	(6)	4	PROFESSIONAL WORKERS -- EMPLOYEES
	(7)	5.1	INTERMEDIATE NON-MANUAL WORKERS -- ANCILLARY WORKERS AND ARTISTS
	(8)	5.2	INTERMEDIATE NON-MANUAL WORKERS -- FOREMEN AND SUPERVISORS NON-MANUAL
	(9)	6	JUNIOR NON-MANUAL WORKERS
	(10)	7	PERSONAL SERVICE WORKERS
	(11)	8	FOREMEN & SUPERVISORS -- MANUAL
	(12)	9	SKILLED MANUAL WORKERS
	(13)	10	SEMI-SKILLED MANUAL WORKERS
	(14)	11	UNSKILLED MANUAL WORKERS
	(15)	12	OWN ACCOUNT WORKERS (OTHER THAN PROFESSIONALS)
	(16)	13	FARMERS -- EMPLOYERS AND MANAGERS
	(17)	14	FARMERS -- OWN ACCOUNT
	(18)	15	AGRICULTURAL WORKERS
	(19)	16	MEMBERS OF THE ARMED FORCES

32. SOC		Collapsed SEG	1974-88
	(1)	NON-MANUAL: MANAGERS AND PROFESSIONAL	
	(2)	NON-MANUAL: NOT MANAGER OR PROFESSIONAL	
	(3)	PERSONAL SERVICES	
	(4)	SKILLED MANUAL	
	(5)	SEMI-SKILLED MANUAL	
	(6)	UNSKILLED MANUAL	

33. KOS		Key Occupations for Statistical Purposes	1974-88
	(1)	PROFESSIONAL AND RELATED OCCUPATIONS SUPPORTING MANAGEMENT; SENIOR NATIONAL AND LOCAL GOVERNMENT MANAGERS	
	(2)	PROFESSIONAL AND RELATED OCCUPATIONS IN EDUCATION, WELFARE AND HEALTH	
	(3)	LITERARY, ARTISTIC AND SPORTS OCCUPATIONS	

(4)	PROFESSIONAL AND RELATED OCCUPATIONS IN SCIENCE, ENGINEERING, TECHNOLOGY AND SIMILAR FIELDS
(5)	MANAGERIAL OCCUPATIONS
(6)	CLERICAL AND RELATED OCCUPATIONS
(7)	SELLING OCCUPATIONS
(8)	SECURITY AND PROTECTIVE SERVICE OCCUPATIONS
(9)	CATERING, CLEANING, HAIRDRESSING AND OTHER PERSONAL SERVICE OCCUPATIONS
(10)	FARMING, FISHING AND RELATED OCCUPATIONS
(11)	MATERIALS PROCESSING OCCUPATIONS; MAKING AND REPAIRING OCCUPATIONS (EXCLUDING METAL AND ELECTRICAL)
(12)	PROCESSING, MAKING, REPAIRING AND RELATED OCCUPATIONS (METAL AND ELECTRICAL)
(13)	PAINTING, REPETITIVE ASSEMBLING, PRODUCT INSPECTING, PACKAGING AND RELATED OCCUPATIONS
(14)	CONSTRUCTION, MINING AND RELATED OCCUPATIONS NOT ELSEWHERE CLASSIFIED
(15)	TRANSPORT OPERATING, MATERIALS MOVING AND STORING AND RELATED OCCUPATIONS
(16)	MISCELLANEOUS OCCUPATIONS

The GHS used two systems to describe occupations. The first was based on the OPCS's Classification of Occupation (1970, 1980) scheme. The SEG variable, available in all years of the GHS, is the consistent implementation of this scheme. SOC is a collapsed version of SEG. The second classification used the 16 major groups of the Key Occupations for Statistical Purposes (KOS). From 1974-1980, the KOS variable is derived from the 18 groups of the Classification of Occupations and Directory of Occupational Titles (CODOT), by combining four CODOT categories into two KOS categories (CODOT (1) and (2) become KOS (1) and CODOT (12) and (13) become KOS (11)).

34. REGION	Region of residence	1974-88
(1)	NORTH	
(2)	YORKSHIRE AND HUMBERSIDE	
(3)	NORTH WEST	
(4)	EAST MIDLANDS	
(5)	WEST MIDLANDS	
(6)	EAST ANGLIA	
(7)	SOUTH EAST	
(8)	SOUTH WEST	
(9)	WALES	
(10)	SCOTLAND	
35. LONDON	If lives in London	1974-88
(0)	NO	
(1)	YES	

The GHS oversampled in Scotland. The Scottish Supplement is excluded from the consistent data set in order to keep it nationally representative. The LONDON variables takes the value one if residents of the South East live in Greater London.

36. MARSTAT	Marital status	1974-88
(1)	MARRIED	
(2)	SINGLE	
(3)	WIDOWED	
(4)	DIVORCED	
(5)	SEPARATED	
(6)	COHABITING [ONLY AVAILABLE 1986-88]	

1974-1985

Marital Status:

Married
Single
Widowed
Divorced
Separated

"Separated" included legal and de facto separations. "Married" included common-law marriages provided respondent said he or she was married.

1986-1988

Marital Status:

Married
Cohabiting
Single
Widowed
Divorced
Separated

Beginning in 1986, the GHS accepted COHABITING as a valid response to the marital status question. As in the earlier years, "Married" included common-law marriages provided respondent said he or she was married.

37. NOTWHITE	If race not white	1974-88
(0)	WHITE	
(1)	NOT WHITE	

According to the GHS codebook, the determination of the respondent's race was based on an "interviewer's assessment made entirely from observation." If interviewers indicated that they were "not sure" of the respondent's race, but that they were "probably white" or "probably coloured", the NOTWHITE variable uses the probable racial classification as valid. Following the procedure used by the GHS, respondents not seen by the interviewer (for example, members of the household whose individual schedules were being answered by a proxy) are coded as not seen, even if the interviewer believed that respondent was "white" or "coloured".

38. NCHILD	Number children under 16	1974-88
	CONTINUOUS	

NCHILD gives the number of children in the respondent's family under the age of sixteen that were living in the respondent's household.

39. LONGILL	If suffers long-standing illness	1974-88
(0)	NO	
(1)	YES	
40. LIMITACT	If illness limits activity	Not 1977
(0)	NO	
(1)	YES	
41. HEALTH	Self-assessed state of health	1977-88
(1)	GOOD	
(2)	FAIRLY GOOD	
(3)	NOT GOOD	

1974-1976

Do you have any long-standing illness, disability or infirmity? (By long-standing I mean anything which has troubled you over a period of time or which is likely to affect you over a period of time.)

Does [COMPLAINT] limit your activities in anyway?

Does [COMPLAINT] ever prevent you from getting out of the house?

Does [COMPLAINT] prevent you from getting out of the house
most of the time throughout the year
some of the time
or hardly ever

Allowed maximum of four complaints per respondent.

1977-1978

Over the last 12 months would you say your health has on the whole been good, fairly good, or not good?

There are some kinds of health problems that keep recurring and some that people have all the time.

Would you look at this card and tick in the boxes on the left any health problems that you yourself find keep recurring or that you have all the time.

Bronchitis
Arthritis or Rheumatism
Sciatica, Lumbago or recurring Backache
Persistent skin trouble (e.g. eczema)
Asthma
Hay fever
Recurring Stomach trouble
Being Constipated all or most of the time
Piles
Blood pressure
Persistent Foot trouble (e.g. bunions, ingrowing toenails)
Trouble with Varicose veins
Nervous trouble or persistent Depression
Diabetes
Persistent trouble with your Gums or Mouth
(Trouble or pain with Periods or Menopause)
NONE OF THESE

Do your have any (other) health problem not on the list that keeps recurring or that you have all or most of the time -- apart from things like colds or stomach upsets?

Some people find they have to be specially careful about their health. Thinking of those health problems you have ticked or written on that card do you have to do any of the following things all the time because of any of them?

Always take things slowly or carefully?
Always watch what you eat and drink?
Have to use special clothing or aids?
Have to be careful when the weather is bad for those health problems?
Take medicines all the time including dressings, injections, pills, etc.?
NONE OF THESE

[The "always take things slowly" category includes "avoiding certain physical activity altogether, or them carefully or with help e.g. lifting (heavy) things; bending; stretching or reaching up; heavy housework; going up and down stairs or hills; standing for too long or standing up at heights; working in a crouched position; have to be careful when lifting; have to walk slowly and not too far; need help

getting in or out or bed; need help to turn over in bed; have to drink and eat very slowly." (See GHS Codebook, 1977, p55.)]

1979-1988

Over the last 12 months would you say your health has on the whole been good, fairly good, or not good?

Do you have any long-standing illness, disability or infirmity? By long-standing I mean anything which has troubled you over a period of time or that is likely to affect you over a period of time.)

Does this illness or disability limit activities in anyway?

Now I'd like you to think about the 2 weeks ending yesterday and the things you usually do -- for example, the things you do every day (at work/school), about the house, during your free time etc. During the 2 weeks ending yesterday, did you have to cut down on any of the things you usually do because of (this illness/disability or some other) illness or injury?

42.	AGE	Age at interview	1974-88
		CONTINUOUS	
43.	SEX	If male	1974-88
	(0)	FEMALE	
	(1)	MALE	
44.	TUATWORK	If trade union at work	1983
	(0)	NO	
	(1)	YES	
45.	TUMEMBER	If union member	1983
	(0)	NO	
	(1)	YES	
46.	PUBSEC	If works in public sector	1983,85,87
	(0)	NO	
	(1)	YES	
47.	EMPSIZE	Employer size	1983,85,87,88
	(1)	1-2 EMPLOYEES	
	(2)	3-24 EMPLOYEES	
	(3)	25-99 EMPLOYEES	
	(4)	100-999 EMPLOYEES	
	(5)	1000+ EMPLOYEES	

Notes

1. Centre for Economic Performance Working Paper No. 227, on which this chapter is based, contains a third appendix with complete listings of all programmes (in SPSS, SIR, SAS, and STATA) used to produce the consistent data set.

2. I am currently working to create an expanded, consistent labour force status variable with ten labour force states: employed; unemployed (waiting to start a job); unemployed (looking for work); unemployed (sick or injured); student; permanently unable to work; retired; keeping house; and other.

3. In a future, expanded version of the consistent data set I hope to incorporate more complete information on self-employed workers and on workers' second jobs.

4. Only a very small share of workers report having second jobs (less than 5 percent during the period 1974-79). In practice, the two methodologies for estimating weekly earnings may not differ substantially. If during 1974-79 interviewers estimated earnings in the last twelve months by using the most recent pay period and adjusting for weeks in employment, the two approaches are virtually identical.

5. The Labour Force Survey (LFS) collects information on workers education level that is very similar to the GHS, but gathers no data on earnings. The Family Expenditure Survey (FES) asks respondents about their earnings -- and after 1978 -- about their years of schooling. However, the FES does not ask respondents about their educational qualifications. The New Earnings Survey (NES) gathers information on earnings from

a sample of approximately one percent of British employees, but includes no information on workers' level of education.

6. Perhaps the most important of these generation specific differences was the minimum school leaving age. The school leaving age was 14 until 1946; 15 until 1972; and 16 thereafter.

7. Danny Blanchflower suggested this procedure based on his own work with the GHS. Investigators using the U.S. Current Population Survey, facing a similar problem, take a similar approach.

8. Approximately, 1,500 of the total of 75,000 valid observations on male, full-time employees in the complete fifteen year sample report finishing full-time education after age 26.

9. A hybrid of this approach and the earlier qualifications based approach, would be to assign additional years of schooling based on the qualification earned.

10. The qualification hierarchy used by the GHS that serves as a basis for the hierarchy in Table 2.2 is fairly consistent. Nevertheless, creation of the HIGHQUAL variable required careful attention. The GHS hierarchy groups some vocational and academic qualifications together (A-LEVEL and VOC-MIDDLE, and O-LEVEL 5+ and VOC-LOW). To separate these qualifications involves returning to the underlying qualifications responses used by the GHS to create its own hierarchy. Unfortunately, the number of qualifications that constituted a complete response to the GHS questions on qualifications differed in nearly every year. Moreover, the

system used to store these responses in the SIR data base varied significantly over the years.

11. For a more detailed description of the categories, see the variable coding in Appendix 2.1, the computer programmes used to generate the consistent data set in Schmitt (1992) Appendix 3, and the relevant coding books for the GHS.

12. Given the large portfolio of businesses held by the British government, the determination of "public sector" status is not always straightforward. The GHS provided interviewers with guidelines to assist respondents.

13. None of the total of approximately 1500 male, full-time employees with a terminal age of education equal to 27 or older, reports finishing "school" after 26. Nine have missing values for AGELFTSC.

Table 2.1
Complete variable list

Variable Name	Brief Description	Years Available
LFSTAT	Labour force status	1974-88
EMPLOYEE	Employed or self-employed	1974-88
WORKHRS	Usual hours worked per week	1974-88
OTPAID	If works paid overtime	1974-83
OTUNPAID	If works unpaid overtime	1974-83
OTHRSPD	Usual hours paid overtime	1974-83
OTHRSUN	Usual hours unpaid overtime	1974-83
TEACHER	If works as teacher	1974-88
FULLTIME	If full-time	1974-88
SECJOB	If has second job	1974-88
LTU	If long-term unemployed	1974-88
WKEARNGR	Usual nominal gross weekly pay	1974-88
YREARN	Earnings last 12 months	1974-78
WKSWORK	Weeks worked last 12 months	1974-78
PAYSLIP	If consulted payslip	1974-88
RPI	Monthly retail price index	1974-88
MONTH	Month of GHS interview	1974-88
AGELFTSC	Age left primary/secondary	1974-88
AGELFTFT	Age left post-secondary	1974-88
TEA	Terminal education age	1974-88
YRSCH	Years of full-time school	1974-88
HIGHQUAL	Educational qualification (14)	1974-88
MAPHD	If has post-graduate degree	1974-88
APPRENT	If doing apprenticeship	1974-84
YTSYOP	If in government training	1983-88
EXP	Years work experience	1974-88
TENURE	Banded years at current job (3)	1975-88
SICC	Industrial group (7)	1974-88
SIC68	SIC 1968 (24)	1974-80
SIC80	SIC 1980 (10)	1981-88
SEG	Socio-economic group (19)	1974-88
SOC	Collapsed SEG (6)	1974-88
KOS	Key Occupations (16)	1974-88
REGION	Region of residence (10)	1974-88
LONDON	If lives in London	1974-88
MARSTAT	Marital status (5)	1974-88
NOTWHITE	If race not white	1974-88
NCHILD	Number children under 16	1974-88

(continued)

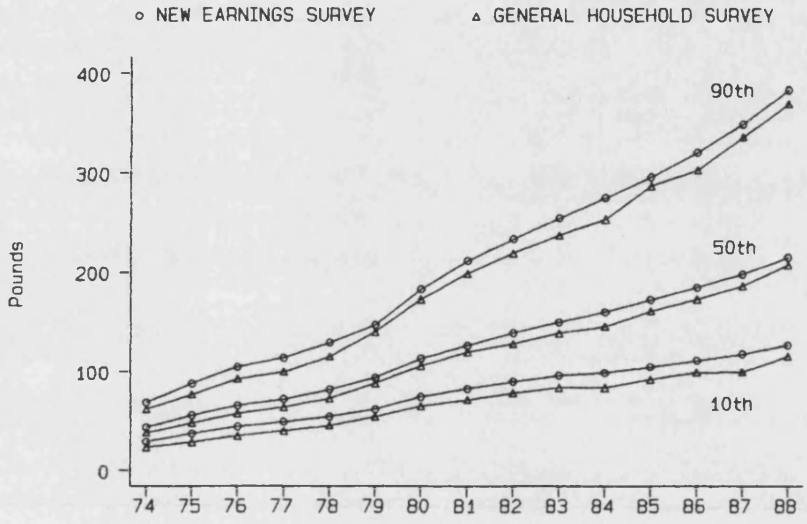
Table 2.1
Complete variable list (continued)

Variable Name	Brief Description	Years Available
LONGILL	If long illness	1974-88
LIMITACT	If illness limits activity	Not 1977
HEALTH	Self-assessed state of health	1977-88
AGE	Age at interview date	1974-88
SEX	If male or female	1974-88
TUATWORK	If union at work	1983
TUMEMBER	If union member	1983
PUBSEC	If works in public sector	1983,85,87
EMPSIZE	Banded employer size (5)	83,85,87,88

Table 2.2
Educational 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 from 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, plus all remaining qualifications which consist mainly of local or regional school leaving certificates and college or professional awards not regarded as 'higher education', i.e. not above GCE A level standard
NO QUAL	NO QUALIFICATIONS: No qualifications including no formal schooling

Figure 2.1
Nominal gross weekly earnings by percentile, 1974-88



Nominal gross weekly earnings by percentile

Note:
The GHS data refer to earnings of male full-time employees aged 21 to 64. The NES data refer to earnings of male full-time employees aged 21 and over.

Chapter 3: Returns to education and experience for British males, 1974-88

I. Introduction

A large body of recent research has established that the financial returns to education and labour market experience rose substantially in the United States during the 1980s.[1] However, little work exists which explores developments in the United Kingdom.[2] This chapter uses the consistent GHS labour market data set described in the previous chapter to analyze the development of returns to education and experience in Britain during the period 1974-1988.

The chapter has several findings. First, the financial returns to most educational qualifications rose substantially after the late 1970s, especially among younger workers. Second, the increase in returns was not limited to "academic" qualifications. Returns to most vocational qualifications also improved strongly during the 1980s. Third, returns to labour market experience also increased over the same period. Finally, in striking contrast to the U.S., the real weekly earnings of low-skilled workers grew in real terms over the period 1974-88.

The chapter explains these findings with the aid of a simple relative labour supply and demand model augmented by an analysis of the workings of key labour market institutions. In the U.S., general agreement exists that a shift in the relative demand for skills was responsible for the rise in returns. Recent work therefore has concentrated on discriminating between two possible reasons for the relative

demand shift. The first hypothesizes that shifts in product demand between industry groups (from manufacturing to services, for example) has led to shifts in labour demand which put low-skilled workers at a disadvantage. The second posits that changes in technology and the organization of production within industries (the introduction of computers, for example) have reduced the relative demand for low-skilled workers. The GHS evidence presented here is consistent with the idea that shifts in labour demand may also be driving the rise in return to skills in Britain. While the GHS data do not allow strong conclusions in this respect, between-industry demand shifts appear to be less important than within-industry shifts. At the same time, the decline in influence of several British labour market institutions, including incomes policies, wage councils and trade unions, may have helped to accelerate the market-driven tendency toward greater skill differentials.

II. The Data

The principle source of data is the consistent labour market data set constructed from the GHS for the years 1974-88. Throughout this chapter, 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).

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 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 Appendix 1). Second, the value of different types of qualifications, particularly vocational versus academic qualifications, sheds 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 2.2. The large number of categories reflects the relatively complicated structure of British educational qualifications. Children must attend full-time education until the age of 16, the age when a large portion of them leave school.[3] 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 labour 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). Some of the vocational 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 labour force in 1974, rising to approximately 11 percent by 1988.

The other principal human capital variable (EXP) measures potential labour market experience, defined in the standard way as age minus age left full-time education. The GHS contains no measure of actual labour 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 reported 24 consistent industry classifications. From 1981 to 1988, the industry classification system was 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.

III. Changes in Returns to Skills

A. Educational and experience differentials

Education and experience differentials for British males fell steeply between the mid- and late-1970s. During the 1980s, however, education and education differentials made a strong recovery. By 1986-88, education differentials returned to the levels prevailing in 1974-76, and experience differentials had more than made up for ground lost in the late 1970s.[4]

To measure the change in returns to labour market skills, 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.[4a]

The education differentials in panel (a) of Table 3.1 (and in Figures 3.1 through 3.8) 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.[5] 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 3.1 all decline between the first and second periods. In the 1980s, however, the differentials for these qualifications increase, 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. Interestingly, the declines in differentials for vocational qualifications during the 1970s are in all cases substantially smaller than those for corresponding academic qualifications; meanwhile, the increases in vocational differentials in the 1980s are roughly comparable in magnitude to those of academic qualifications.

Panel (b) of Table 3.1, and Figure 3.9, show 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. 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 very strong gains in the

1980s. By the late 1980s, experience premia were well above the levels prevailing in the mid-1970s.

Comparable estimates of changes in education and experience differentials for workers age 16 to 30 appear in Table 3.2. 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 (Blackburn, Bloom and Freeman, 1991). The regression results summarized in Table 2 indicate a mixed performance, with the rise in skill differentials generally greater for younger British workers than the workforce on the whole. Notable exceptions are the intermediary vocational qualifications (VOC-LOW and VOC-MIDDLE), which correspond roughly to City & Guilds Craft or Ordinary, and Advanced or Final level, where returns actually fell sharply for younger workers in the 1980s.

B. Real earnings of low-skilled workers

While skills differentials increased substantially in Britain during the 1980s, the real earnings of employed, full-time, workers with low levels of skills still managed to grow. The median real weekly earnings of British workers with no qualifications, for example, increased by approximately 30 percent between 1974 and 1988 (see Table 3.3, column 1).

Since this results stands in such contrast with the experience of the U.S., where real earnings of low-skilled workers fell by approximately 15 percent over the same

period[6], 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 workers 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 overall earnings distribution as a proxy for low-skilled workers. As column 3 of Table 3.3 demonstrates, real earnings for workers in the 10th percentile increased by approximately 20 percent 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 <u>median</u> real earnings for the no qualification group were rising, the earnings at the bottom of the no qualification group were falling. However, by 1988 real earnings for the 10th percentile of the no qualification group were approximately 15 percent above their level in 1974 (see Table 3.3, column 2).

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 labour force collected through their employers, indicates that the weekly wages of workers in the 10th percentile of the male earnings distribution, increased by approximately 10 percent between 1974 and 1988 (see, Table 3.3 column 4).[7]

IV. Supply, demand, and labour 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.[8] 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 labour in Britain taking into account the evolving role of several British labour 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.[8a] A breakdown of the male labour force by educational qualifications for the three sub-periods of the GHS sample appears in Table 3.4. In 1974-76, workers with no qualifications comprised over half of the male labour 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 labour 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 labour 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 labour market with constant relative demand, an increase in the relative supply of skilled labour would reduce the relative wages of skilled labour. The large increase in the relative supply of skilled labour 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 Britain 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 3.4 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.[9] 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 labour may lie behind the decline in skill differentials 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 research on the U.S. economy has usefully divided relative demand changes into two categories: "between industry" factors which affect product demand, and thus labour demand, between 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 3.10 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):

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

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:

$$(2) \qquad d_{qt} = \sum_s d_{qst} \cdot x_{qst}$$

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:

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

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:

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

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 3.5. 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:

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

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.[10] 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 3.6 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.[11]

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 3.7 and 3.8 indicate that the pattern of labour demand within industries including manufacturing changed significantly over the sample. The share of manufacturing employees with a university degree (see panel (a) of Table 3.7) 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 3.8 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.

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.[12] 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 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 such large increases in relative supplies.

C. Labour market institutions

Labour supply and demand shifts can explain many of the developments in the British wage structure during the sample period. Labour market institutions may also have played a role in mitigating or bolstering the forces of supply and demand. This section of the chapter, therefore, examines the role of several British labour 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 higher earnings differentials. 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 differentials from increasing as fast as they would have in the absence of such policies. The effects, however, are difficult to quantify and incomes policies in the 1970s

probably tell us little about the period of widening differentials 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 labour force worked in industries covered by Wage 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. Years of governmental "malign neglect" of Wage Councils culminated in the Wage Act of 1986, which 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.

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, a related but broader concept than skill differentials. 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.[13] 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 Wage Councils during the 1980s may have played a role in rising differentials during the 1980s, though

it is difficult to quantify the effect. Even so, the dismantling of Wage 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 unemployment 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 chapter. 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 3.11. The benefit data in the figure 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). The figure indicates 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 slightly more generous in 1988 than it was in 1974; 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

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 then fell by over 10 percentage points during the 1980s.[14] Since unions tend to raise the earnings of low-skilled workers relatively more than those of high-skilled workers, the decline in density could account for some portion of the rise in skill differentials.

Following Freeman (1991, Table 2), Table 3.9 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.[14a] Since no estimates of British union membership by education or occupation exist for the skill groups and time period in Table 3.9, 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 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.[15]

As with Wage Councils, the decline in union membership, however, does not make it any easier to account for the rise in low-skilled earnings. Skill differentials may have increased in Britain during the 1980s due to the weakening of key labour market institutions. At the same time, low-skilled workers may have been able to protect absolute earnings more effectively in Britain than in the U.S., for example, 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. Highly unionized economies also experienced smaller changes in earnings differentials between 1978 and 1987.[16]

V. Some Conclusions

The GHS data provide clear evidence that education and experience differentials rose during the 1980s. Given the large increases in the supply of skilled labour over the same period, economic theory suggests that the relative demand for skilled labour must have increased substantially. The factors driving this shift in demand appear to be common to all (or most) sectors of the economy, and not directly related to the shift in output and employment from manufacturing to services. The decline in the influence of Wages Councils and trade unions during the 1980s may have accelerated this underlying tendency toward rising skill differentials.

Appendix 3.1
Educational qualifications versus years of schooling as measures of human capital

Measuring human capital using educational qualifications offers several advantages over years-of-schooling based variables. Table 3.1.1 demonstrates that a qualification based specification (column 1) generates a higher R^2 than a continuous years of schooling variable (column 2) in every year of the GHS. Qualifications also do better than a specification using years of schooling and its square (column 3) or twelve dummy variables for years of completed schooling (column 4).

The superior performance of the qualification variables principally stems from two factors. First, the GHS probably measures qualifications more accurately than years of full-time schooling. The GHS does not ask respondents for their total number of years of full-time education. Instead, the GHS asks individuals their age when they left school (where "school" refers to secondary level education) and their age when they left their most recent period of full-time education. The consistent data set used in this paper estimates years of full-time schooling as: the maximum of the age left full-time education and age left "school", minus 5, if the this age was less than 27, or, the age left "school", plus 3 (arbitrary years of additional schooling), minus 5, if the age left full-time education was greater than or equal to 27. This definition suffers from several problems, not the least of which are that: (1) it overestimates years of schooling for workers who did not complete all full-time

schooling in a single uninterrupted spell ending before they first entered full-time employment; and (2) it underestimates years of full-time schooling equivalent for those who earned qualifications part-time or on-the-job. In contrast, the GHS gathers information directly on qualifications that respondents have earned independently of when or how they earned them. Table 3.1.2 summarizes the average years of schooling associated with each of the educational qualifications for three sub-samples of the GHS.

The second reason that qualifications may outperform years variables is that they may better capture changes in the supply and demand for skills. Table 3.1.3 presents a series of regressions designed to test this hypothesis using data pooled from the 1986, 1987 and 1988 GHS. If qualifications contain all the information in years of schooling, we would expect the years of schooling variables to be insignificant in a regression which also included a complete set of qualification variables. The first four specifications in Table 3.1.3 prepare benchmarks for the combined qualification and years regressions. Column 1 fits the main specification (used in Table 3.1 in the text) to the pooled sample. Column 2 uses a years of schooling variable instead of qualifications. Column 3 adds the square of schooling to the linear schooling variable. Column 4 uses twelve dummy variables for completed years of schooling.

Column 5 combines the educational qualifications and the years of schooling variable. If qualifications "dominate" years of schooling, we would expect small, statistically

insignificant coefficients on the years variable. The size of the years of schooling coefficient drops by 60 percent relative to the specification in column 2, but it remains highly significant. Comparing the coefficients on the educational variables in the same regression with the benchmark in column 1 reveals an interesting pattern. The estimates for the vocational qualifications (VOC1, VOC2, VOC3, APRNT) fall only slightly after including years of schooling. The same is true for lower level academic qualifications (OLEV, OLEV5+, ALEV). However, for higher academic qualifications the inclusion of years of schooling greatly reduces the size of estimated differentials (from 0.658 to 0.485 for university graduates; 0.347 to 0.200 for certified teachers; and 0.290 to 0.189 for qualified nurses). Including years of schooling squared (column 6) or utilizing dummy variables for years of schooling (column 7) gives similar results. The coefficients on the years variables fall dramatically but remain highly significant; vocational and low-level academic qualifications are only marginally affected; and higher academic qualifications -- where years of schooling are important -- fall in magnitude by as much as 30 percent.

These results are difficult to interpret. Qualifications variables do not "drive out" the years variables, but neither do the year variables eliminate the significance of the qualification variables. The years variable appears to retain its significance in regressions which include qualifications by "competing" with higher

academic qualifications. A more carefully constructed years-of-schooling variable may allow more clear cut conclusions. Nevertheless, as discussed in the previous chapter, the GHS places inherent limitations on any years of schooling variables.

A careful cross-sectional analysis of the level of returns to education and experience would have to sort out these issues carefully. In the present context, where the main focus is on changes in returns to education, consistency across years of the GHS appears to be the over-riding concern. This paper therefore chooses the qualification variables as the best of the simple specifications. It is comforting to note that the time series pattern of returns to years of schooling follows the basic pattern suggested by the qualifications-based analysis in the main text (see Figure 3.1.1).

Table 3.1.1
Adjusted R-squared from alternative earnings specifications

	Qualifi-cations	Years of Schooling	Years of Schooling and Square	Years of Schooling Dummies
1974	0.399	0.370	0.371	0.382
1975	0.373	0.345	0.347	0.353
1976	0.418	0.375	0.375	0.383
1977	0.414	0.359	0.360	0.365
1978	0.417	0.364	0.365	0.371
1979	0.389	0.345	0.345	0.350
1980	0.367	0.322	0.323	0.329
1981	0.404	0.342	0.344	0.351
1982	0.363	0.306	0.307	0.314
1983	0.388	0.330	0.330	0.341
1984	0.438	0.393	0.394	0.402
1985	0.420	0.370	0.375	0.384
1986	0.442	0.404	0.405	0.415
1987	0.442	0.400	0.400	0.408
1988	0.438	0.388	0.393	0.400

Source: General Household Survey.
Notes:
(1) The dependent variable in all regressions is the log of real weekly earnings.
(2) All annual regressions include years of potential labour market experience, its square, and nine regional dummy variables.
(2) "Qualifications" adds thirteen qualification dummy variables to the basic specification (see Table 2.1). The "Years of Schooling" specification adds the YRSCH variable to the basic specification. The "Years of Schooling and Square" adds both YRSCH and its square. The "Years of Schooling Dummies" specification includes dummy variables for: less than 8 years of schooling, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20 or more years of schooling.

Table 3.1.2
Average years of schooling by educational qualification

	1974-76	1978-80	1986-88
UNIVERSITY	15.9	16.1	16.0
VOC-HIGH	12.2	12.1	12.1
A-LEVEL	13.8	13.4	13.4
VOC-MIDDLE	11.1	11.3	11.5
O-LEVEL 5+	12.8	11.7	11.9
VOC-LOW	10.7	10.7	10.9
O-LEVEL 1-4	11.3	11.3	11.3
VOC-OTHER	9.7	9.8	10.0
NOQUAL	9.6	9.7	10.0
ALL	10.7	10.9	11.7

Source: General Household Survey.

Table 3.1.3
Weekly earnings equations using different education variables, 1986-88

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UNIVERSITY	0.658				0.485	0.485	0.468
	(0.012)				(0.016)	(0.016)	(0.017)
VOC-HIGH	0.398				0.345	0.343	0.331
	(0.012)				(0.013)	(0.013)	(0.013)
TEACHING	0.347				0.200	0.199	0.185
	(0.035)				(0.036)	(0.036)	(0.036)
NURSING	0.290				0.189	0.189	0.178
	(0.055)				(0.054)	(0.054)	(0.054)
A-LEVEL	0.394				0.312	0.309	0.288
	(0.017)				(0.018)	(0.018)	(0.020)
VOC-MIDDLE	0.264				0.236	0.235	0.226
	(0.014)				(0.014)	(0.014)	(0.014)
O-LEVEL 5+	0.264				0.219	0.217	0.203
	(0.018)				(0.018)	(0.018)	(0.019)
VOC-LOW	0.148				0.136	0.135	0.130
	(0.015)				(0.015)	(0.015)	(0.015)
O-LEV&CLER	0.145				0.127	0.126	0.117
	(0.067)				(0.066)	(0.066)	(0.066)
O-LEVEL 1-4	0.157				0.144	0.142	0.132
	(0.014)				(0.014)	(0.014)	(0.015)
CLERICAL	0.027				0.002	0.001	-0.001
	(0.060)				(0.059)	(0.059)	(0.059)
VOC-OTHER	0.084				0.076	0.076	0.078
	(0.015)				(0.015)	(0.015)	(0.015)
OTHER	0.069				0.067	0.066	0.063
	(0.015)				(0.015)	(0.015)	(0.015)
YRSCH		0.076	0.134		0.032	0.039	
		(0.002)	(0.012)		(0.002)	(0.012)	
YRSCH^2			-0.212			-0.025	
(x100)			(0.042)			(0.042)	
YRSCH<=8				-0.041			-0.036
				(0.040)			(0.039)
YRSCH=10				-0.037			-0.065
				(0.017)			(0.016)
YRSCH=11				0.116			0.011
				(0.018)			(0.018)
YRSCH=12				0.225			0.057
				(0.020)			(0.021)
YRSCH=13				0.331			0.100
				(0.021)			(0.023)
YRSCH=14				0.326			0.090
				(0.028)			(0.028)

(continued)

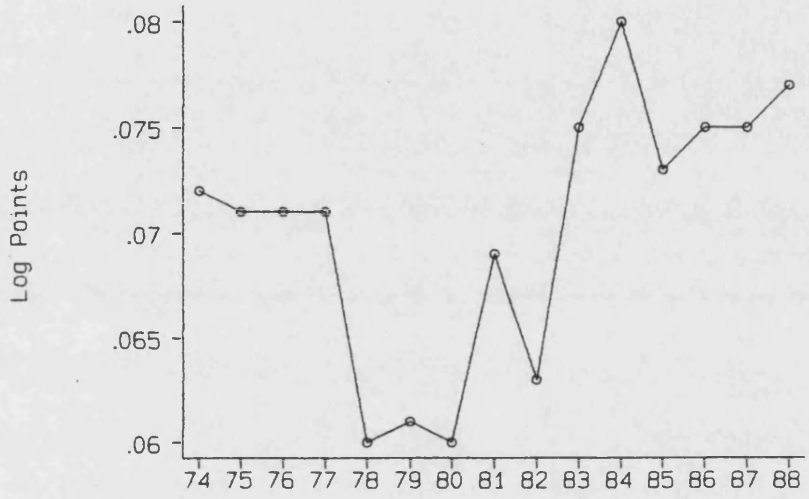
Table 3.1.3 (continued)
Weekly earnings equations using different education variables, 1986-88

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
YRSCH=15				0.415			0.144
				(0.030)			(0.030)
YRSCH=16				0.525			0.184
				(0.024)			(0.026)
YRSCH=17				0.589			0.213
				(0.025)			(0.028)
YRSCH=18				0.614			0.226
				(0.030)			(0.032)
YRSCH=19				0.685			0.299
				(0.035)			(0.037)
YRSCH>=20				0.636			0.262
				(0.034)			(0.035)
R2	0.443	0.400	0.401	0.410	0.453	0.453	0.456
Adjusted-R2	0.442	0.400	0.401	0.409	0.452	0.452	0.455
N	12941	12941	12941	12941	12941	12941	12941

Source: General Household Survey.

Notes:
(1) The dependent variable is the log of real weekly earnings.
(2) All regressions include labour market experience and its square, nine regional dummy variables, and dummy variables for membership in the 1987 and 1988 GHS.
(3) Standard errors appear in parantheses.

Figure 3.1.1
Returns to an additional year of schooling



Appendix 3.2
Summary statistics

Table 3.2.1
Means for full-time, male employees, aged 16-64

	1974	1975	1976	1977	1978
Ln Wkly Pay (Dep. Var.)	3.568	3.568	3.592	3.554	3.600
UNIVERSITY	0.041	0.049	0.048	0.071	0.073
VOC-HIGH	0.045	0.047	0.047	0.068	0.065
TEACHING	0.011	0.010	0.009	0.011	0.010
NURSING	0.001	0.002	0.003	0.004	0.002
A-LEVEL	0.028	0.027	0.030	0.017	0.019
VOC-MIDDLE	0.046	0.046	0.047	0.046	0.047
O-LEVEL 5+	0.050	0.053	0.060	0.057	0.060
VOC-LOW	0.041	0.050	0.055	0.037	0.046
O-LEV&CLER	0.002	0.002	0.002	0.001	0.000
O-LEVEL1-4	0.047	0.051	0.054	0.053	0.059
CLERICAL	0.006	0.005	0.006	0.007	0.005
VOC-OTHER	0.095	0.097	0.092	0.105	0.106
OTHER	0.045	0.053	0.054	0.052	0.052
NO QUAL	0.542	0.508	0.494	0.470	0.455
EXP	23.7	23.4	23.3	23.2	23.1
EXP^2	772.3	756.4	748.8	737.7	735.8
NO	0.068	0.064	0.072	0.065	0.067
YH	0.092	0.101	0.089	0.087	0.096
NW	0.124	0.119	0.109	0.093	0.121
EM	0.070	0.075	0.077	0.020	0.072
WM	0.103	0.113	0.109	0.067	0.108
EA	0.035	0.038	0.036	0.012	0.036
SE	0.312	0.296	0.310	0.436	0.295
SW	0.064	0.071	0.074	0.050	0.065
WA	0.056	0.048	0.046	0.077	0.045
SC	0.077	0.076	0.077	0.093	0.095
Sample N	5921	6497	6258	6364	6169

(continued)

Table 3.2.1 (continued)
Means for full-time, male employees, aged 16-64

	1979	1980	1981	1982	1983
Ln Wkly Pay (Dep. Var.)	3.668	3.696	3.701	3.702	3.725
UNIVERSITY	0.081	0.084	0.084	0.093	0.096
VOC-HIGH	0.071	0.076	0.073	0.091	0.095
TEACHING	0.010	0.011	0.013	0.010	0.009
NURSING	0.002	0.003	0.005	0.004	0.003
A-LEVEL	0.009	0.018	0.022	0.020	0.033
VOC-MIDDLE	0.024	0.050	0.055	0.058	0.072
O-LEVEL 5+	0.081	0.062	0.062	0.054	0.042
VOC-LOW	0.025	0.055	0.048	0.044	0.056
O-LEV&CLER	0.001	0.002	0.001	0.002	0.002
O-LEVEL1-4	0.059	0.061	0.059	0.060	0.069
CLERICAL	0.003	0.004	0.003	0.004	0.006
VOC-OTHER	0.100	0.093	0.095	0.098	0.095
OTHER	0.060	0.062	0.061	0.056	0.057
NO QUAL	0.474	0.420	0.419	0.407	0.365
EXP	22.9	22.4	22.6	23.0	22.1
EXP^2	730.3	699.8	705.2	719.8	679.8
NO	0.062	0.060	0.059	0.065	0.057
YH	0.094	0.090	0.089	0.090	0.087
NW	0.114	0.120	0.112	0.111	0.111
EM	0.072	0.078	0.077	0.075	0.074
WM	0.106	0.104	0.099	0.104	0.091
EA	0.042	0.040	0.040	0.041	0.037
SE	0.300	0.298	0.310	0.289	0.316
SW	0.071	0.065	0.071	0.078	0.078
WA	0.043	0.047	0.041	0.046	0.054
SC	0.097	0.098	0.102	0.101	0.095
Sample N	5617	5768	5632	4269	4318

(continued)

Table 3.2.1 (continued)
Means for full-time, male employees, aged 16-64

	1984	1985	1986	1987	1988
Ln Wkly Pay (Dep. Var.)	3.719	3.759	3.791	3.819	3.874
UNIVERSITY	0.107	0.115	0.123	0.128	0.124
VOC-HIGH	0.095	0.100	0.109	0.113	0.117
TEACHING	0.012	0.011	0.009	0.012	0.010
NURSING	0.004	0.004	0.003	0.005	0.004
A-LEVEL	0.038	0.044	0.047	0.044	0.055
VOC-MIDDLE	0.080	0.079	0.077	0.083	0.080
O-LEVEL 5+	0.040	0.044	0.043	0.038	0.043
VOC-LOW	0.064	0.062	0.070	0.058	0.067
O-LEV&CLER	0.004	0.003	0.003	0.002	0.003
O-LEVEL1-4	0.084	0.087	0.078	0.083	0.092
CLERICAL	0.003	0.004	0.003	0.004	0.002
VOC-OTHER	0.077	0.067	0.080	0.068	0.051
OTHER	0.063	0.066	0.072	0.068	0.074
NO QUAL	0.330	0.314	0.284	0.293	0.278
EXP	21.0	21.1	21.2	20.7	21.0
EXP^2	630.8	626.7	632.2	611.8	617.4
NO	0.055	0.057	0.057	0.047	0.049
YH	0.089	0.092	0.086	0.087	0.088
NW	0.111	0.121	0.119	0.122	0.111
EM	0.080	0.075	0.080	0.073	0.083
WM	0.095	0.091	0.090	0.102	0.101
EA	0.035	0.041	0.036	0.036	0.040
SE	0.324	0.301	0.326	0.332	0.318
SW	0.072	0.073	0.077	0.078	0.074
WA	0.042	0.048	0.041	0.039	0.047
SC	0.097	0.102	0.088	0.085	0.087
Sample N	4082	4328	4295	4514	4141

Source: General Household Survey.
Notes:
(1) Means for sample used to estimate skill differentials in Table 2.
(2) Regional abbreviations: NO, North; YH, Yorkshire and Humberside; NW, North West; EM, East Midlands; WM, West Midlands; EA, East Anglia; SE, South East; SW, South West; WA, Wales; SC, Scotland.

Appendix 3.3
Education differentials for birth cohort, 1924-58

Table 3.3.1
Education differentials at 20 years experience: birth cohort

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
UNIVERSITY	0.675	0.572	0.612	-0.103	0.041
VOC-HIGH	0.350	0.288	0.369	-0.062	0.082
A-LEVEL	0.482	0.405	0.424	-0.077	0.019
VOC-MIDDLE	0.234	0.189	0.232	-0.045	0.043
O-LEVEL 5+	0.449	0.258	0.314	-0.191	0.056
VOC-LOW	0.168	0.154	0.146	-0.015	-0.008
O-LEVEL 1-4	0.236	0.186	0.214	-0.050	0.028
VOC-OTHER	0.048	0.071	0.085	0.022	0.014
NO QUAL	0.000	0.000	0.000	0.000	0.000

Source: General Household Survey.

Notes:
(1) Education differentials calculated as in Table 3.1.
(2) The sample consists of all full-time, male employees born between 1924 and 1958 appearing in the 1974 through 1988 General Household Surveys.

Notes

1. See, for example, Blackburn, Bloom and Freeman (1991), Bluestone (1990), Bluestone and Harrison (1988), Bound and Johnson (1989), Juhn, Murphy and Pierce (1989), Katz, Loveman, and Blanchflower (1993, forthcoming), Katz and Murphy (1992), Katz and Revenga (1989), and Murphy and Welch (1992).

2. Two 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 micro-data from the Family Expenditure Survey for the years 1978-1985. Katz, Loveman and Blanchflower (1993, forthcoming) compare changes in the wage structure in the U.S., the U.K., France and Japan. For the U.K. they use published data from the New Earnings Survey and micro-data from the GHS.

3. 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 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, for example, Appendix 3.3).

4. 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).

5. Summary statistics for the sample of full-time male employees aged 16 to 64 used to calculate differentials appear in Appendix 3.2. Comparably calculated education and experience differentials for a birth cohort born between 1924 and 1958 appear in Appendix 3.3.

6. In the U.S., 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).

7. 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 its own between 1975 and 1986. Furthermore, as they note, the variables they used 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.

8. See, for example, Freeman (1978), Bound and Johnson

(1989), Blackburn, Bloom and Freeman (1991), Katz and Murphy (1992), Murphy and Welch (1992).

9. 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.

10. The qualification differentials are constructed exactly as in Table 3.1.

11. 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.

12. 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 d^U=0.1.54) providing no indication of serial correlation.

13. 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.

14. 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. Density fell to just over 10 percent of the workforce by the end of the 1980s. See, Freeman (1991).

15. These estimates lie very close to the 25 percent figure for the U.S. by Freeman (1991). Table 3.9 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, 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. Substituting plausible values for both missing numbers suggests that Table 3.9 probably underestimates the union effect on differentials.

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

4a. If the unobservable ability differential increased along with the differential for observable skills, the biases would not be constant over time.

8a. Of course, a rise in the share of workers with higher educational qualifications does not necessarily mean that the skills quality of the work force has improved.

14a. These union differentials are larger than those generally found in other estimates of the union differential in Britain, even using the same GHS data (see, for example, Green, F. (1988) 'The trade union wage gap in Britain: some new estimates' Economics Letters, vol. 27, pp.183-87). This is primarily due to the exclusion here of firm size as an explanatory variable. This probably leads to an overestimate of the union effect since large firms tend to be more heavily unionised.

Table 3.1
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.
(4) Calculating and presenting standard errors to assist in testing the significance of changes over time is not straightforward. As a rough guide, the standard errors for the educational differentials in 1987 are:

UNIV	0.053	O-LEVEL5+	0.071
VOC-HIGH	0.058	VOC-LOW	0.066
A-LEVEL	0.063	O-LEVEL1-4	0.051
VOC-MIDDLE	0.062	VOC-OTHER	0.158

Table 3.2
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 3.3
Real weekly earnings for low-skilled male workers

	GHS NO QUAL Median	GHS NO QUAL 10th %ile	GHS All 16-64 10th %ile	NES All 21+ 10th %ile
1974	33.39	21.70	21.70	29.30
1975	33.46	22.09	21.93	30.82
1976	34.06	22.89	22.71	30.76
1977	32.47	21.66	21.61	29.01
1978	34.39	23.61	22.80	29.88
1979	36.70	24.69	24.51	30.66
1980	36.90	24.47	24.66	30.39
1981	37.22	23.74	24.06	30.10
1982	36.26	24.40	24.40	29.77
1983	37.44	24.34	24.94	30.73
1984	37.17	25.02	23.96	30.04
1985	38.35	24.58	24.71	29.82
1986	39.72	25.89	25.55	30.68
1987	40.52	24.45	24.94	31.15
1988	42.50	26.25	27.14	32.31

Source:
(1) Columns 1 to 3: General Household Survey.
(2) Column 4: New Earnings Survey.

Notes:
(1) Real weekly earnings deflated from nominal weekly earnings using the Retail Price Index with January 1974 as base.
(2) Column 1: median earnings for full-time male employees aged 16-64 with no educational qualifications. Column 2: earnings for the 10th percentile of the the same distribution of workers with no qualifications. Column 3: the earnings for the 10th percentile of all full-time male employees aged 16 to 64. Column 4: the earnings for the 10th percentile of workers aged 21 and over from the New Earnings Survey.

Table 3.4
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 3.5
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.

Notes: See text.

Table 3.6
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.

Notes: See text.

Table 3.7
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 3.8
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 3.9
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 3.1, 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 3.1. 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 3.1
University differential at 20 years

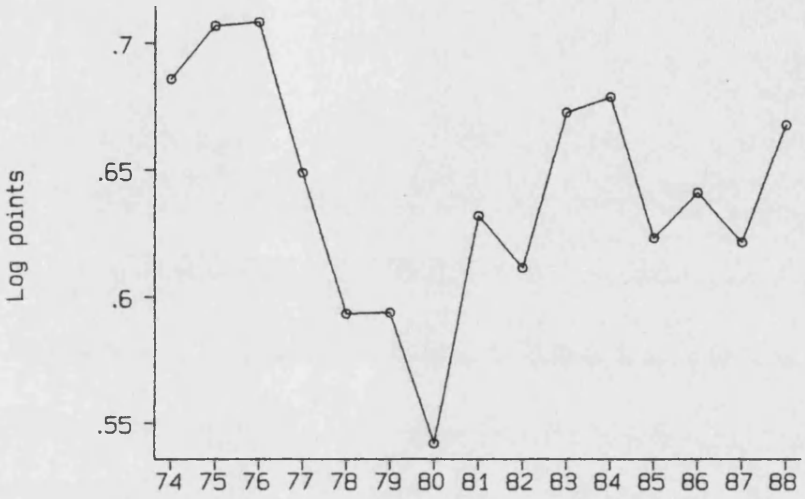


Figure 3.2
VOC-HIGH differential at 20 years

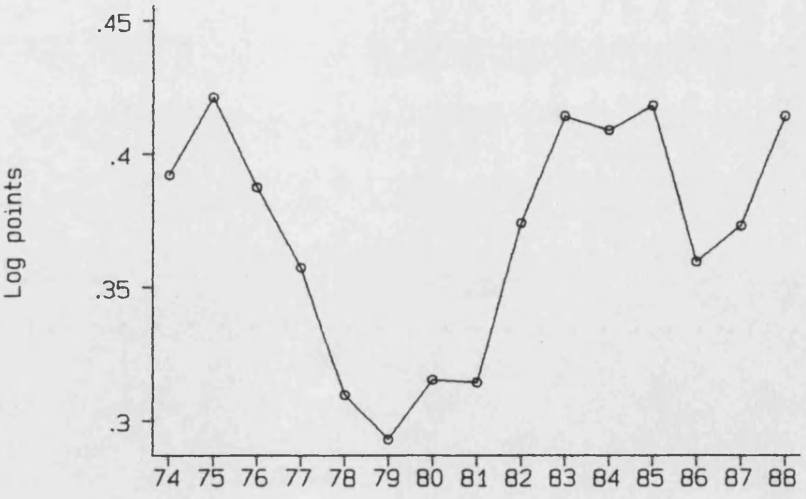


Figure 3.3
A-LEVEL differential at 20 years

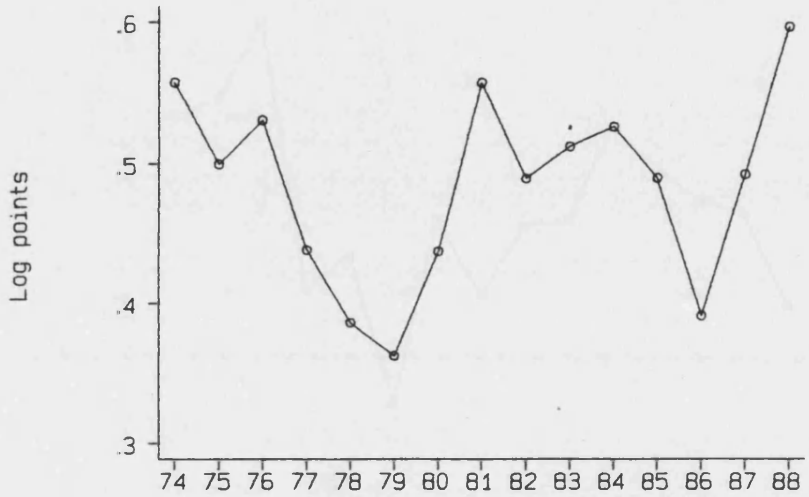


Figure 3.4
VOC-MIDDLE differential at 20 years

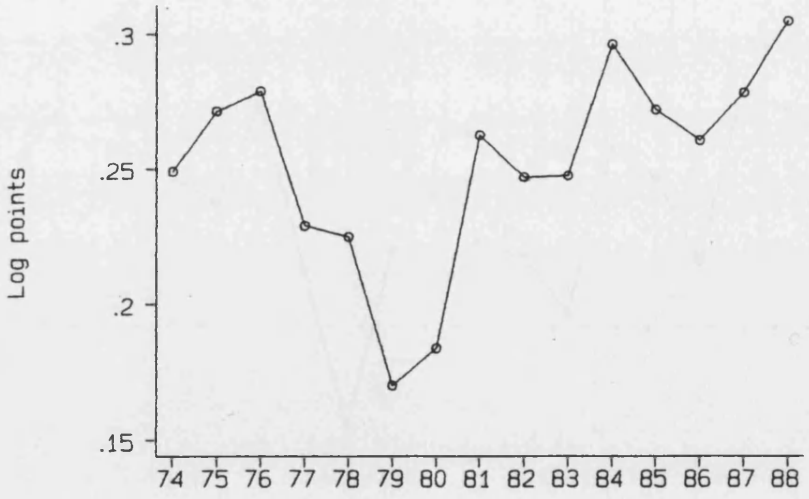


Figure 3.5
O-LEVEL 5+ differential at 20 years

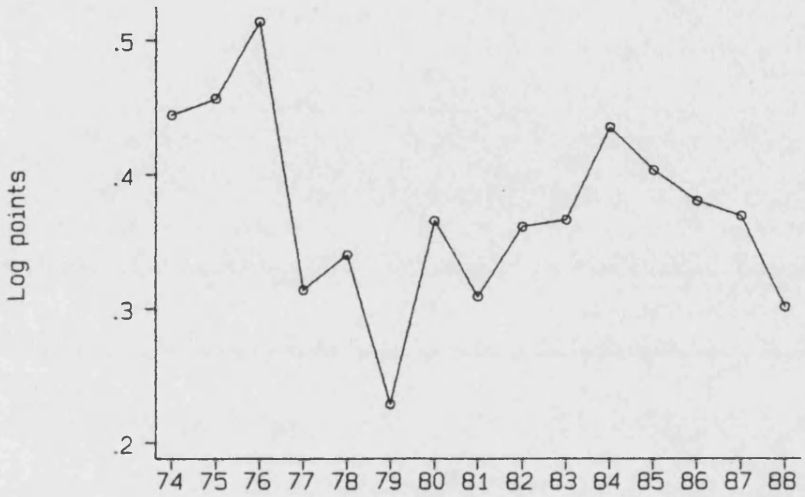


Figure 3.6
VOC-LOW differential at 20 years

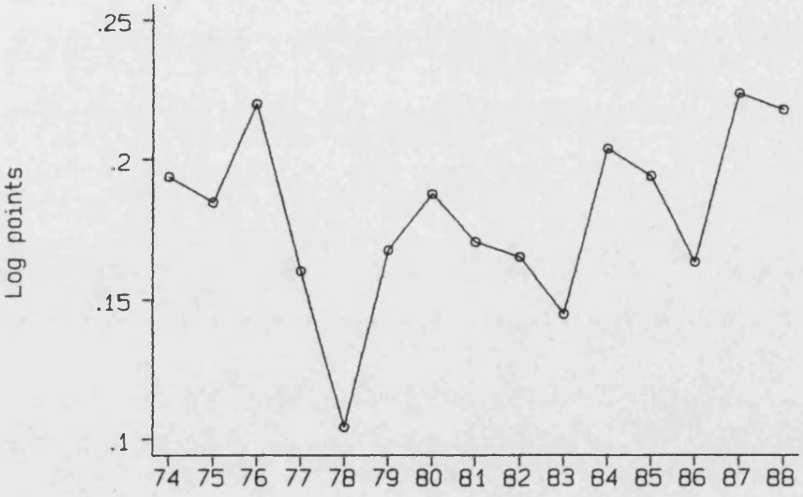


Figure 3.7
O-LEVEL 1-4 differential at 20 years

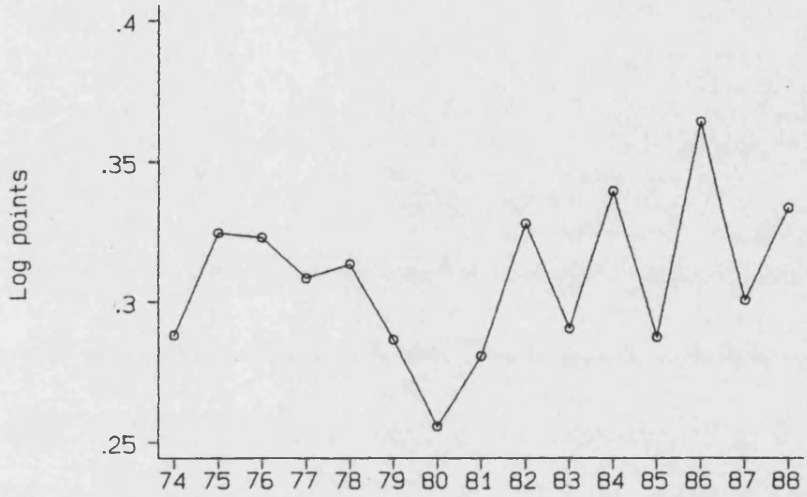


Figure 3.8
VOC-OTHER differential at 20 years

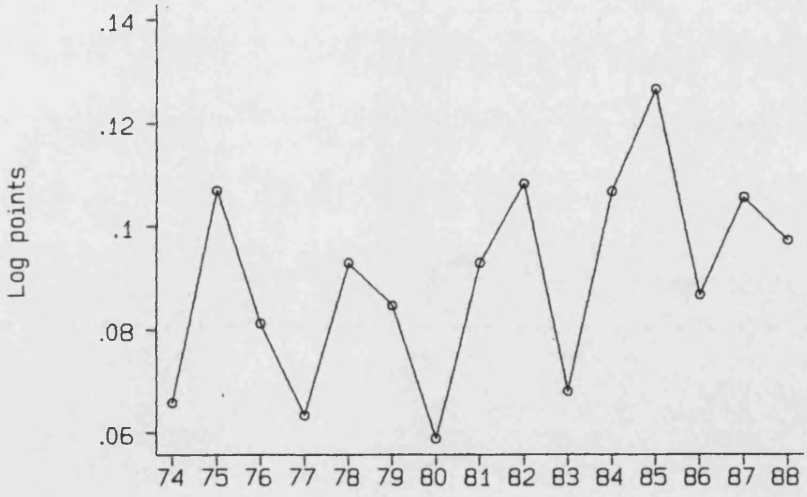


Figure 3.9
Average experience differential

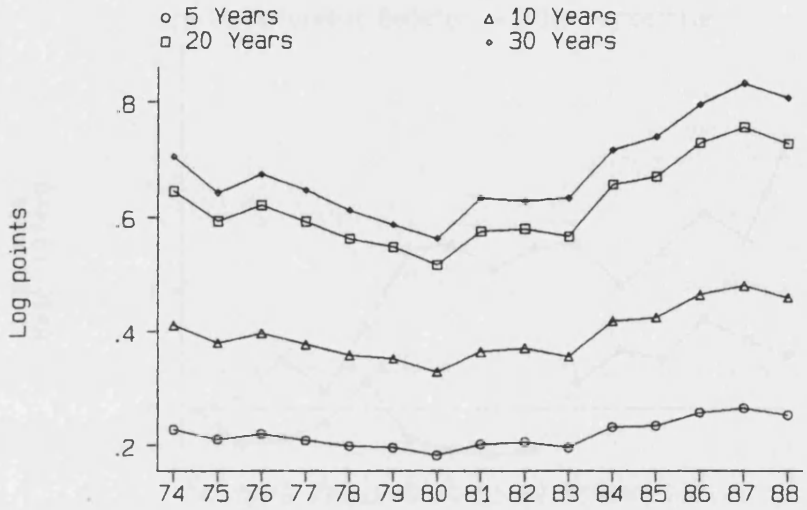


Figure 3.10
Share in total employment by industry group

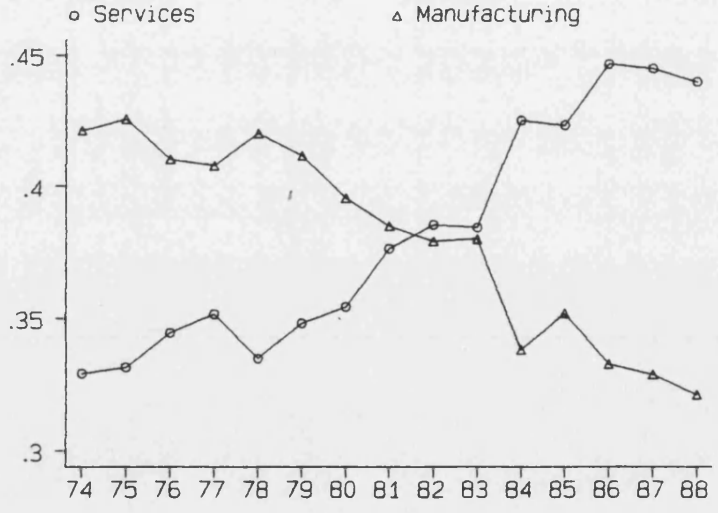
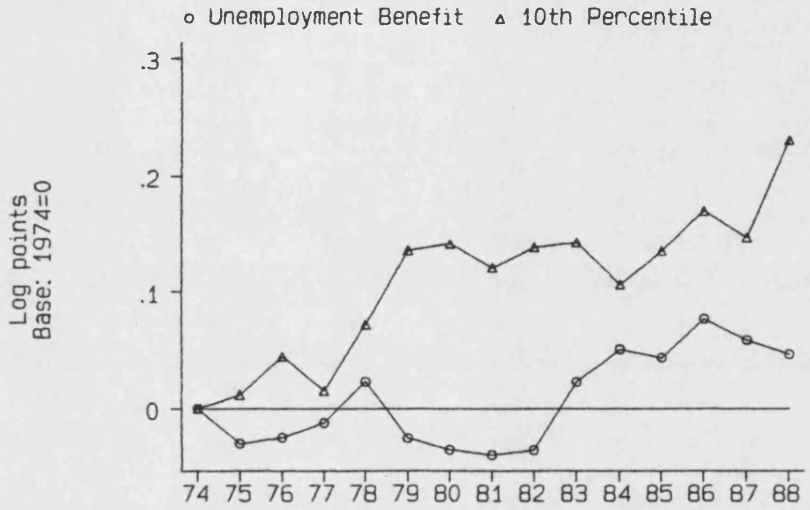


Figure 3.11
'Indexed' real unemployment benefit and earnings



Chapter 4: The rise in male earnings inequality in Britain, 1974-88

I. Introduction

The analysis in the previous chapter indicates that earnings inequality between groups of males defined by educational qualifications and experience levels increased substantially in Britain during the 1980s. This chapter extends this analysis of "between group" inequality by examining inequality within education, experience, region and industry groups. Together, the "between-" and "within-group" analysis can describe and, in part, explain changes in the pattern of overall earnings inequality in the 1970s and 1980s.

The chapter has three main findings. First, overall earnings inequality fell slightly between the mid- and late-1970s, only to rise sharply during the 1980s. Second, most of the rise in inequality -- between one-half and two-thirds occurred within groups defined by education, experience, region and industry, not between these groups. Finally, a rise in the relative demand in favour of workers with high skill levels and against those with fewer skills probably represents the most important factor behind the increase in earnings inequality during the 1980s.

As in the preceding chapter, the principal source of data is a sub-sample of the General Household Survey comprised of full-time male employees aged 16 to 64. The wage, education, experience, region and industry variables are exactly as in Chapter 3. Following recent work in the United States, the primary measure of inequality is the log earnings

differential for different percentiles of the earnings distribution (usually the 90th and the 10th percentiles). The standard deviation of log earnings is a second summary measure of inequality employed.

II. The Rise in Inequality

A. Overall Inequality

Figure 4.1 describes the path of real earnings for males in the 90th, 50th, and 10th percentiles of the overall weekly earnings distribution relative to their respective earnings in 1974. From 1974 to 1980, earnings of the 10th percentile grew fastest; the earnings of the 90th percentile grew slowest. 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. The data make clear that earnings inequality, measured by the "90-10 differential", fell slightly during the 1970s and rose substantially during the 1980s.

The data in panel (a) of Table 4.1 summarize the same earnings data at three periods of the GHS sample, 1974-76, 1978-80, and 1986-88. The 90-10 differential 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 sharply 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 (see Figures 4.2 and 4.3 for yearly data on both statistics). 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.[1]

The previous chapter suggests that an increase in inequality between education and experience groups may have made an important contribution to the rise in overall

inequality. Popular discussions of inequality in Britain during the 1980s have emphasized the importance of inequality between regions, especially the South East versus the "North", and between industrial sectors, especially manufacturing and services. Table 4.2 presents the results of a simple decomposition of the rise in earnings inequality designed to estimate the contribution that changes in inequality between groups have made to the rise in overall inequality.

The decomposition procedure involves first regressing workers' log real earnings against their education level and years of work experience. The residuals from this regression can be interpreted as individual earnings purged of variation due to "human capital" endowments valued at prevailing market prices. The difference between the level of the raw 90-10 differential and the 90-10 differential for the residuals thus tells us what portion of the overall differential is due to education and experience. Next, the residuals from the "human capital" equation were regressed against four dummy variables for industrial sector. As before, we can interpret the residuals from this regression as individual earnings purged of variation due to industry-related effects (after previously removing education and experience effects). The difference between the 90-10 differentials for the new residuals and those from the human capital equation represents the additional contribution of industry-related effects to the overall 90-10 differential. Finally, the same process was repeated for a regression including nine regional dummy variables. Changes over time in the share of the overall 90-

10 differential accounted for by the three types of regressors (human capital, industry, and region) will provide an estimate of the contribution of each set of factors to the rise in overall inequality.

Concentrating on developments between the periods 1978-80 and 1986-88, Table 4.2 indicates that changes in the distribution and valuation of labour market skills, region, and industry explain only about one-third of the increase in inequality. The overall 90-10 differential rose by 0.222 log points between 1978-80 and 1986-88. After controlling for education and experience, the 90-10 differential still increased by 0.143 log points. By this calculation, education and experience related differences accounted for only about one-third of the rise in inequality during the 1980s. The additional contribution of controls for industry reduces the changes in the 90-10 differential by less than 0.01 log points, and the inclusion of regional controls actually exaggerates the rise in earnings inequality.[2] In the end, increased inequality between groups defined by education, experience, industry and region, by this measure, explain about one-third of the rise in overall inequality. Two-thirds of the increase occurred <u>within</u> these same groups.[3]

B. "Within Group" Inequality

The simple decomposition of earnings described in the last section suggests that the most important factor driving the rise in overall earnings dispersion was the increase in within-group inequality. To illustrate the importance of within-group inequality, I have followed the earnings dispersion of various education and experience groups, industrial sectors and regions through pooled subsamples of the fifteen years of GHS surveys.

Panel (a) of Table 4.3 shows various measures of earnings dispersion for four education categories.[4] Among workers with a university degree, the 90-10 differential fell by 0.054 log points between 1974-76 and 1978-80, and then rose by 0.063 log points through 1986-88. Widening earnings inequality in the bottom half of the distribution of university graduates accounted for nearly all of the rise in the 90-10 differential: the 50-10 differential increased by 0.062, versus 0.001 for the 90-50 differential. The rise in within group inequality was much greater for workers with less than a university degree. The 90-10 differential for workers with middle, low, and no qualifications increased by 0.134, 0.174, and 0.164 log points respectively during the 1980s. These large increases in dispersion appeared to be fairly equally divided across the distribution (compare the 90-50 and 50-10 differentials, for example).

Table 4.4, panel (a), presents the same inequality measures for workers with 0 to 10, 11 to 20, and 21 or more years of work experience. All three groups demonstrate little

change in earnings inequality during the 1970s, followed by very large increases in the 1980s. The 90-10 differential, for example, increased by approximately 0.180 log points during the 1980s for all three groups.

Table 4.5, panel (a), examines the behaviour of earnings inequality within each of the ten standard British regions. Inequality remained largely unchanged across all the regions in the 1970s (except Scotland where it fell substantially). Within region inequality rose markedly in all regions in the 1980s, although the exact size of the increase varied considerably (from a 0.119 log point increase in the 90-10 differential in Yorkshire and Humberside to an 0.280 log point increase in the South West). The rise in inequality in the relatively prosperous South East was greater than or comparable to the increase in inequality in the economically depressed "North": the 90-10 differential increased by 0.226 log points in the South East versus 0.119 in Yorkshire & Humberside, 0.170 in the North, and 0.249 in the North West).

Table 4.6, panel (a) summarizes changes in the earnings distribution for workers in seven industrial groups. Inequality within five of the groups showed little change between 1974-76 and 1978-80. Over the same period inequality increased for workers in agriculture, and decreased for workers in services. Between 1978-80 and 1986-88, earnings dispersion increased across all industrial sectors, including manufacturing (where the 90-10 differential increased by 0.113 for Energy, Metals & Mining; 0.172 for Engineering & Vehicles;

and 0.225 for Other Manufacturing) and services (a rise of 0.181).

The rise in within group inequality during the 1980s does not disappear after using regresion techniques to control for observable differences within each group. Compare, for example, the residual distributions in panel (b) of Tables 4.3, 4.4, 4.5, and 4.6 with the raw earnings data in panel (a) of each table.[5] Regression effectively divides these groups into more disaggregated sub-groups where within-group inequality continues to be an important cause of overall inequality (see also Table 4.1, panel (b), and Table 4.1.2, panel (b)).

The data on earnings inequality within regions and industrial sectors challenges explanations of the rise in inequality based on increases in inequality between regions and industries. The level of inequality was generally greater in the South East than in other regions, and was substantially higher in services than manufacturing. Nevertheless, earnings inequality increased within all regions and industrial sectors, even after controlling for the distribution of observable labour market skills.

III. A Closer Look at "Within Group" Inequality

Unfortunately, in this context, "within-group inequality" is just another way of saying residual inequality -- the inequality that can't be explained using standard regression techniques. After documenting a similar rise in within-group dispersion in U.S. data, Juhn, Murphy and Pierce (1989) (JMP) adapted the standard decomposition of the type used in the previous section in order to extract the information from changes in residual inequality over time. This subsection implements the JMP decomposition using the British data.

The JMP decomposition starts with a simple earnings equation:[6]

$$Y_{it} = X_{it}\beta_t + u_{it}$$

JMP's fundamental insight is to view the residual as having two components, an individual percentile in the residual distribution, θ_{it}, and a corresponding distribution function, $F_t(.)$, such that:

$$u_{it} = F_t^{-1}(\theta_{it} \mid X_{it})$$

The inverse of the distribution function, thus, assigns a value (in log real earnings) to each percentile in the distribution of residuals.[7]

This framework allows us to isolate three sources of changes in inequality over time: first, changes in the distribution of observable individual characteristics (X_{it}); second, changes in the prices of these observable characteristics (β_t); and third, changes in the distribution

function of the residuals. The JMP decomposition ultimately seeks to reconstruct the wage distribution holding subsets of these components fixed (at their sample averages over the entire 1974-1988 period).

As the analysis of within group inequality suggested, much of the change in overall inequality stemmed from changes in the distribution of residuals over time. Figure 4.4 graphs the average value of the residuals by percentile for the years 1978 and 1988. In 1988, the log point value associated with any given percentile in the residual distribution was greater in absolute value than in 1978. In 1988, the "reward" for being in a high percentile of the residual earnings distribution is greater than it was in 1978; the "punishment" for being in a low percentile was more severe.

To estimate the effects of changes in observable characteristics over time, holding prices and the residual distribution constant, we can construct an estimated earnings distribution:

$$Y^1_{it} = X_{it}\bar{\beta} + \bar{F}^{-1}(\theta_{it} \mid X_{it})$$

We can also estimate the earnings distribution allowing observable characteristics and observable prices to vary through time while the residual distribution remains constant:

$$Y^2_{it} = X_{it}\beta_t + \bar{F}^{-1}(\theta_{it} \mid X_{it})$$

Finally, we can replicate the original distribution if we allow all three components to move over time:

$$Y^3_{it} = X_{it}\beta_t + F_t^{-1}(\theta_{it} \mid X_{it}) = X_{it}\beta_t + u_{it} = Y_{it}$$

After calculating the distribution of Y^1, Y^2, and Y^3 for each year, we have an empirical basis for carrying out the proposed decomposition. The change in inequality in Y^1 proxies the change due to the composition of observable characteristics (X_{it}); any additional change in inequality in Y^2 will capture the role of observable price changes (θ_t); and any remaining change in Y^3 will reflect changes in unobservable prices and characteristics (the residual distribution).

Figure 4.5 presents the results of the JMP decomposition. The first panel repeats the path of the overall 90-10 differential that appears in Figure 4.2. The other panels show the contribution of the three components discussed above toward the overall increase in the differential (for ease of interpretation these contributions are shown relative to their means over the entire sample period). Table 4.7, panel (b) summarizes the results of the JMP decomposition for the periods between 1978-80 and 1986-88. Changes in the distribution of education and experience, the observable characteristics, accounted for 15 percent (0.033 in a total of 0.222 log points) of the increase in the 90-10 differential. Increases in the returns to education and experience, the observable prices, contributed approximately 38 percent of the rise in the overall 90-10 differential. Changes in the distribution of residuals over time, the unobservable prices and quantities, were responsible for the

remaining 47 percent of the increase in the 90-10 differential.

The JMP decomposition confirms the important role of the residual distribution in explaining widening overall inequality. Nearly half of the increase in inequality in the 1980s (whether measured as the 90-10 differential or the standard deviation of earnings) stemmed from worker characteristics, or market valuations of these characteristics, which were unobservable to the econometrician. The JMP decomposition also gives some idea of the behaviour of unobservable prices and quantities over the sample period. The unobservables appear to have moved in a pattern roughly similar to the observable price changes: falling through the late 1970s and rising strongly thereafter.[8]

The coincident timing of the rise in the observable price measure and the unobservable price and quantity measure suggests a simple explanation for the rise in residual inequality. Unobservable price movements may be driven by the same relative labour demand shifts that were behind the observable price changes. If this were true, overall inequality may be responding to an increase in the market "price" of observable and unobservable (to the econometrician) labour market skills.[9] The rise in return to observable skills documented in the previous chapter could reflect a broader shift in relative labour demand toward those with higher skills, observable and unobservable.[10]

JMP suggest a possible test of the hypothesis that a rise in unobservable prices lies behind the growth in residual inequality over time. They argue that if the unobservable price hypothesis is correct we would expect to see widening differentials even where unobservable quantities were held constant. One experiment which captures this notion crudely involves looking at the change in inequality across age cohorts, under the assumption that unobservable quantities (quality of schooling, social experiences, "ability", etc.) are constant.[11] Table 4.8 reports within-cohort 90-10 differentials for 11 cohorts defined by five year date-of-birth bands. To follow a cohort (with constant unobservable quantities) through each of the three five year pooled samples read across the first three columns. To follow a comparable five-year experience group (with varying unobservable quantities) read across one column and up one row. Changes in within-cohort residual inequality are very close to the increase in inequality within comparable 5-year experience groups. Since changes in unobservable quantities could not have played a significant role in the widening within-cohort residual inequality, it seems reasonable to assume that nearly all of the rise in residual inequality stems from rises in unobservable skill prices.

This last finding has important implications for the broader debate over shifts in relative labour demand during the 1980s. Assuming that the labour supply decisions of full-time male employees did not change significantly over the period, the cohort analysis provides support for the idea that

the 1980s witnessed significant relative demand shifts in favour of skilled workers. Relative demand shifts appear to have been the primary cause of widening differentials between groups during the 1980s. The evidence here suggests that relative demand shifts also played a central role in the growth in within group inequality. Taken together, changes in relative demand in favour of skilled workers then appear to be the most likely cause of the rise in overall inequality during the 1980s.

IV. Some Conclusions

Overall earnings inequality among full-time male employees in Britain fell slightly during the 1970s and then rose sharply during the 1980s. While increasing inequality between groups defined by education, experience, region and industry accounted for between one-third and one-half of the rise in overall inequality during the 1980s, one-half to two-thirds of the rise in inequality occurred within these groups. The timing of the rise in within-group inequality, and the apparently small role played by changes in "unobservable" worker characteristics over the 1980s, suggests that the rise in within group inequality reflected a shift in relative labour demand in favour of workers with high levels of "unobservable" skills. The data presented here complements evidence of shifts in relative demand for observable skills and leaves relative demand shifts as the most likely cause of the rise in overall earnings inequality in Britain during the 1980s.

Appendix 4.1
Summary of full-time male weekly earnings distribution

Table 4.1.1
Summary of weekly log earnings distribution

	Percentile						
	90th	75th	50th	25th	10th	S.D.	N
1974	4.053	3.807	3.567	3.326	3.077	0.425	5908
1975	4.032	3.804	3.575	3.337	3.087	0.419	6460
1976	4.077	3.824	3.601	3.367	3.125	0.418	6215
1977	4.017	3.784	3.561	3.328	3.085	0.415	6345
1978	4.059	3.835	3.611	3.380	3.143	0.406	6150
1979	4.138	3.906	3.671	3.442	3.206	0.402	5593
1980	4.179	3.946	3.698	3.455	3.214	0.418	5733
1981	4.208	3.954	3.700	3.461	3.191	0.435	5627
1982	4.222	3.961	3.687	3.443	3.209	0.438	4260
1983	4.255	3.987	3.721	3.464	3.213	0.435	4310
1984	4.280	3.997	3.724	3.459	3.174	0.489	4066
1985	4.337	4.046	3.767	3.485	3.206	0.503	4320
1986	4.362	4.087	3.806	3.529	3.240	0.497	4289
1987	4.423	4.131	3.840	3.551	3.218	0.532	4508
1988	4.457	4.194	3.884	3.580	3.302	0.517	4137

Source: General Household Survey.
Note:
Data refer to log real weekly earnings of employed full-time male employees deflated using the monthly RPI with January 1974 as base.

Table 4.1.2
Weekly earnings deciles and quartiles

	90-50	75-25	90-50	50-10	S.D.	N
(a) Log real weekly earnings						
1974	0.487	0.481	0.487	0.489	0.425	5908
1975	0.457	0.467	0.457	0.488	0.419	6460
1976	0.476	0.457	0.476	0.476	0.418	6215
1977	0.456	0.456	0.456	0.476	0.415	6345
1978	0.448	0.455	0.448	0.468	0.406	6150
1979	0.467	0.464	0.467	0.465	0.402	5593
1980	0.481	0.491	0.481	0.485	0.418	5733
1981	0.507	0.493	0.507	0.509	0.435	5627
1982	0.535	0.518	0.535	0.478	0.438	4260
1983	0.535	0.523	0.535	0.507	0.435	4310
1984	0.555	0.538	0.555	0.550	0.489	4066
1985	0.570	0.561	0.570	0.561	0.503	4320
1986	0.556	0.558	0.556	0.566	0.497	4289
1987	0.583	0.580	0.583	0.622	0.532	4508
1988	0.573	0.614	0.573	0.581	0.517	4137
(b) Residual log real weekly earnings						
1974	0.390	0.391	0.390	0.380	0.321	5908
1975	0.381	0.391	0.381	0.379	0.323	6460
1976	0.366	0.380	0.366	0.363	0.310	6215
1977	0.366	0.368	0.366	0.364	0.311	6345
1978	0.373	0.350	0.373	0.340	0.302	6150
1979	0.383	0.384	0.383	0.371	0.309	5593
1980	0.407	0.400	0.407	0.374	0.326	5733
1981	0.394	0.385	0.394	0.382	0.329	5627
1982	0.422	0.397	0.422	0.376	0.342	4260
1983	0.412	0.402	0.412	0.388	0.335	4310
1984	0.422	0.431	0.422	0.406	0.358	4066
1985	0.444	0.438	0.444	0.418	0.375	4320
1986	0.437	0.438	0.437	0.426	0.363	4289
1987	0.440	0.450	0.440	0.455	0.390	4508
1988	0.467	0.440	0.467	0.439	0.380	4137

Source: General Household Survey.
Note:
(1) Data refer to log real weekly earnings of full-time male employees deflated using monthly RPI with January, 1974 as base.
(2) 90-10 refers to the difference between average earnings of workers in the 90th and the 10th percentiles of the distribution; 75-25 to the earnings difference for workers in the 75th and 25th percentiles; etc. S.D. is the standard deviation.
(3) Residual log real weekly earnings calculated using the distribution of the residuals from an OLS regression of log real weekly earnings against thirteen educational qualification dummies plus their complete interactions with years of experience and its square.

Notes

1. Table 4.1.1 lists the log real weekly earnings for workers in the 90th, 75th, 50th, 25th, and 10th percentile, as well as the standard deviation and sample size, of the distribution of full-time male employees for each year of the GHS. Table 4.1.2 uses the data in Table 4.1.1 to calculate the 90-10, 75-25, 90-50, and 50-10 differentials for the same period.

2. For the region controls to increase the 90-10 differential, between region inequality must be falling after controlling for education and experience differentials.

3. In theory, correlations between the three classes of regressors (human capital, industry, and region) could affect the share of the 90-10 differential attributable to each. Conducting the decomposition in the six possible permutations of the the three classes of regressors produces nearly identical results in all cases.

4. These categories are condensed from the 14 qualification groups used in the regressions reported in Table 3.1 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.

5. It is interesting that the rise in within region inequality drops greatly in all but the North and Yorkshire & Humberside after controlling for education and experience. The regional distribution of skills appears to be an important determinant of inequality at the regional level.

6. The regressors in the basic equation used here are 13 educational qualification dummies, years of potential work experience, the square of years of potential work experience, and the complete interaction of the education dummies with the experience terms.

7. Using a mapping from percentiles in the residual distribution to log points of real earnings makes the procedure nearly non-parametric. It is also possible to specify F^{-1} as representing a particular distribution such as the log normal.

8. The rise in the contribution of unobservables to the overall inequality begins two years earlier than the rise in unobservable prices. This differs from the pattern observed in the United States where the unobservables began to rise in the late 1960s, while the observable price measure didn't rise until the late 1970s. Juhn, Murphy and Pierce cite the different timing in the movement of overall and residual inequality as one of their major findings.

9. Juhn, Murphy and Pierce make the same argument for the U.S. (though the timing of the increase in residual inequality leads them to make it in a slightly different way).

10. The U.S. literature showing a rise in the returns to observable skills is large and growing. See, among many others, Bound and Johnson (1989), Blackburn, Bloom and Freeman (1991), Katz and Murphy (1990), Katz and Revenga (1989), and Mincer (1991). For Britain see Katz, Loveman and Blanchflower (1992), Moghadam (1990) and chapter 3 of this thesis.

11. This is the essence of a "pseudo-panel". See Deaton

(1985), Browning, Deaton and Irish (1985), and Schmitt and Wadsworth (1992).

Table 4.1
Weekly earnings deciles and quartiles

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings					
90-10	0.957	0.938	1.160	-0.020	0.222
75-25	0.468	0.470	0.584	0.002	0.114
90-50	0.473	0.465	0.571	-0.008	0.105
50-10	0.484	0.472	0.590	-0.012	0.117
S.D.	0.421	0.409	0.515	-0.012	0.106
(b) Residual log real weekly earnings					
90-10	0.753	0.750	0.888	-0.003	0.138
75-25	0.387	0.378	0.442	-0.009	0.064
90-50	0.379	0.388	0.448	0.009	0.060
50-10	0.374	0.362	0.440	-0.012	0.078
S.D.	0.318	0.312	0.378	-0.006	0.065

Source: General Household Survey.
Note:
(1) 90-10 refers to the difference between average earnings of workers in the 90th and the 10th percentiles of the distribution; 75-25 to the earnings difference for workers in the 75th and 25th percentiles; and so on. S.D. is the standard deviation.
(2) Earnings data refer to log real weekly earnings of full-time male employees deflated using the monthly RPI with January 1974 as base.
(3) Residual log real weekly earnings calculated using the distribution of the residuals from an OLS regression of log real weekly earnings against thirteen educational qualification dummies plus their complete interactions with years of experience and its square.
(4) Differentials are the averages over years indicated.

Table 4.2
Decomposing the change in weekly earnings dispersion

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) 90-10 Differential					
Total	0.957	0.938	1.160	-0.020	0.222
Ed & Exp	0.760	0.756	0.899	-0.004	0.143
Industry	0.753	0.750	0.886	-0.002	0.135
Region	0.742	0.732	0.876	-0.011	0.145
(b) Standard Deviation					
Total	0.421	0.409	0.515	-0.012	0.106
Ed & Exp	0.322	0.317	0.386	-0.005	0.070
Industry	0.318	0.312	0.378	-0.006	0.066
Region	0.315	0.307	0.373	-0.008	0.067

Source: General Household Survey.
Note:
(1) Earnings data refer to log real weekly earnings of full-time male employees deflated using the monthly RPI with January 1974 as base.
(2) "Ed & Exp" refers to residuals from OLS regression of earnings against thirteen educational qualification dummies plus their complete interactions with years of experience and its square. "Industry" refers to residuals from "Ed & Exp" equation regressed against six industry dummies. "Region" refers to residuals from "Industry" equation regressed against nine region dummies.
(3) Data are the averages over years indicated.

Table 4.3
Change in within-group inequality: education

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings					
UNIVERSITY					
90-10	1.061	1.006	1.070	-0.054	0.063
90-50	0.555	0.519	0.520	-0.036	0.001
50-10	0.506	0.488	0.549	-0.018	0.062
75-25	0.580	0.478	0.516	-0.103	0.038
S.D.	0.443	0.398	0.439	-0.045	0.040
N	856	1388	1618		
MIDDLE					
90-10	1.117	0.964	1.098	-0.153	0.134
90-50	0.532	0.449	0.510	-0.083	0.062
50-10	0.586	0.516	0.588	-0.070	0.072
75-25	0.548	0.465	0.537	-0.083	0.072
S.D.	0.465	0.421	0.467	-0.045	0.046
N	3473	3612	3835		
LOW					
90-10	1.035	1.011	1.185	-0.025	0.174
90-50	0.395	0.415	0.505	0.020	0.090
50-10	0.641	0.596	0.680	-0.045	0.084
75-25	0.455	0.465	0.539	0.010	0.074
S.D.	0.431	0.422	0.536	-0.009	0.114
N	4703	4618	3790		
NO QUALIFICATIONS					
90-10	0.784	0.792	0.956	0.008	0.164
90-50	0.366	0.393	0.475	0.027	0.082
50-10	0.418	0.399	0.481	-0.019	0.081
75-25	0.405	0.402	0.471	-0.003	0.069
S.D.	0.343	0.345	0.434	0.002	0.090
N	9551	7858	3691		

(continued)

Table 4.3
Change in within-group inequality: education (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings					
UNIVERSITY					
90-10	0.804	0.763	0.865	-0.042	0.102
90-50	0.417	0.389	0.450	-0.028	0.062
50-10	0.388	0.374	0.415	-0.013	0.040
75-25	0.411	0.379	0.403	-0.031	0.024
S.D.	0.345	0.316	0.372	-0.029	0.056
N	856	1388	1618		
MIDDLE					
90-10	0.875	0.788	0.900	-0.087	0.111
90-50	0.444	0.406	0.452	-0.038	0.046
50-10	0.431	0.382	0.448	-0.049	0.066
75-25	0.439	0.386	0.462	-0.052	0.076
S.D.	0.365	0.336	0.381	-0.029	0.045
N	3473	3612	3835		
LOW					
90-10	0.799	0.794	0.941	-0.005	0.146
90-50	0.415	0.406	0.462	-0.009	0.056
50-10	0.384	0.389	0.479	0.005	0.090
75-25	0.412	0.415	0.480	0.003	0.065
S.D.	0.332	0.328	0.404	-0.004	0.076
N	4703	4618	3790		
NO QUALIFICATIONS					
90-10	0.724	0.742	0.882	0.018	0.141
90-50	0.357	0.378	0.456	0.020	0.078
50-10	0.366	0.364	0.427	-0.002	0.062
75-25	0.378	0.381	0.446	0.003	0.065
S.D.	0.306	0.308	0.375	0.002	0.067
N	9551	7858	3691		

Source: General Household Survey.
Note:
(1) See endnote 4 for a description of educational categories.
(2) Earnings refer to log real weekly earnings of full-time male employees deflated using the monthly RPI with January 1974 as base.
(3) Residual earnings data based on residuals from OLS regression of log real earnings for each education category in each sub-sample against years of experience, its square and 9 region dummies.
(4) Data pooled over GHS surveys as indicated.
(5) N refers to number of observations in sub-sample.

Table 4.4
Change in within-group inequality: experience

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings					
0-10					
90-10	1.201	1.192	1.379	-0.009	0.187
90-50	0.506	0.505	0.574	-0.001	0.069
50-10	0.695	0.687	0.805	-0.008	0.118
75-25	0.642	0.607	0.669	-0.036	0.062
S.D.	0.478	0.463	0.579	-0.015	0.116
N	4423	4258	3609		
11-20					
90-10	0.808	0.824	0.990	0.016	0.165
90-50	0.431	0.449	0.509	0.018	0.060
50-10	0.377	0.375	0.481	-0.002	0.106
75-25	0.397	0.413	0.538	0.016	0.125
S.D.	0.346	0.346	0.421	-0.000	0.076
N	4095	4044	3049		
21+					
90-10	0.878	0.868	1.054	-0.010	0.186
90-50	0.488	0.480	0.583	-0.008	0.103
50-10	0.390	0.387	0.471	-0.002	0.083
75-25	0.441	0.436	0.539	-0.005	0.102
S.D.	0.371	0.362	0.437	-0.009	0.075
N	10065	9174	6275		

(continued)

Table 4.4
Change in within-group inequality: experience (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings					
0-10					
90-10	1.047	0.995	1.183	-0.052	0.188
90-50	0.488	0.456	0.518	-0.032	0.062
50-10	0.559	0.538	0.665	-0.020	0.127
75-25	0.553	0.504	0.594	-0.049	0.090
S.D.	0.423	0.397	0.498	-0.026	0.101
N	4423	4258	3609		
11-20					
90-10	0.696	0.705	0.822	0.008	0.118
90-50	0.349	0.364	0.423	0.015	0.060
50-10	0.347	0.341	0.399	-0.006	0.058
75-25	0.361	0.352	0.420	-0.009	0.068
S.D.	0.296	0.304	0.351	0.008	0.047
N	4095	4044	3049		
21+					
90-10	0.746	0.743	0.880	-0.003	0.137
90-50	0.379	0.391	0.458	0.012	0.067
50-10	0.367	0.352	0.422	-0.015	0.070
75-25	0.388	0.380	0.437	-0.008	0.057
S.D.	0.317	0.311	0.375	-0.006	0.064
N	10065	9174	6275		

Source: General Household Survey.
Note:
(1) Experience categories are 0 to 10, 11 to 20, and 21 or more years.
(2) Residual earnings data based on residuals from regression of log real earnings for each experience group in each sub-sample against 3 education qualification dummies, 9 region dummies, and 2 year dummies.
(3) See also Table 4.3, notes (2), (4) and (5).

Table 4.5
Change in within-group inequality: region

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings					
NORTH					
90-10	0.935	0.914	1.084	-0.022	0.170
90-50	0.442	0.427	0.462	-0.015	0.035
50-10	0.494	0.486	0.622	-0.007	0.135
75-25	0.431	0.460	0.519	0.030	0.059
S.D.	0.405	0.384	0.488	-0.020	0.104
N	1265	1105	656		
YORKSHIRE & HUMBERSIDE					
90-10	0.918	0.955	1.074	0.037	0.119
90-50	0.441	0.452	0.517	0.011	0.065
50-10	0.478	0.503	0.558	0.026	0.054
75-25	0.439	0.495	0.542	0.056	0.047
S.D.	0.392	0.400	0.502	0.008	0.103
N	1752	1630	1124		
NORTH WEST					
90-10	0.910	0.887	1.136	-0.023	0.249
90-50	0.445	0.422	0.516	-0.023	0.094
50-10	0.465	0.465	0.620	0.000	0.155
75-25	0.451	0.443	0.558	-0.008	0.115
S.D.	0.394	0.389	0.500	-0.005	0.111
N	2179	2075	1520		
EAST MIDLANDS					
90-10	0.887	0.912	1.160	0.025	0.248
90-50	0.416	0.410	0.521	-0.005	0.111
50-10	0.471	0.501	0.639	0.031	0.138
75-25	0.424	0.475	0.534	0.051	0.059
S.D.	0.396	0.418	0.496	0.021	0.078
N	1371	1299	1019		
WEST MIDLANDS					
90-10	0.855	0.871	1.078	0.016	0.207
90-50	0.380	0.402	0.515	0.022	0.114
50-10	0.476	0.470	0.563	-0.006	0.093
75-25	0.405	0.409	0.539	0.004	0.130
S.D.	0.369	0.379	0.495	0.011	0.116
N	2019	1859	1267		

(continued)

Table 4.5
Change in within-group inequality: region (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings (continued)					
EAST ANGLIA					
90-10	0.883	0.914	1.108	0.032	0.194
90-50	0.469	0.459	0.566	-0.009	0.107
50-10	0.414	0.455	0.542	0.041	0.086
75-25	0.433	0.499	0.563	0.065	0.065
S.D.	0.385	0.414	0.472	0.028	0.058
N	676	681	482		
SOUTH EAST					
90-10	1.048	1.018	1.244	-0.030	0.226
90-50	0.543	0.529	0.645	-0.013	0.116
50-10	0.506	0.489	0.599	-0.017	0.110
75-25	0.506	0.503	0.626	-0.003	0.122
S.D.	0.456	0.432	0.525	-0.024	0.093
N	5666	5182	4208		
SOUTH WEST					
90-10	0.936	0.894	1.175	-0.041	0.280
90-50	0.441	0.447	0.566	0.006	0.119
50-10	0.495	0.447	0.609	-0.048	0.161
75-25	0.470	0.455	0.585	-0.015	0.130
S.D.	0.409	0.407	0.516	-0.002	0.109
N	1296	1167	988		
WALES					
90-10	0.898	0.875	1.049	-0.023	0.174
90-50	0.431	0.418	0.529	-0.012	0.110
50-10	0.467	0.457	0.520	-0.011	0.063
75-25	0.483	0.444	0.529	-0.038	0.085
S.D.	0.415	0.383	0.491	-0.033	0.109
N	929	785	547		
SCOTLAND					
90-10	1.019	0.915	1.193	-0.105	0.278
90-50	0.485	0.471	0.608	-0.014	0.138
50-10	0.534	0.444	0.584	-0.090	0.140
75-25	0.523	0.470	0.579	-0.053	0.108
S.D.	0.432	0.397	0.511	-0.036	0.114
N	1430	1693	1123		

(continued)

Table 4.5
Change in within-group inequality: region (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings					
NORTH					
90-10	0.780	0.722	0.907	-0.059	0.185
90-50	0.385	0.363	0.438	-0.021	0.075
50-10	0.395	0.358	0.468	-0.037	0.110
75-25	0.387	0.359	0.445	-0.027	0.086
S.D.	0.317	0.299	0.355	-0.018	0.056
N	1265	1105	656		
YORKSHIRE & HUMBERSIDE					
90-10	0.770	0.772	0.920	0.002	0.148
90-50	0.377	0.387	0.477	0.010	0.089
50-10	0.393	0.385	0.443	-0.008	0.058
75-25	0.400	0.397	0.443	-0.003	0.046
S.D.	0.315	0.319	0.385	0.004	0.066
N	1752	1630	1124		
NORTH WEST					
90-10	0.732	0.747	0.890	0.015	0.142
90-50	0.362	0.385	0.422	0.023	0.037
50-10	0.370	0.362	0.468	-0.008	0.106
75-25	0.387	0.376	0.425	-0.011	0.049
S.D.	0.307	0.307	0.374	0.000	0.067
N	2179	2075	1520		
EAST MIDLANDS					
90-10	0.778	0.760	0.885	-0.019	0.125
90-50	0.407	0.368	0.431	-0.039	0.063
50-10	0.372	0.392	0.454	0.020	0.062
75-25	0.391	0.405	0.424	0.013	0.019
S.D.	0.325	0.331	0.370	0.005	0.040
N	1371	1299	1019		
WEST MIDLANDS					
90-10	0.695	0.712	0.832	0.018	0.120
90-50	0.337	0.358	0.427	0.020	0.070
50-10	0.357	0.355	0.405	-0.002	0.050
75-25	0.349	0.358	0.437	0.010	0.079
S.D.	0.288	0.295	0.366	0.007	0.071
N	2019	1859	1267		

(continued)

Table 4.5
Change in within-group inequality: region (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings (continued)					
EAST ANGLIA					
90-10	0.714	0.789	0.882	0.075	0.093
90-50	0.383	0.408	0.459	0.025	0.050
50-10	0.331	0.381	0.423	0.050	0.042
75-25	0.382	0.401	0.436	0.019	0.035
S.D.	0.295	0.347	0.368	0.053	0.020
N	676	681	482		
SOUTH EAST					
90-10	0.827	0.811	0.942	-0.016	0.131
90-50	0.413	0.425	0.496	0.012	0.071
50-10	0.414	0.385	0.446	-0.029	0.060
75-25	0.423	0.410	0.479	-0.013	0.069
S.D.	0.350	0.334	0.403	-0.016	0.069
N	5666	5182	4208		
SOUTH WEST					
90-10	0.769	0.749	0.876	-0.019	0.126
90-50	0.385	0.380	0.403	-0.005	0.023
50-10	0.384	0.370	0.472	-0.015	0.103
75-25	0.411	0.400	0.456	-0.011	0.057
S.D.	0.319	0.314	0.394	-0.005	0.080
N	1296	1167	988		
WALES					
90-10	0.746	0.761	0.872	0.014	0.111
90-50	0.365	0.389	0.425	0.024	0.036
50-10	0.381	0.372	0.447	-0.010	0.075
75-25	0.391	0.363	0.448	-0.028	0.085
S.D.	0.329	0.306	0.366	-0.023	0.060
N	929	785	547		
SCOTLAND					
90-10	0.794	0.771	0.919	-0.023	0.148
90-50	0.424	0.407	0.445	-0.017	0.038
50-10	0.370	0.364	0.474	-0.006	0.110
75-25	0.420	0.391	0.458	-0.029	0.067
S.D.	0.328	0.311	0.370	-0.017	0.059
N	1430	1693	1123		

Source: General Household Survey.
Note:
(1) Residual earnings from regression of log real earnings for each region in each sub-sample against 3 education qualification dummies, their complete interaction with experience and its square, and 2 year dummies.
(1) See Table 4.3, notes (2), (4) and (5).

Table 4.6
Change in within-group inequality: industry

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings					
AGRICULTURE					
90-10	0.748	0.827	1.144	0.079	0.317
90-50	0.355	0.384	0.494	0.029	0.110
50-10	0.392	0.442	0.650	0.050	0.207
75-25	0.372	0.381	0.464	0.010	0.083
S.D.	0.338	0.406	0.568	0.068	0.163
N	318	310	192		
ENERGY, METALS & MINING					
90-10	0.781	0.814	0.928	0.033	0.113
90-50	0.400	0.440	0.517	0.039	0.078
50-10	0.380	0.375	0.411	-0.006	0.036
75-25	0.384	0.402	0.469	0.018	0.066
S.D.	0.352	0.365	0.419	0.013	0.054
N	2472	2107	1253		
ENGINEERING & VEHICLES					
90-10	0.790	0.808	0.980	0.018	0.172
90-50	0.369	0.410	0.511	0.041	0.101
50-10	0.422	0.398	0.469	-0.023	0.070
75-25	0.381	0.380	0.486	-0.000	0.106
S.D.	0.365	0.356	0.456	-0.009	0.100
N	3863	3762	2265		
OTHER MANUFACTURING					
90-10	0.923	0.915	1.140	-0.009	0.225
90-50	0.449	0.432	0.542	-0.018	0.110
50-10	0.474	0.483	0.598	0.009	0.115
75-25	0.439	0.452	0.551	0.013	0.099
S.D.	0.409	0.396	0.520	-0.013	0.124
N	2343	2054	1453		

(continued)

Table 4.6
Change in within-group inequality: industry (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Log real weekly earnings (continued)					
CONSTRUCTION					
90-10	0.933	0.930	1.049	-0.003	0.118
90-50	0.445	0.458	0.502	0.013	0.043
50-10	0.488	0.472	0.547	-0.015	0.075
75-25	0.457	0.467	0.505	0.011	0.038
S.D.	0.400	0.405	0.494	0.005	0.089
N	1980	1816	1115		
TRANSPORT & COMMUNICATIONS					
90-10	0.815	0.787	0.919	-0.029	0.132
90-50	0.411	0.400	0.495	-0.010	0.095
50-10	0.405	0.386	0.424	-0.018	0.038
75-25	0.409	0.407	0.463	-0.002	0.055
S.D.	0.343	0.354	0.414	0.010	0.060
N	1861	1753	1123		
SERVICES					
90-10	1.192	1.115	1.296	-0.076	0.181
90-50	0.624	0.560	0.623	-0.064	0.063
50-10	0.568	0.555	0.673	-0.012	0.118
75-25	0.619	0.590	0.692	-0.029	0.102
S.D.	0.504	0.468	0.565	-0.036	0.097
N	5746	5674	5533		

(continued)

Table 4.6
Change in within-group inequality: industry (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings					
AGRICULTURE					
90-10	0.621	0.723	0.825	0.102	0.102
90-50	0.335	0.374	0.369	0.039	-0.005
50-10	0.286	0.349	0.456	0.063	0.107
75-25	0.321	0.347	0.399	0.026	0.052
S.D.	0.262	0.336	0.404	0.074	0.068
N	318	310	192		
ENERGY, METALS & MINING					
90-10	0.689	0.691	0.735	0.003	0.043
90-50	0.336	0.351	0.365	0.015	0.014
50-10	0.353	0.341	0.370	-0.012	0.029
75-25	0.361	0.358	0.385	-0.003	0.027
S.D.	0.291	0.294	0.333	0.004	0.039
N	2472	2107	1253		
ENGINEERING & VEHICLES					
90-10	0.692	0.681	0.804	-0.011	0.123
90-50	0.352	0.361	0.431	0.010	0.070
50-10	0.340	0.319	0.373	-0.021	0.054
75-25	0.346	0.338	0.417	-0.008	0.080
S.D.	0.287	0.283	0.336	-0.004	0.053
N	3863	3762	2265		
OTHER MANUFACTURING					
90-10	0.748	0.767	0.875	0.020	0.107
90-50	0.385	0.395	0.431	0.010	0.036
50-10	0.362	0.372	0.443	0.010	0.071
75-25	0.389	0.388	0.431	-0.001	0.043
S.D.	0.322	0.310	0.385	-0.011	0.074
N	2343	2054	1453		

(continued)

Table 4.6
Change in within-group inequality: industry (continued)

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(b) Residual log real weekly earnings (cont'd)					
CONSTRUCTION					
90-10	0.745	0.760	0.857	0.016	0.097
90-50	0.390	0.412	0.437	0.022	0.025
50-10	0.355	0.349	0.420	-0.006	0.072
75-25	0.385	0.373	0.411	-0.012	0.038
S.D.	0.310	0.308	0.365	-0.002	0.057
N	1980	1816	1115		
TRANSPORT & COMMUNICATIONS					
90-10	0.697	0.718	0.781	0.021	0.063
90-50	0.335	0.369	0.377	0.034	0.008
50-10	0.362	0.349	0.404	-0.013	0.055
75-25	0.359	0.369	0.406	0.010	0.037
S.D.	0.291	0.301	0.337	0.010	0.035
N	1861	1753	1123		
SERVICES					
90-10	0.849	0.807	0.965	-0.041	0.158
90-50	0.432	0.403	0.484	-0.029	0.081
50-10	0.417	0.405	0.482	-0.012	0.077
75-25	0.441	0.411	0.486	-0.030	0.075
S.D.	0.362	0.337	0.406	-0.025	0.069
N	5746	5674	5533		

Source: General Household Survey.
Note:
(1) Residual earnings from regression of log real earnings for each industry in each sub-sample against 3 education qualification dummies, their complete interaction with experience and its square, 9 region dummies, and 2 year dummies.
(2) See also Tables 4.3, notes (2), (4) and (5).

Table 4.7
JMP decomposition of change in earnings distribution

	Total Change	Observable Quantities	Observable Prices	Unobservable Prices and Quantities
(a) 1974-76 to 1978-80				
90-10	-0.020	0.035	-0.050	-0.004
90-50	-0.008	0.026	-0.036	0.002
50-10	-0.012	0.009	-0.014	-0.007
75-25	0.002	0.029	-0.020	-0.007
S.D.	-0.012	0.014	-0.019	-0.007
(b) 1978-80 to 1986-88				
90-10	0.222	0.033	0.084	0.106
90-50	0.105	0.024	0.044	0.038
50-10	0.117	0.010	0.040	0.068
75-25	0.114	0.022	0.037	0.055
S.D.	0.106	0.014	0.036	0.056

Source: General Household Survey
Notes:
(1) See text for a description of JMP decomposition.
(2) Data are averages for years shown.

Table 4.8
90-10 differential by year-of-birth cohorts

Year of Birth	(1) 74-78	(2) 79-83	(3) 84-88	Change by Cohort (2)-(1)	Change by Cohort (3)-(2)	Change by Experience (2)-(1)	Change by Experience (3)-(2)
(a) Log real earnings							
1963-67			1.067				0.166
1958-62		0.901	0.879		-0.022	-0.020	0.113
1953-57	0.921	0.766	0.920	-0.155	0.154	0.056	0.107
1948-52	0.710	0.812	0.981	0.102	0.168	0.043	0.097
1943-47	0.770	0.884	1.049	0.114	0.165	0.075	0.116
1938-42	0.809	0.932	1.078	0.123	0.145	0.054	0.135
1933-37	0.879	0.943	1.086	0.065	0.143	0.058	0.160
1928-32	0.885	0.927	1.064	0.041	0.137	0.038	0.142
1923-27	0.889	0.922	0.989	0.033	0.066	0.024	0.121
1918-22	0.898	0.867		-0.031		0.018	
1913-17	0.849						
Weighted Average	0.840	0.880	1.005	0.040	0.122	0.040	0.126
(b) Residual log real earnings							
1963-67			0.831				0.070
1958-62		0.760	0.772		0.011	0.026	0.063
1953-57	0.735	0.709	0.766	-0.026	0.058	0.062	0.055
1948-52	0.647	0.712	0.836	0.065	0.124	0.053	0.077
1943-47	0.659	0.760	0.849	0.101	0.089	0.065	0.072
1938-42	0.695	0.777	0.853	0.082	0.076	0.076	0.082
1933-37	0.701	0.772	0.870	0.071	0.098	0.050	0.113
1928-32	0.722	0.757	0.848	0.035	0.092	0.046	0.069
1923-27	0.711	0.779	0.840	0.068	0.061	0.045	0.102
1918-22	0.734	0.738		0.004		-0.006	
1913-17	0.744						
Weighted Average	0.701	0.750	0.825	0.052	0.077	0.049	0.076

Source: General Household Survey
Notes:
(1) See Table 4.3, notes (2) and (4).
(2) Residual earnings data based on residuals from regression of log real earnings for each cohort in each sub-sample against 13 education qualification dummies, experience, its square, 9 region dummies, and 4 year dummies.
(3) Data pooled over GHS surveys as indicated.

Figure 4.1
'Indexed' real weekly earnings by percentile

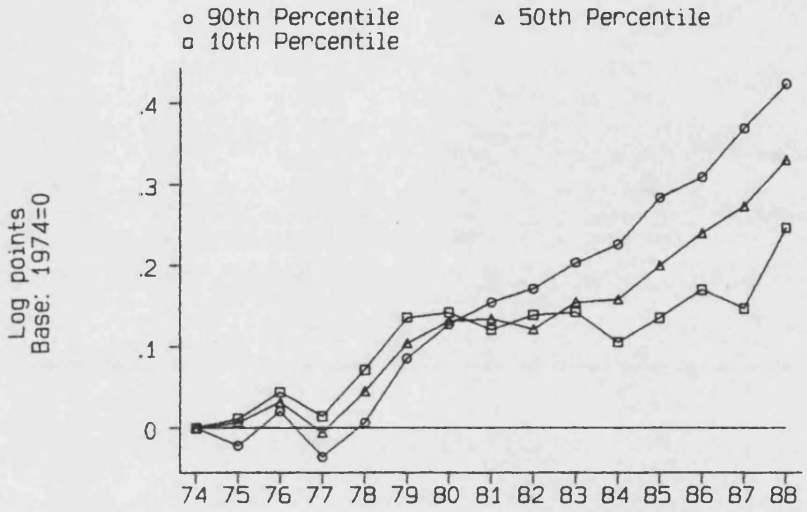


Figure 4.2
90-10 earnings differential

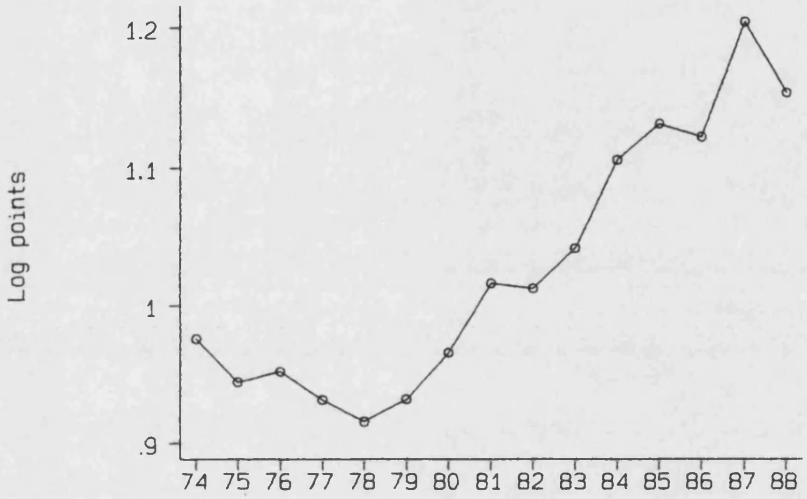


Figure 4.3
Standard deviation of earnings

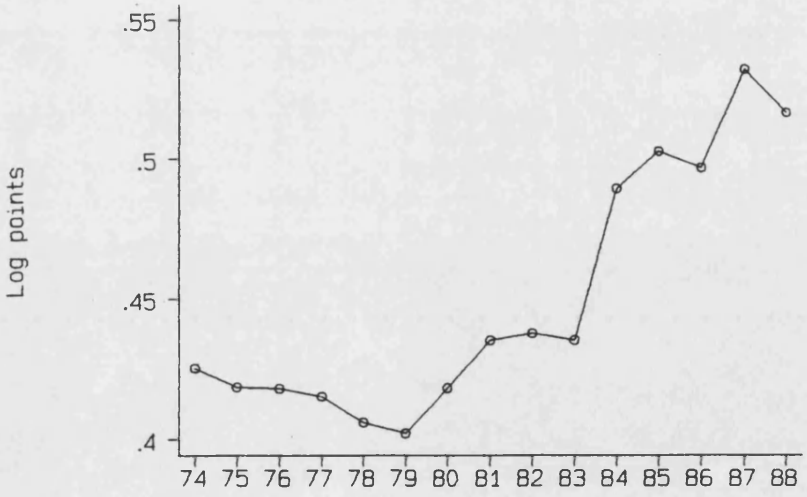


Figure 4.4
Earnings residual by percentile

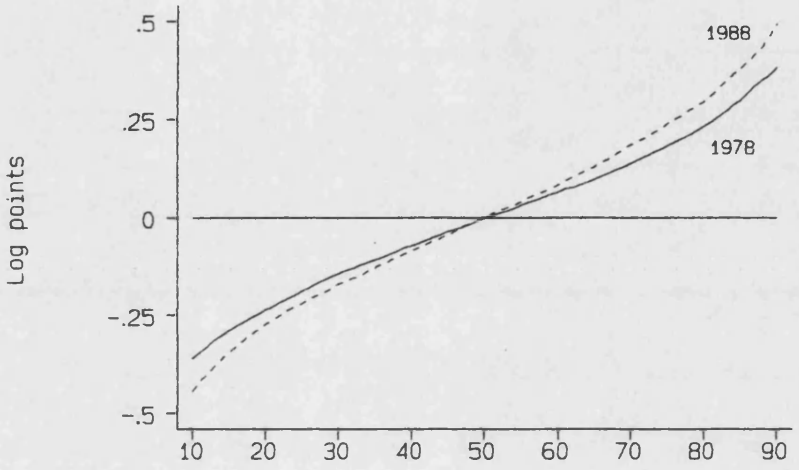
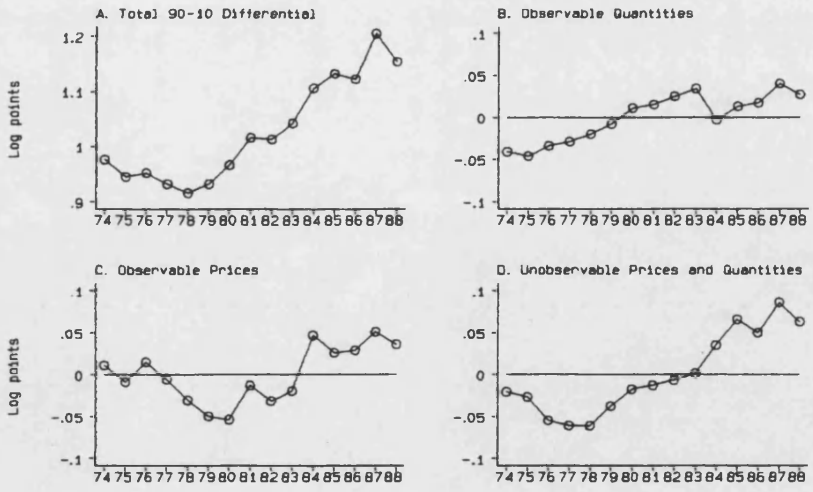


Figure 4.5
JMP decomposition, 1974-88



Chapter 5: Labour market skills and unemployment among British males, 1974-88

I. Introduction

Economic theory suggests that labour market skills such as education, training and work experience should have an important influence on an individual's probability of experiencing unemployment. The exact nature of the relationship, however, has rarely been quantified.[1] This chapter, therefore, seeks to verify empirically the link between labour market skills and unemployment using data from the General Household Survey for the years 1974 to 1988.

In a world with involuntary unemployment, labour market skills which lower the incidence or duration of unemployment may provide an important return which will not appear in the conventional measure of skill returns used in Chapter 3 since these are based solely on comparisons of earnings while in employment. This chapter uses the empirical estimates of the relationship between education, experience, and unemployment to adjust the standard calculations of the returns to skill to reflect the cost of involuntary unemployment. In light of the large rise in average unemployment rates -- and the significant rise in conventionally measured returns to skills during the 1980s -- the analysis pays careful attention to changes in the relationship between skills and unemployment over the fifteen year sample.

The empirical evidence indicates that labour market skills have an important impact on the incidence and duration of unemployment. Education substantially reduces the

probability that individuals become unemployed and lowers the expected length of their unemployment spells. The unemployment rate also falls as work experience grows, except for the most experienced group of workers. Unemployment duration, however, increases strongly with work experience. Incorporating the lower probability of experiencing unemployment into the standard measures of returns to skill, raises these returns by 2-6 percent during the period 1974-76, 4-9 percent during 1978-80, and 6-13 percent during 1986-88.

II. The Data

The principal source of data is a sub-sample of all males aged 16 to 64 from the 1974 to 1988 General Household Surveys described in Chapter 2. By the GHS definition, workers are unemployed if they did not work any paid hours in the week prior to their interview, and in the same week they were either: (i) waiting to take up a job which they had already obtained; (ii) looking for work; or (iii) would have looked for work except for temporary illness or injury. The definition is largely consistent with internationally used definitions of unemployment, but differs from the official British government definition which is based on eligibility for unemployment related benefits.

The GHS asks workers how long they have been unemployed during their current unemployment spell and according to their answers places workers in banded duration categories (less than one month, one month but less than three months, three months but less than one year, etc.). Unfortunately, the duration bands change from year to year. For simplicity and consistency, the chapter divides workers into two categories "short-term" unemployed (those unemployed less than one year) and the "long-term" unemployed (those unemployed one year or longer). The short-term unemployed have been out of work for less than one year; the long-term for one year or more.[1a]

The education and experience variables are identical to those used in Chapters 3 and 4.

III. Unemployment and Labour Market Skills

The unemployment rate is a function of the frequency with which individuals enter unemployment and the length of time they remain unemployed. Theory suggests that education and experience should have different effects on both these determinants of the unemployment rate. This section, therefore, examines the impact of education and experience on the incidence and duration of unemployment.

Several characteristics of the data, however, limit the specificity of the analysis. First, the sample size and the banded duration data of the GHS do not allow for a meaningful analysis of job separation and inflow into unemployment by skill groups. Instead, what follows uses the overall level of unemployment as a measure of "incidence". Clearly, this will tend to confuse incidence with duration. Second, the banded duration data only permit a distinction between workers in short-term unemployment (less than one year) and those in long-term unemployment (one year or more). This reduces our ability to draw specific conclusions about duration effects, particularly for recent entrants, early exiters, and the very long-term unemployed. Third, all duration data refer to uncompleted spells of unemployment. This severely limits the usefulness of the data for conventional statistical analysis of duration and labour market transitions.

A. Unemployment Incidence

"Human capital" theory provides the link between labor market skills and unemployment incidence. Education increases an individual's human capital, raising the rate of return to

future training. The higher return to training leads individuals and firms to invest more heavily in training for better educated workers. Since most training contains a portion which is employer-specific, trained workers are less likely to quit and firms are less likely to lay them off.

In a similar way, as individuals accumulate work (and life) experience, returns to training may rise. Work experience is also positively correlated with job tenure, suggesting that greater work experience will generally reflect longer ties with a particular firm. However, since investment in training may not pay-off except in the medium- or long-run, older workers with extensive labor market experience may see their realizable returns to training fall. This changing pattern of returns implies a U-shaped relationship between unemployment incidence and work experience: unemployment incidence should fall as workers gain experience and then rise again for the oldest and most experienced workers.

1. Education

Table 5.1 presents the unemployment rate for workers with nine educational qualifications in each year of the GHS sample. The average unemployment rate during the 1974-88 period, which appears in the last row of the table, provides a convenient summary of the education-unemployment relationship. Loosely speaking, the unemployment rate does appear to rise as educational attainment falls. The average unemployment rate for university graduates, for example, is 3.1 percent compared to 12.3 percent for workers with no educational qualifications. The relationship, however, is not

monotonic with respect to the qualification hierarchy. Among academic qualifications, workers with A-Levels have a higher unemployment rate (6.1 percent) than workers with five or more O-Levels (5.5 percent). Unemployment does rise smoothly as the level of vocational qualifications falls.[2]

In three of four cases, the unemployment rate for workers with vocational qualifications is lower than the rate for workers with roughly comparable academic qualifications (VOC-HIGH 2.6 percent versus UNIV 3.1 percent; VOC-MIDDLE 3.8 percent versus A-LEVEL 6.1 percent; VOC-OTHER 6.7 percent versus O-LEVEL 8.1 percent); in the fourth case, the unemployment rate is virtually identical (VOC-LOW 5.6 percent versus O-LEVEL 5+ 5.5 percent). Since academic qualifications consistently provide higher financial returns than comparable vocational qualifications[3], this raises the possibility that workers choosing vocational qualifications may be trading-off higher direct returns for a lower risk of unemployment.

The pattern of relative unemployment by qualification changes markedly over the sample. In 1974, the year with the lowest average unemployment rate, unemployment among workers with no qualifications was 1.9 times the rate for university graduates. In 1983, the year with the highest average unemployment rate, the ratio was 5.8. Even after the economic recovery which took place during the last part of the sample, the unemployment rate for workers with no qualifications was 3.5 times higher than for workers with a university degree. The relative unemployment rates of workers with other qualifications show a similar pattern over the sample.

The sample unemployment rates used in Table 5.1, however, may not be the most accurate way to measure changes in the effects of education over time. The sample figures do not control for other worker characteristics which may be correlated with education -- and vary over time. The most important of these characteristics is work experience (or, closely related, age). In Britain, younger, less experienced workers tend to have higher levels of formal education than their more experienced counterparts. Less-experienced workers suffer from much higher unemployment rates than more-experienced workers independent of educational attainment (see below). The sample unemployment rates may therefore understate the reduction in unemployment incidence due to educational attainment, since better educated workers are also younger. This bias probably grows over the sample period as better educated workers become younger and younger. This changing bias could invalidate comparisons of relative unemployment effects across years. A second compositional issue which may affect the comparison of relative unemployment rates is the geographical distribution of workers with educational qualifications.

To control for these compositional effects, I have used a simple technique based on a probit equation of unemployment probability. The probit equation first estimates the probability that each worker in each year of the GHS sample was unemployed as a function of their education level, their years of potential work experience (and its square), and their geographical region. Then, using the parameter estimates from

these equations I re-estimated each individual's probability of being unemployed assuming that they had 20 years of work experience and were distributed across regions exactly according to the overall distribution for the entire fifteen year sample. This technique should control for changes in relative unemployment rates due solely to changes in the experience level and geographic distribution of educational qualifications.

Table 5.2 summarises these probit-estimated unemployment rates by educational qualification. Since all workers now have twenty years experience, the probit unemployment rates are lower than the GHS sample rates for every qualification (compare the last row of Table 5.2 with the last row of Table 5.1). The pattern of relative unemployment over time, however, changes very little after controlling for experience and region. The controls, however, do all but eliminate the comparative advantage of vocational over academic qualifications. This suggests that the lower levels of unemployment among workers with vocational qualifications probably reflect work experience and regional factors correlated with these qualifications and not any special advantage offered by vocational training.

2. Experience

Turning to potential work experience, Table 5.3 displays sample unemployment rates for banded experience levels (see also Figure 5.2). As theory suggests, the average unemployment rate by experience group follows a U-shaped pattern as experience increases (for the complete fifteen year

sample see the last row). The average unemployment rate is very high for workers with 0-5 years experience (14.1 percent), and declines steadily through workers with 21-30 years experience (5.9 percent). For workers with 31 or more years experience, the average unemployment rate then rises to 7.2 percent.[4]

The variation over time in relative unemployment rates by experience is not as large as for educational qualifications. For example, the ratio of the unemployment rate for those with 0-5 years experience to those with 21-30 years experience was 1.9 in 1974 and 3.0 in 1983.

As with educational qualifications, the sample unemployment rates may give a biased impression of the unemployment effects of work experience since they do not control for other workers characteristics. Table 5.4 presents probit-estimated unemployment rates which control for educational qualifications and region of residence using a procedure almost identical to that used to construct Table 5.2. In this case, individuals were assumed to have their actual level of work experience, to possess the sample average level of education, and to be distributed across regions according to the sample average distribution. The probit procedure does not alter the basic U-shaped relationship between the unemployment rate and years of experience. The probit-estimated rates, however, are lower for more experienced workers and higher for less experienced workers. This suggests that below average education levels contribute to the higher unemployment of the most experienced workers

(31+ years). Similarly, the high relative education levels of young people help to lower otherwise elevated unemployment rates.

B. Unemployment Duration

Human capital theory provides fairly clear predictions concerning the relationship between education, experience, and unemployment incidence. Theory is less clear-cut when it comes to predicting the effect of labour market skills on the duration of unemployment. Several factors suggest that duration should be an increasing function of labour market skills. Hiring and training costs for skilled workers are generally higher than those for the less-skilled. Firms and high-skilled workers may also have more difficulty finding an appropriate "match", while unskilled workers can presumably work in any unskilled job. Other factors argue that higher skill levels should be associated with shorter unemployment spells. Skilled workers can take unskilled jobs while they search for work more closely suited to their abilities. Skilled workers are also more geographically mobile. Given that unemployment-related benefits are largely unrelated to previous or expected earnings, skilled workers have a systematically lower replacement ratio, which might make unemployment relatively more unpleasant. Relative labour demand may also be biased in favour of skilled workers.[5]

The effect of skills on duration then appears to be an empirical question. This section investigates the relationship using crude data on the long-term unemployment

rate -- defined as the share of all unemployed whose uncompleted unemployment spells have lasted one year or more.

1. Education

Table 5.5 presents the sample long-term unemployment rates by educational qualification for each year of the sample.[6] As theory suggests, the relationship between education and unemployment duration is not straightforward. Looking first at the "academic" qualifications, the sample average long-term unemployment rate (see the last row) increases slightly and almost continuously as the qualification level falls: the sample average long-term rate for university graduates (UNIV) is 19 percent; for other academic qualifications (A-LEVEL, O-LEVEL 5+, O-LEVEL) long-term unemployment is between 22 and 25 percent. For vocational qualifications, the long-term unemployment follows a different pattern. The sample average long-term unemployment rate, at 39.0 percent, is highest for workers with the highest qualification (VOC-HIGH). Long-term unemployment is approximately 25 percent for workers with intermediate levels of vocational qualifications (VOC-MIDDLE, VOC-LOW) and rises again to 38.5 percent for workers with the low-level, miscellaneous apprenticeships (VOC-OTHER). While the relationship between qualifications and long-term unemployment displayed in Table 5.5 is not a simple one, the long-term unemployment rate for workers with all educational qualifications is substantially lower than the average rate for those without educational qualifications (46.4 percent).

The average share of long-term unemployed in total unemployment increases steadily over the fifteen year sample (see the last column of Table 5.5). The average long-term unemployment rate is approximately one-fourth in the first three years of the sample, rising to just over one-half during the last six years. The rise in long-term unemployment appears to be stronger among workers with no qualifications. Among university graduates, for example, the sample long-term rate rises from 0.0 percent in 1974 to a peak of 31.6 percent in 1988. For workers with no qualifications, the long-term rate increases from 28.4 percent in 1974 to its own peak of 63.9 percent in 1988.

Table 5.6 uses a probit equation to control for experience and region effects, following the procedure used for unemployment incidence. The figures reported assume that all workers have 20 years experience and "live" in the average region of the full sample of unemployed workers. Due to the relatively low unemployment rates of the 1970s and the small GHS sample size, it is not possible to construct probit-controlled long-term unemployment rates for the 1970s.[7] The probit estimates for the 1980s show no systematic differences with the sample rates.

To summarize, education does seem to reduce the duration of unemployment spells, though education beyond a certain point, or particular kinds of education do not always lead to shorter durations. The factors which theory suggests should allow education to contribute to shorter durations -- greater geographic and job mobility, lower relative replacement

ratios, and stronger relative demand -- appear more important than those factors which push in the opposite direction.

2. Experience

Sample long-term unemployment rates by experience level appear in Table 5.7 (see also Figure 5.4). In contrast to the mixed relationship between education and duration, the data show a smooth tendency for long-term unemployment to increase with experience (see the last row, for example). The differences in the level of long-term unemployment are substantial: only one-fifth of the sample with 0-5 years of experience were long-term unemployed, while over half of the sample with 31 or more years of experience had been unemployed for more than a year.[8]

Over time, the long-term rates across experience groups move in a similar way, with mild increases (between 3 and 10 percentage points) during the decade of the 1970s and sharp rises during the 1980s (about 14 percentage points for workers with 0-5 years experience and more than 20 percentage points for the rest).

In strong contrast to education, greater levels of experience appear to raise the duration of unemployment spells. The geographic mobility associated with more educated workers may not hold for more experienced workers with greater economic and personal ties to a region. The pay-back periods associated with hiring and job-specific training costs for more experienced workers may also exceed the expected tenure, especially for the most experienced workers. Furthermore, for a variety of reasons, older workers have better claims to

unemployment related benefit.[9] They may also have greater personal savings to use to finance search, and a greater pay-off to finding a job which closely matches their skills.

IV. Unemployment and Returns to Labour Market Skills

The GHS data clearly indicate that labour market skills have a substantial impact on the incidence and duration of unemployment. In a world with involuntary unemployment, any reduction in the likelihood that workers' find themselves unemployed represents a potentially important financial return to skill. Standard measures of the direct financial returns to skill therefore may underestimate the true overall returns. This section uses a simple method to adjust conventional estimates of returns to skill to take into account the indirect returns from lower unemployment probabilities.

Using data from a single cross-section of the GHS, Nickell (1979) proposed adjusting returns to education for unemployment probabilities in two ways. To compute a private rate of return, he calculated the expected after-tax earnings of each worker as: $E(y) = qw + (1-q)b$, where y refers to weekly income, w, weekly earnings from wages, b, weekly earnings from benefits, and q is the probability that a worker is employed in a given week. Alternatively, to estimate the social rate of return, he multiplied workers' gross weekly income by their probability of being employed in a given week.

Both approaches have drawbacks. In the absence of data on after-tax earnings and the actual level of unemployment benefits, calculating the private rate of return for even a single year of the GHS involves making a large number of assumptions. Nickell applied standard tax rules to individuals' reported gross earnings under the assumption that the none of the individuals' spouses worked. He estimated

unemployment benefits for currently employed and unemployed workers as the level of supplementary benefit to which their families would be entitled under published benefit rules. Both of these calculations involve considerable simplification. In an analysis of a single cross-section of the GHS the impact on the final conclusions are likely to be small. Over time, however, as the tax and benefit structures change, conclusions about the relative returns to skills may be much more sensitive to unverifiable assumptions about tax payments, benefit receipt, and other factors. Even accepting these kind of simplifications, implementing them for fifteen years of the GHS would require a substantial computational burden. With respect to the social rate of return, as Nickell observes, his proposed measure only "loosely" corresponds to the true social return. For it to reflect the actual social return, increments in human capital would have to reduce the unemployment rate for those acquiring them without shifting unemployment to individuals with less human capital.

With these practical and conceptual difficulties in mind, the unemployment-adjusted returns to skills in Tables 5.10 and 5.11 use pre-tax weekly earnings differentials adjusted for relative employment probabilities. These adjusted returns most closely resemble Nickell's "social returns" measure. However, given very real concerns that human capital raises employment probabilities for the more-skilled largely, or even exclusively, by reducing employment probabilities for the less-skilled, I prefer to interpret the figures in Tables 5.10 and 5.11 as a hybrid of private and

public returns. They seek to establish a financial order of magnitude for the effect of unemployment on returns to skill, rather than to provide estimates of final private or public returns to skill acquisition.

A. Education

The data summarized in Table 5.10 indicate that the financial returns to education increase substantially after including the unemployment effects of educational qualifications. Panel (a) reproduces direct estimates of financial returns to qualifications from Chapter 3. Panel (b) multiplies these rates by the relative employment rate for each qualification -- the ratio of the employment rate for each qualification to the employment rate for the no qualifications group, $(1 - u_i)/(1 - u_{NOQUAL})$ (see Table 5.9). The unemployment adjustments increase the estimated returns to education during the period 1974-76 by between 2 and 4 percent (compare the first column of panel (a) with the first column of panel (b)). The unemployment adjustments for 1978-80 are slightly larger at between 4 and 6 percent for all but the lowest qualification, OTHER (see column two). During 1986-88, however, the unemployment adjusted returns lie between 9 and 13 percent above the unadjusted figures (see column three), again excluding the lowest qualification. The unemployment effect contributes substantially to the already large increases in returns to qualifications observed in the 1980s (see column five). The rise in rates of return to a university degree, for example, increases by over 80 percent, from 6.7 percent to 12.2 percent between 1978-80 and 1986-88.

The increase in unemployment adjusted differentials for other qualifications over the same period generally range between 20 and 40 percent.

B. Experience

Table 5.11 presents roughly comparable data for experience levels.[10] The pattern for experience levels generally resembles the one for educational qualifications. The adjusted returns to experience are only slightly higher than unadjusted returns during 1974-76 -- between 3 and 6 percent for all but the most experienced workers, where the adjustment actually lowers the expected returns by about 7 percent. During the late 1970s, the unemployment adds between 4 and 9 percent to experience returns. By the end of the sample period, the adjustments range between 6 and 13 percent. The adjusted returns raise the already strong growth in experience differentials during the 1980s by approximately 20 to 40 percent (compare column five of panels (a) and (b)).

Across education and experience groups, the rise in average unemployment rates brought with it an increase in relative unemployment rates for low-skilled workers. The deteriorating unemployment position of low-skilled workers reinforced the relative erosion in earnings-in-employment observed during the 1980s. The very poor employment performance of low-skilled workers provides additional evidence to support the idea advanced in Chapters 3 and 4 that a dwindling relative demand for low-skilled labour lies behind the decline in the relative earnings of low-skilled workers in Britain.

V. Some Conclusions

As theory suggests, education and experience have an important impact on unemployment. Education reduces both the incidence and the duration of unemployment spells. Over most ranges, work experience generally lowers the likelihood that individuals find themselves unemployed, but raises the expected duration of unemployment spells.

Adjusting conventionally measured returns to labour market skills to take into account relative unemployment probabilities raises returns to skills by a meaningful degree. The magnitude of unemployment adjustments increase over the 15 year sample, especially as the average unemployment rate climbs during the 1980s. Between 1978-80 and 1986-88, unemployment adjusted skill differentials rose between 20 and 80 percent more than the already large increases to direct financial returns. The pattern of relative unemployment provides further evidence for the claim that relative demand for skilled labour increased sharply in Britain during the 1980s.

Appendix 5.1
Sample size by skill groups

Table 5.1.1
Sample size by educational qualification

	UNIV	VOC-HIGH	ALEVEL	VOC-MED	OLEVEL5+	VOC-LOW	OLEVEL	VOC-OTHER	NOQUAL	OTHER	ALL
1974	330	321	229	315	403	313	345	716	4072	478	7522
1975	433	368	234	363	480	411	452	805	4261	592	8399
1976	403	363	257	344	507	429	427	758	4111	598	8197
1977	611	523	134	337	484	291	421	859	3886	599	8145
1978	585	486	147	357	455	355	460	839	3649	547	7880
1979	595	478	63	168	587	178	428	730	3562	534	7323
1980	616	528	139	355	478	398	445	729	3384	592	7664
1981	639	517	160	384	471	361	473	766	3557	628	7956
1982	536	502	120	306	357	254	373	591	2694	464	6197
1983	542	512	200	414	282	345	442	614	2518	510	6379
1984	578	494	233	425	254	375	462	519	2279	517	6136
1985	649	541	266	448	302	365	521	457	2238	524	6311
1986	692	612	274	462	293	434	549	524	2099	571	6510
1987	751	643	298	530	257	385	549	501	2214	582	6710
1988	688	629	310	490	293	403	553	367	1972	549	6254
SUM	8648	7517	3064	5698	5903	5297	6900	9775	46496	8285	107583

Source: General Household Survey

Table 5.1.2
Sample size by experience level

	0-5	6-10	11-20	21-30	31+	ALL
1974	974	859	1704	1561	3089	8187
1975	1136	885	2043	1670	3407	9141
1976	1161	856	1958	1615	3263	8853
1977	1214	948	2084	1578	2958	8782
1978	1302	888	1926	1630	2896	8642
1979	1288	873	1887	1602	2660	8310
1980	1373	915	1870	1668	2653	8479
1981	1382	931	2022	1732	2735	8802
1982	1091	769	1526	1364	2107	6857
1983	1076	784	1620	1407	2117	7004
1984	1127	817	1557	1453	1852	6806
1985	1108	873	1597	1524	1868	6970
1986	1166	889	1573	1548	1931	7107
1987	1243	914	1622	1529	1983	7291
1988	1032	872	1553	1545	1874	6876
ALL	17673	13073	26542	23426	37393	118107

Source: General Household Survey

Appendix 5.2
Summary of long-term unemployment rates by skill groups

Table 5.2.1
Changes in long-term unemployment rates by skill level

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Educational qualifications					
UNIVERSITY	0.061	0.203	0.214	0.143	0.010
VOC-HIGH	0.426	0.337	0.382	-0.089	0.044
A-LEVEL	0.089	0.194	0.279	0.106	0.084
VOC-MIDDLE	0.167	0.108	0.390	-0.058	0.282
O-LEVEL 5+	0.211	0.109	0.241	-0.102	0.132
VOC-LOW	0.157	0.131	0.367	-0.026	0.236
O-LEVEL 1-4	0.057	0.152	0.345	0.095	0.193
VOC-OTHER	0.215	0.297	0.526	0.082	0.229
NO QUAL	0.281	0.346	0.622	0.065	0.276
(b) Years of experience					
0-5	0.073	0.117	0.256	0.044	0.139
6-10	0.167	0.268	0.472	0.100	0.204
11-20	0.183	0.281	0.563	0.098	0.282
21-30	0.276	0.343	0.575	0.067	0.232
31+	0.409	0.446	0.655	0.036	0.209

Source: General Household Survey

Notes

1. Nickell (1979) estimates the impact of years of schooling on the incidence and duration of unemployment in Britain using data for males from the 1972 General Household Survey. Mincer (1991) conducts a careful analysis of the unemployment effects of education on a sample of white males taken from the Panel Study on Income Dynamics for the years 1976-81. Ashenfelter and Ham (1979) examine the link between education and unemployment among a panel of white males from the University of Michigan Income Dynamics Survey for the years 1967-74.

2. Sample size by educational qualifications and experience levels, by year appear in Appendix 5.1, Tables 5.1.1 and 5.1.2. Figure 5.2 graphs the sample unemployment rates for the four condensed education categories introduced in Chapter 4.

3. See Chapter 3.

4. Nickell (1979) finds a similar U-shaped pattern for unemployment by age group.

5. This discussion follows Nickell (1979, p. S118) closely. For evidence that relative labour demand has shifted in favour of skilled workers over the sample period see Chapters 3 and 4.

6. Figure 5.3 graphs the long-term unemployment rates for the four condensed educational categories for each year of the sample.

7. Many of the educational qualification categories have no long-term unemployed individuals. The maximum likelihood

procedure which underlies the probit equation breaks down in the face of a variable which "predicts" short-term unemployment with probability equal to one in the sample. The standard procedure in such cases is to exclude the observations pertaining to the perfect predictor (or incorporate them into a larger miscellaneous category which includes a mix of outcomes). In this case, however, such a procedure would make it impossible to compare results across years.

8. See Table 5.8 for probit-estimated long-term unemployment rates for the 1980s. The predicted rates assume workers have the average level of education and live in the "average region" for the full sample of unemployed. The probit-estimated long-term rates do not vary systematically from the sample rates.

9. Older workers are more likely to have made the required contributions in the years preceding their spell of unemployment. They are also more likely to be married and have children. On the other hand, the replacement ratio should be lower for more experienced workers.

10. The calculations here differ slightly from Table 5.10. The unadjusted returns to gross weekly earnings in panel (a) refer to the employment weighted average return to experience over all educational qualifications. The return is calculated by evaluating the experience and experience-squared terms at the appropriate level of years of experience (see Chapter 3) relative to 0 years of experience. The relative employment rates for the experience equal to 5, 10, 20, 30, and 40 groups

are based on the probit predicted rates for 0-5, 6-10, 11-20, 21-30, and 31+ years of experience. The relative employment rates are all calculated relative to the 0-5 year experience group. Thus, the EXP=5 rows in panel (b) must equal the EXP=5 row in panel (a).

1a. Note that this definition of long-term unemployment differs from others used in the discussion of unemployment duration. Here long-term unemployment is the share of the stock of unemployed who have been out of work for one year or longer, not the preferable proportion of all spells of unemployment which last more than one year (see, Salant, S.W.(1977), 'Search theory and duration data: A theory of sorts', Quarterly Journal of Economics, no. 99, pp. 39-57).

Table 5.1
Sample unemployment rates by educational qualification

	UNIV	VOC-HIGH	ALEVEL	VOC-MED	OLEVEL5+	VOC-LOW	OLEVEL	VOC-OTHER	NOQUAL	ALL
1974	0.021	0.006	0.022	0.006	0.015	0.026	0.017	0.017	0.039	0.029
1975	0.012	0.024	0.047	0.008	0.021	0.029	0.060	0.034	0.053	0.041
1976	0.027	0.008	0.051	0.023	0.030	0.021	0.035	0.044	0.074	0.055
1977	0.020	0.023	0.015	0.006	0.041	0.031	0.059	0.034	0.068	0.050
1978	0.015	0.014	0.020	0.014	0.044	0.020	0.059	0.031	0.063	0.046
1979	0.013	0.013	0.016	0.042	0.017	0.022	0.037	0.040	0.072	0.049
1980	0.028	0.015	0.036	0.023	0.054	0.050	0.056	0.058	0.092	0.066
1981	0.041	0.029	0.081	0.042	0.057	0.066	0.118	0.074	0.157	0.107
1982	0.054	0.050	0.083	0.069	0.098	0.063	0.134	0.081	0.176	0.125
1983	0.033	0.037	0.110	0.070	0.085	0.116	0.149	0.093	0.190	0.130
1984	0.055	0.034	0.120	0.042	0.075	0.069	0.102	0.114	0.184	0.117
1985	0.031	0.031	0.060	0.042	0.079	0.088	0.102	0.101	0.187	0.112
1986	0.035	0.036	0.084	0.065	0.075	0.085	0.122	0.086	0.190	0.114
1987	0.047	0.044	0.101	0.064	0.054	0.083	0.089	0.098	0.164	0.104
1988	0.028	0.032	0.065	0.061	0.072	0.069	0.072	0.098	0.136	0.082
AVG	0.031	0.026	0.061	0.038	0.055	0.056	0.081	0.067	0.123	0.082

Source: General Household Survey.

Table 5.2
Probit estimated unemployment rates by educational qualification, at 20 years experience

	UNIV	VOC-HIGH	ALEVEL	VOC-MED	OLEVEL5+	VOC-LOW	OLEVEL	VOC-OTHER	NOQUAL	ALL
1974	0.014	0.005	0.006	0.004	0.010	0.018	0.010	0.013	0.029	0.021
1975	0.008	0.021	0.026	0.003	0.015	0.018	0.033	0.030	0.048	0.035
1976	0.013	0.005	0.017	0.012	0.015	0.010	0.011	0.037	0.059	0.039
1977	0.010	0.015	0.006	0.003	0.019	0.023	0.024	0.030	0.055	0.036
1978	0.008	0.010	0.010	0.008	0.022	0.014	0.027	0.027	0.054	0.035
1979	0.007	0.007	0.007	0.031	0.008	0.018	0.014	0.031	0.055	0.036
1980	0.017	0.010	0.019	0.016	0.026	0.038	0.026	0.050	0.075	0.049
1981	0.023	0.020	0.052	0.028	0.025	0.049	0.052	0.067	0.131	0.081
1982	0.030	0.031	0.052	0.050	0.040	0.046	0.055	0.070	0.142	0.090
1983	0.015	0.022	0.039	0.034	0.044	0.066	0.055	0.072	0.141	0.085
1984	0.038	0.025	0.068	0.030	0.050	0.049	0.056	0.109	0.166	0.098
1985	0.020	0.022	0.029	0.026	0.053	0.060	0.051	0.101	0.173	0.093
1986	0.021	0.026	0.045	0.040	0.045	0.055	0.062	0.074	0.162	0.085
1987	0.032	0.031	0.058	0.041	0.031	0.063	0.049	0.086	0.140	0.079
1988	0.021	0.024	0.044	0.046	0.053	0.053	0.045	0.080	0.117	0.066
AVG	0.019	0.018	0.032	0.025	0.030	0.039	0.038	0.059	0.103	0.062

Source: General Household Survey.
Notes:
(1) Unemployment rates implied by probit regression of employment status against 9 education dummies, experience and its square, and 9 region dummies, evaluated at 20 years experience and full sample average distribution by region.
(2) Unemployment rates for the ninth, miscellaneous educational dummy not shown, but used to calculate overall unemployment rate.

Table 5.3
Sample unemployment rates by years of experience

	0-5	6-10	11-20	21-30	31+	ALL
1974	0.050	0.027	0.025	0.026	0.025	0.029
1975	0.072	0.044	0.034	0.043	0.030	0.041
1976	0.118	0.067	0.049	0.041	0.040	0.055
1977	0.089	0.069	0.049	0.034	0.037	0.050
1978	0.077	0.065	0.042	0.039	0.033	0.046
1979	0.079	0.060	0.038	0.036	0.045	0.049
1980	0.116	0.068	0.057	0.047	0.059	0.066
1981	0.184	0.122	0.099	0.075	0.088	0.107
1982	0.242	0.114	0.108	0.082	0.109	0.125
1983	0.243	0.156	0.105	0.078	0.115	0.130
1984	0.188	0.110	0.106	0.096	0.103	0.117
1985	0.193	0.128	0.096	0.082	0.094	0.112
1986	0.191	0.146	0.079	0.078	0.110	0.114
1987	0.162	0.127	0.083	0.073	0.099	0.104
1988	0.105	0.095	0.069	0.060	0.092	0.082
AVG	0.141	0.093	0.069	0.059	0.072	0.082

Source: General Household Survey.

Note:

The t-statistics for a test that the unemployment rates in the 31+ column are greater than those in the 21-30 column are:

1974	-0.20	1979	1.46	1984	0.67
1975	-2.26	1980	1.74	1985	1.23
1976	-0.17	1981	1.56	1986	3.25
1977	0.52	1982	2.68	1987	2.75
1978	-1.03	1983	3.72	1988	3.55

and for the average of the whole sample, assuming independence of the samples across years is 6.17.

Table 5.4
Probit-estimated unemployment rates by years of experience, at sample average qualification level

	0-5	6-10	11-20	21-30	31+	ALL
1974	0.041	0.028	0.019	0.015	0.018	0.021
1975	0.069	0.049	0.034	0.024	0.022	0.034
1976	0.118	0.070	0.039	0.023	0.023	0.043
1977	0.104	0.064	0.038	0.023	0.024	0.042
1978	0.086	0.056	0.035	0.022	0.020	0.038
1979	0.088	0.056	0.034	0.024	0.028	0.041
1980	0.119	0.080	0.052	0.036	0.038	0.058
1981	0.205	0.136	0.086	0.057	0.060	0.096
1982	0.255	0.168	0.102	0.068	0.078	0.120
1983	0.265	0.169	0.098	0.064	0.085	0.121
1984	0.206	0.153	0.109	0.081	0.082	0.117
1985	0.214	0.155	0.106	0.073	0.062	0.110
1986	0.218	0.151	0.102	0.073	0.082	0.116
1987	0.186	0.133	0.095	0.071	0.077	0.105
1988	0.131	0.101	0.078	0.063	0.072	0.084
AVG	0.154	0.105	0.068	0.048	0.051	0.076

Source: General Household Survey
Notes:
Unemployment rates implied by probit regression of employment status against 9 education dummies, experience and its square, and 9 region dummies, evaluated at the full sample average level of education and full sample average distribution by region.

Table 5.5
Sample long-term unemployment rates by educational qualification

	UNIV	VOC-HIGH	ALEVEL	VOC-MED	OLEVEL5+	VOC-LOW	OLEVEL	VOC-OTHER	NOQUAL	ALL
1974	0.000	0.500	0.000	0.500	0.333	0.250	0.000	0.083	0.284	0.221
1975	0.000	0.444	0.100	0.000	0.100	0.000	0.037	0.185	0.240	0.208
1976	0.182	0.333	0.167	0.000	0.200	0.222	0.133	0.375	0.318	0.281
1977	0.182	0.182	0.000	0.500	0.200	0.444	0.120	0.172	0.441	0.345
1978	0.125	0.429	0.333	0.200	0.150	0.143	0.192	0.400	0.371	0.331
1979	0.250	0.333	0.000	0.000	0.100	0.000	0.143	0.276	0.344	0.289
1980	0.235	0.250	0.250	0.125	0.077	0.250	0.120	0.214	0.323	0.254
1981	0.120	0.333	0.083	0.250	0.333	0.125	0.214	0.429	0.423	0.374
1982	0.310	0.440	0.400	0.381	0.257	0.375	0.240	0.458	0.510	0.436
1983	0.222	0.579	0.364	0.310	0.348	0.350	0.439	0.491	0.614	0.525
1984	0.281	0.529	0.464	0.444	0.474	0.231	0.413	0.508	0.612	0.526
1985	0.300	0.353	0.313	0.158	0.375	0.344	0.392	0.609	0.610	0.523
1986	0.125	0.409	0.348	0.400	0.318	0.324	0.333	0.489	0.626	0.511
1987	0.200	0.286	0.172	0.471	0.357	0.419	0.327	0.449	0.614	0.488
1988	0.316	0.450	0.316	0.300	0.048	0.357	0.375	0.639	0.625	0.509
AVG	0.190	0.390	0.221	0.269	0.245	0.256	0.232	0.385	0.464	0.388

Source: General Household Survey.
Notes:
Long-term unemployment defined as share of total unemployed seeking work for 1 year or more.

Table 5.6
Probit-estimated long-term unemployment rates by educational qualification, at 20 years experience

	UNIV	VOC-HIGH	ALEVEL	VOC-MED	OLEVEL5+	VOC-LOW	OLEVEL	VOC-OTHER	NOQUAL	ALL
1980	0.284	0.162	0.376	0.100	0.099	0.247	0.212	0.153	0.327	0.267
1981	0.177	0.360	0.177	0.249	0.422	0.127	0.284	0.450	0.472	0.424
1982	0.396	0.474	0.507	0.408	0.318	0.423	0.375	0.421	0.561	0.508
1983	0.367	0.698	0.564	0.368	0.461	0.416	0.607	0.493	0.674	0.606
1984	0.424	0.626	0.672	0.570	0.557	0.332	0.603	0.511	0.687	0.616
1985	0.409	0.436	0.579	0.223	0.546	0.405	0.613	0.625	0.693	0.628
1986	0.190	0.456	0.544	0.486	0.416	0.411	0.490	0.445	0.671	0.577
1987	0.375	0.391	0.415	0.674	0.597	0.524	0.499	0.508	0.730	0.627
1988	0.364	0.465	0.434	0.339	0.103	0.389	0.506	0.563	0.629	0.527
AVG	0.332	0.452	0.474	0.379	0.391	0.364	0.465	0.463	0.605	0.531

Source: General Household Survey
Notes:
(1) Long-term unemployment defined as share of total unemployed seeking work for 1 year or more.
(2) Proportion of long-term unemployed in total unemployed implied by probit regression of duration (1 if unemployed 1 year or more, 0 otherwise) against 9 education dummies, experience and its square, and 9 region dummies, evaluated at 20 years experience and full sample average distribution by region.
(3) Comparable rates not available for 1974-1979 due to small samples and low long-term unemployment share.

Table 5.7
Sample long-term unemployment rates by years of experience

	0-5	6-10	11-20	21-30	31+	ALL
1974	0.021	0.136	0.093	0.250	0.438	0.221
1975	0.064	0.103	0.214	0.254	0.323	0.208
1976	0.134	0.263	0.242	0.323	0.467	0.281
1977	0.084	0.375	0.356	0.308	0.593	0.345
1978	0.125	0.316	0.405	0.344	0.484	0.331
1979	0.111	0.192	0.208	0.386	0.479	0.289
1980	0.115	0.295	0.229	0.299	0.374	0.254
1981	0.268	0.416	0.403	0.465	0.389	0.374
1982	0.314	0.409	0.485	0.438	0.550	0.436
1983	0.341	0.566	0.588	0.651	0.602	0.525
1984	0.348	0.544	0.567	0.604	0.621	0.526
1985	0.336	0.468	0.584	0.632	0.649	0.523
1986	0.320	0.492	0.565	0.581	0.651	0.511
1987	0.180	0.586	0.602	0.563	0.624	0.488
1988	0.269	0.337	0.523	0.581	0.690	0.509
AVG	0.202	0.367	0.404	0.445	0.529	0.388

Source: General Household Survey.
Notes:
Long-term unemployment defined as share of total unemployed seeking work for 1 year or more.

Table 5.8
Probit-estimated long-term unemployment rates by years of experience, at sample average qualification level

	0-5	6-10	11-20	21-30	31+	ALL
1980	0.126	0.171	0.229	0.295	0.349	0.238
1981	0.291	0.345	0.391	0.416	0.348	0.352
1982	0.335	0.403	0.474	0.532	0.529	0.451
1983	0.370	0.462	0.568	0.642	0.618	0.522
1984	0.346	0.458	0.571	0.655	0.609	0.526
1985	0.325	0.454	0.582	0.663	0.611	0.519
1986	0.351	0.446	0.548	0.628	0.644	0.515
1987	0.274	0.431	0.578	0.686	0.606	0.503
1988	0.283	0.381	0.487	0.595	0.652	0.505
AVG	0.300	0.395	0.492	0.568	0.552	0.459

Source: General Household Survey.
Notes:
(1) Long-term unemployment defined as share of total unemployed seeking work for 1 year or more.
(2) Proportion of long-term unemployed in total unemployed implied by probit regression of duration (1 if unemployed 1 year or more, 0 otherwise) against 9 education dummies, experience and its square, and 9 region dummies, evaluated at full sample average level of education and full sample average distribution by region.
(3) Comparable rates not available for 1974-1979 due to small samples and low long-term unemployment share.

Table 5.9
Changes in probit-estimated unemploymentrates by skill level

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Educational qualifications, at 20 years experience					
UNIVERSITY	0.011	0.011	0.025	-0.001	0.014
VOC-HIGH	0.010	0.009	0.027	-0.001	0.018
A-LEVEL	0.017	0.012	0.049	-0.005	0.037
VOC-MIDDLE	0.006	0.018	0.042	0.012	0.024
O-LEVEL 5+	0.013	0.019	0.043	0.005	0.025
VOC-LOW	0.015	0.023	0.057	0.008	0.034
O-LEVEL 1-4	0.018	0.022	0.052	0.004	0.030
VOC-OTHER	0.027	0.036	0.080	0.009	0.044
NO QUAL	0.046	0.062	0.139	0.016	0.078
AVERAGE	0.032	0.040	0.077	0.008	0.037
(b) Years of experience, at average qualifications					
0-5	0.076	0.098	0.178	0.022	0.081
6-10	0.049	0.064	0.129	0.015	0.065
11-20	0.031	0.040	0.092	0.010	0.051
21-30	0.020	0.027	0.069	0.007	0.042
31+	0.021	0.029	0.077	0.008	0.048
AVERAGE	0.033	0.046	0.102	0.013	0.056

Source: Tables 5.3 and 5.4.

Table 5.10
Unemployment-adjusted returns to educational qualifications at 20 years experience

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Unadjusted for unemployment					
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	0.099
VOC-MIDDLE	0.266	0.193	0.282	-0.073	0.089
O-LEVEL 5+	0.471	0.312	0.351	-0.159	0.039
VOC-LOW	0.199	0.153	0.202	-0.046	0.049
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) Adjusted for unemployment					
UNIVERSITY	0.725	0.607	0.729	-0.118	0.122
VOC-HIGH	0.415	0.323	0.432	-0.092	0.109
A-LEVEL	0.545	0.416	0.546	-0.129	0.130
VOC-MIDDLE	0.277	0.202	0.314	-0.075	0.112
O-LEVEL 5+	0.487	0.326	0.390	-0.161	0.064
VOC-LOW	0.205	0.159	0.221	-0.046	0.062
O-LEVEL 1-4	0.321	0.297	0.365	-0.024	0.068
VOC-OTHER	0.087	0.081	0.103	-0.006	0.021
NO QUAL	0.000	0.000	0.000	0.000	0.000

Source:
(1) Panel (a): Table 3.1.
(2) Panel (b): probit-estimated unemployment rates from Table 5.2.

Notes:
Unemployment-adjusted relative return in panel (b) calculated as relative return in panel (a) times $(1-u_i)/(1-u_{NOQUAL})$, the relative employment rate, where i refers to each of the qualification groups.

Table 5.11
Unemployment-adjusted returns to years of experience at sample average education level

	(1) 74-76	(2) 78-80	(3) 86-88	Change (2)-(1)	Change (3)-(2)
(a) Unadjusted for unemployment					
EXP=0	0.000	0.000	0.000	0.000	0.000
EXP=5	0.219	0.192	0.258	-0.027	0.066
EXP=10	0.396	0.346	0.468	-0.050	0.122
EXP=20	0.620	0.542	0.739	-0.078	0.197
EXP=30	0.674	0.588	0.813	-0.086	0.225
EXP=40	0.558	0.483	0.690	-0.075	0.207
(b) Adjusted for unemployment					
EXP=0	0.000	0.000	0.000	0.000	0.000
EXP=5	0.219	0.192	0.258	-0.027	0.066
EXP=10	0.408	0.359	0.496	-0.049	0.137
EXP=20	0.650	0.576	0.817	-0.074	0.241
EXP=30	0.715	0.634	0.921	-0.081	0.287
EXP=40	0.519	0.528	0.775	-0.071	0.255

Source:
(1) Panel (a): Table 3.1.
(2) Panel (b): probit-estimated unemployment rates from Table 5.4.

Notes:
Unemployment-adjusted relative return in panel (b) calculated as relative return in panel (a) times $(1-u_i)/(1-u_{0-5})$, the relative employment rate, where i refers to each of the experience groups.

Figure 5.1
Sample unemployment rate by educational qualification

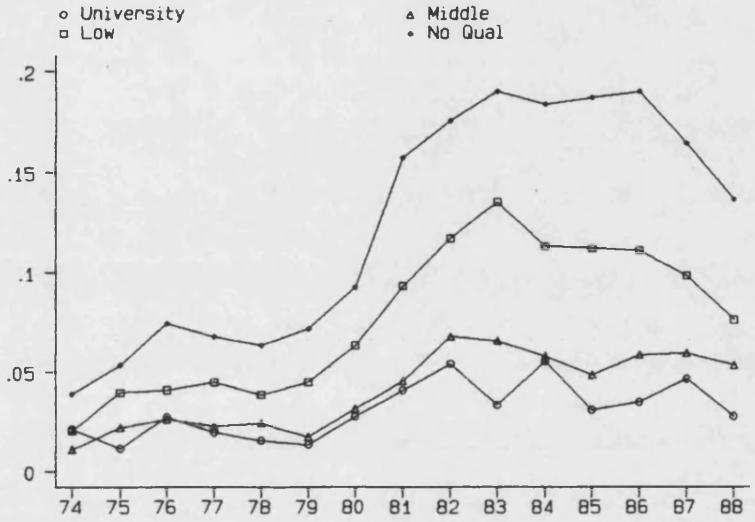


Figure 5.2
Sample unemployment rate by experience level

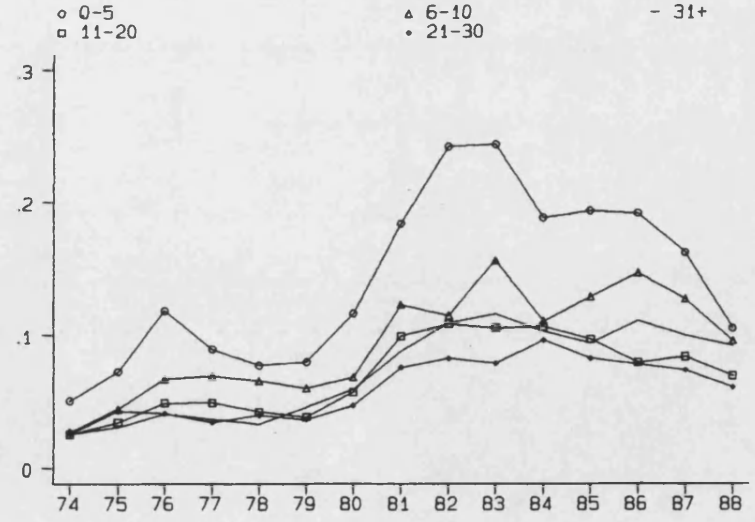


Figure 5.3
Sample long-term unemployment rate by qualification

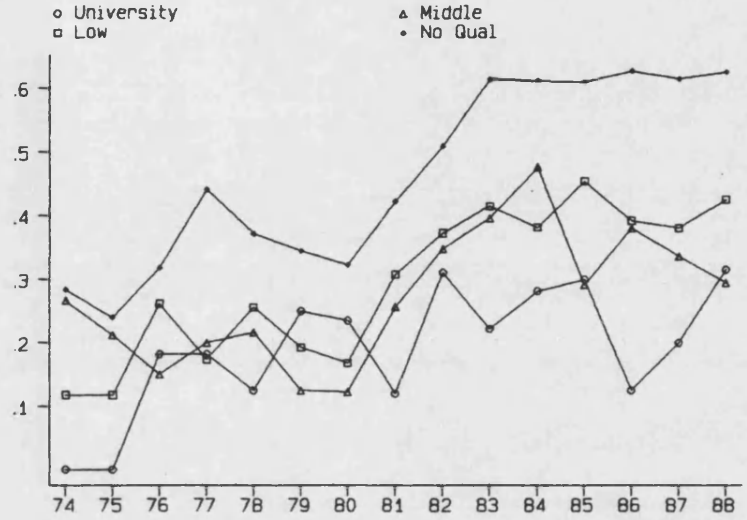


Figure 3: Long-term unemployment rate by qualification

Figure 5.4
Sample long-term unemployment rate by experience

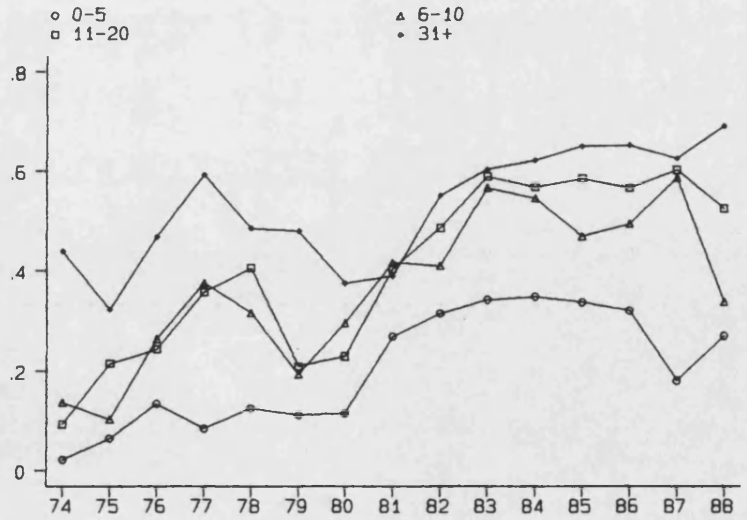


Figure 4: Long-term unemployment rate by experience

Chapter 6: Unemployment benefit levels and search activity

I. Introduction

The previous chapter examined some of the determinants of unemployment in Britain during the 1970s and 1980s. This chapter turns attention to the behaviour of workers once they become unemployed. The chapter differs from the preceding ones in several ways. Most notably, the data here cover only the years 1979-82 and the primary focus is not on "inequality". Nevertheless, the analysis develops the two principal themes of the thesis. The investigation relies on repeated cross-sections of the GHS (not simply the annual repetition of the survey, but also the fact that it is conducted in each month of each year). The main conclusion of the chapter -- that the changes in the level of unemployment-related benefits over the ranges observed in the sample has little effect on the search behaviour of the unemployed -- has important implications for inequality in the 1980s. Throughout the period, the Thatcher government argued in favour of reducing access to, and the level of, unemployment benefits on the ground of efficiency. The evidence presented here questions the empirical magnitude of the efficiency gains relative to the increased hardship experienced by the unemployed.

In standard search models of unemployment, the probability that an unemployed worker enters a job equals the probability that the worker receives a job offer times the probability that the job is acceptable to the worker. An

acceptable job pays a wage that exceeds the worker's "reservation wage", the wage where a worker is indifferent between working and remaining unemployed.

Most theoretical analyses of the effect of state benefits on unemployment have focused on the way that government assistance raises workers' reservation wages. These models assume that job offers either arrive at some constant rate or by some exogenously-determined stochastic process. Workers review each offer and reject those which are below their cut-off wage. While it is difficult to establish a worker's reservation wage, most empirical research has concentrated on demonstrating the notion expounded by these early search theories (for example, Mortensen (1970)) that higher benefit levels prolong the duration of unemployment spells by reducing the expected return from employment.

Given the strength of the theoretical predictions concerning benefits and reservation wages, the evidence on duration and transition effects of benefits is not strong. In Britain, for example, estimated benefit duration elasticities range from 0.06 to 0.6.[1] In the United States, with a different unemployment compensation system, many estimates of benefit duration elasticities range around 0.4 (see Atkinson and Micklewright (1990) for a comprehensive review). For the Netherlands, van den Berg (1990) finds a very low, positive elasticity of unemployment duration with respect to changes in the benefit level (approximately 0.03).

Recent evidence suggests that the unemployed receive and reject very few job offers. Using data on a cross-section of

unemployed British workers in 1982, Jones (1989a) reports that over 85 percent have never received a job offer. Holzer (1988) presents a figure of 66% in similar results for male youths in the United States in 1981. Van den Berg (1990), using a panel of unemployed Dutch men, finds low job offer arrival rates (approximately a one percent chance per week) and a very high proportion of acceptable offers (approximately 97 percent for the whole sample). Survey evidence reported in Layard, Nickell and Jackman (1991, Chapter 5) suggests that unemployed men in Britain make a low, but regular, number of job applications -- around one or two per month -- which tend to diminish over the unemployment spell.

The experience of many workers therefore seems to be that they remain unemployed primarily because they receive few job offers, not because they reject many. If so, then the simple reservation wage effect of benefits is open to question. Within the context of search models, it is conceivable that unemployment benefits may still affect job matching by influencing the rate of job offer arrival. This seems particularly pertinent, since recent work finding that receipt of unemployment benefits is associated with greater search extensiveness among the unemployed (Wadsworth (1991b)) raises the possibility that expanding benefit coverage could increase the search effectiveness of the pool of unemployed.

Unemployment-related benefits might alter search effort in two ways. First, unemployed benefits might have a direct financial impact on recipients' search behaviour. Claimants may use their greater resources to finance more search

activity, other things equal. Or, search activity could decline if the relative returns to employment fall as unemployment benefits rise. Second, receipt of state benefit might increase ties to the labour force through information or incentive effects.[2] Benefit payments may be contingent on recipients demonstrating active job search. Those not claiming state benefit may become marginalised in their attempts to locate work.

This paper is a formal test of the first hypothesis. If benefits encourage recipients to devote more (or less) resources to search activities, then the level of benefit itself could affect the degree of search effort. We utilise information from the General Household Survey to examine the job search behaviour of a sample of unemployed male benefit recipients in Great Britain over the period 1979-1982. We are therefore able to test whether job search activity, as measured by the number of search methods used in a given week, responds to differential levels of government assistance. Section 2 provides a brief outline of the underlying theoretical framework. Section 3 describes the data and the principal estimation procedure, ordered logit maximum likelihood. Section 4 presents results on the choice of search method and extensiveness of search effort, which are ambiguous with regard to the direction of any benefit effect. Section 5 concludes with a brief summary of our major finding that job search activity is largely uninfluenced by the level of unemployment compensation but is dependent on worker characteristics and environment.

II. Theoretical Framework

Standard search theory posits that the probability an unemployed worker enters employment, P_e, is given by

$$P_e = O*A \qquad (1)$$

where O is the probability that a job offer is received and A is the probability that it is acceptable. Most models assume that the rate of job offer arrival is exogenous. If, however, workers can influence the job offer arrival rate through search activity, then O becomes endogenous such that

$$O = O[mS(B,g,x)] \qquad (2)$$

The function, S(.) defines the "search effort" of the unemployed individual. The more diligently the workers search, the more likely they are to find a job. The individual's search effort depends on several factors: the level of unemployment benefit, B, local economic conditions, g, and a vector of personal characteristics, x which includes the potential wage from employment. In addition, m is a multiplicative constant which reflects the state of the business cycle.[3]

Since A also depends on the benefit level, equation (3) demonstrates that benefits could have an ambiguous effect on the job transition probability, dependent on the signs of the two constituent effects.

$$\frac{dP}{dB} = O'm\frac{\partial S}{\partial B}A + \frac{\partial A}{\partial B}O \qquad (3)$$

We proceed to examine the effect of benefit levels on search effort, $\partial S/\partial B$ as a first step toward addressing this potential ambiguity.

Standard models predict higher levels of benefit should decrease search effort since the relative return to search falls as unemployment benefit rises (see for example, Barron and Mellow (1979)). On this basis, one might expect to see the number of job applications decline, or the number of offer refusals increase, as unemployment compensation rises. Given our dataset, this hypothesis suggests a fall in the number of search methods used at any one time. Alternatively, a rise in benefit may have positive effects on search. If workers use this income to finance more search activity this may offset any increased preference for leisure. This may arise, for example, if unemployed workers are credit-constrained (see Hammermesh (1982)) or leisure is a locally inferior good, as suggested by the results in van den Berg (1990). Ben-Horim and Zuckerman (1987) demonstrate the possibility of such a positive effect, in a model where the unemployed finance search from limited resources. Given these two opposing effects, the sign of any benefit level effect on overall search effort becomes a matter for empirical investigation.

III. Data and Estimation

A. Data

The data consist of a pooled sample of observations on 1,484 unemployed British men participating in the General Household Survey (GHS) between 1979 and 1982.[4] Four GHS surveys, from 1979 to 1982, provide consistent data on the type of search methods used by unemployed respondents in the week prior to their GHS interview. In addition, the GHS contains self-reported levels of state benefits received by each respondent (with a breakdown by source), and the total state benefit and other income received by all members of their families.

The GHS asks unemployed workers whether they have used any of six job search methods in the week prior to their interview. The methods are: visited a Job Centre, used a private employment agency, read or placed an advertisement in the newspaper, directly approached an employer, waited for the results of a job application, or some other method of job search[5]. Responses to these questions create two kinds of dependent variables. The first is a simple 0-1 dummy for the use of a particular method. The second is a search extensiveness variable calculated as the total number of search methods used in the reference week of the survey.

The central problem facing any attempt to estimate the effects of benefits on search effort is the latter's inherent unobservability. Many factors affect search activity: the amount of resources devoted to search effort; the number (and "quality") of hours spent searching; the willingness to

compromise on geographical location, working conditions, and pay; the type, number, and appropriateness of search methods used; differential individual qualities which affect search effectiveness; and others.

Empirical work has generally taken one of the list of components above as a proxy for search effort.[6] The number of search methods says little about how intensively the individual uses each method. The choice of number of search methods then, could lead us to conclude that a lazy searcher choosing several methods in a half-hearted way is exerting more "effort" than a diligent individual using just one method intensively.[7]

We believe, nevertheless, that the number of search methods is a good proxy for underlying search effort. Wadsworth (1991a) demonstrates a small positive relationship between the number of search methods used and the probability that a worker finds a job. Furthermore, the effects of variables for which we have strong prior beliefs with respect to search effort -- unemployment duration, educational qualifications, marital status, and age -- can act as checks for the benefit results. We show in section 4 that these variables always take their expected signs in the number of search method regressions.

All unemployed workers in the data set receive either Unemployment Benefit or Supplementary Benefit, the two state benefit programmes providing, respectively, insurance-based short-term and means-tested long-term assistance to the unemployed. The majority of the sample unemployed for less

than seven months would also have been eligible for Earnings Related Supplement (ERS) to their unemployment benefit during the period of our analysis.[8] We use the sum of Unemployment Benefit and Supplementary Benefit (a small portion of respondents claim both) to calculate the respondent's nominal level of benefits, converted to real January 1979 pounds using the Retail Price Index appropriate for the interview month and year. This levels variable, RBEN, can be thought of as capturing the income effect of benefits on search. In order to measure the benefit effect on the return to search it is necessary to take account of expected future benefit levels relative to potential wage opportunities. This we do by constructing, REPRAT, a 12-month forward moving average of expected real benefit levels deflated by an expected wage term obtained from a simple earnings equation (see Appendix 6.1 for further details).

The GHS also asks respondents about alternative sources of income, earned, unearned, and from other state benefits. We can therefore construct variables which measure the family's total earned income and total receipt of all forms of state benefit (excluding the unemployed worker's unemployment-related benefits). We have supplemented the data by attaching several external labour market variables to workers based on their region, skill level, and the year of their interview with the GHS. We used these variables (vacancy, unemployment and wage rates) to control and test for business cycle and expected return effects on search behaviour, as suggested by

equation (2). Our preferred measure of the state of the business cycle is the relevant vacancy-unemployment ratio.

From the standpoint of econometric estimation, the structure of the benefit system (see Appendix 6.2) and the pooled nature of the dataset, allow several types of variation in the level of benefits across otherwise econometrically identical workers: (1) policy related changes in basic and supplemental rates (including eligibility requirements), for UB and SB; (2) changes in real UB and SB rates due to monthly changes in the price level; (3) variations in the ERS component for the portion of the sample unemployed between 2 and 28 weeks. Figure 6.1 demonstrates this variation over the sample period, together with the smoothed expected benefit series, for a typical sample member -- a single male with no dependent children.[9]

B. Estimation

Ordered logistic analysis is ideally suited for estimating the sign of $\partial S/\partial B$ in (3).[10] We have observations on a discrete, ordered variable, the number of search methods, y, which reflect the distribution of an unobservable, underlying variable of interest, search effort, y*. The latent variable y^*, is influenced by a vector of variables, x incorporating benefits, socio-economic characteristics and local labour market conditions, such that:[11]

$$y^* = \beta' x + \epsilon$$

If there are J ordered number of search methods, we observe:

$$\begin{array}{lll} y=0 & \text{if} & y^* < 0 \\ y=1 & \text{if} & 0 <= y^* < \mu_1 \\ y=2 & \text{if} & \mu_1 <= y^* < \mu_2 \\ \cdot & & \\ \cdot & & \\ \cdot & & \\ y=J & \text{if} & \mu_{J-1} <= y^* \end{array}$$

where the threshold levels μ_j (j=1,2,...,J-1), are parameters of the model to be estimated along with β (see Greene (1990), Maddala (1983)). We define a set of ordinal variables:

Z_{ij}=1 if y_i falls in the jth category, and

Z_{ij}=0 if y_i does not,

for i=1,2,...,n individuals and j=0,1,...,J search methods. If ϵ is logistically distributed and Λ represents its cumulative distribution, then:

$$Prob(Z_{ij}=1) = \Lambda(\mu_j - \beta' x_i) - \Lambda(\mu_{j-1} - \beta' x_i)$$

We can write the likelihood function as:

$$L = \prod_{i=1}^{n} \prod_{j=1}^{J} [\Lambda(\mu_j - \beta' x_i) - \Lambda(\mu_{j-1} - \beta' x_i)]^{z_{ij}}$$

And the log likelihood function is:

$$L^* = \ln L = \sum_{i=1}^{n} \sum_{j=1}^{J} Z_{ij} \ln [\Lambda(\mu_j - \beta' x_i) - \Lambda(\mu_{j-1} - \beta' x_i)]$$

We maximize the log-likelihood function using iterative procedures available in LIMDEP.

C. Interpreting Coefficient Estimates

The coefficient estimates for the variables in an ordered logit model do not have a straightforward interpretation. In general, a positive coefficient estimate suggests that "high" values of the variable mean an individual is likely to use more search methods. However, to evaluate the marginal effects of a change in the value of a particular variable note that, the probability that y_i takes a particular value is:

$$\begin{aligned}
\text{Prob}[y=0] &= \Lambda(-\beta'x) \\
\text{Prob}[y=1] &= \Lambda(\mu_1 - \beta'x) - \Lambda(-\beta'x) \\
\text{Prob}[y=2] &= \Lambda(\mu_2 - \beta'x) - \Lambda(\mu_1 - \beta'x) \\
&\vdots \\
\text{Prob}[y=J] &= 1 - \Lambda(\mu_{J-1} - \beta'x)
\end{aligned}$$

The marginal effect of a change in a variable in x is then:

$$\frac{\partial Prob[y=0]}{\partial x} = -v(\beta'x)\beta$$

$$\frac{\partial Prob[y=1]}{\partial x} = (v(-\beta'x) - v(\mu_1 - \beta'x))\beta$$

$$\vdots$$

$$\frac{\partial Prob[y=J]}{\partial x} = v(\mu_{J-1} - \beta'x)\beta$$

where v is the logistic density function.

IV. Benefit levels and search activity

A. Choice of search method

Table 6.1 presents a breakdown of search methods used according to socio-economic group, uncompleted duration of unemployment spell, and year interviewed. Approximately 85 percent of the total sample used one or more search methods in the week prior to their interview. The average number of search methods used was 1.6. Job Centres were the most important search method, with over 70 percent visiting a Job Centre in the previous week. This partially reflects the nature of the U.K. benefit administration scheme in operation between 1979-82, whereby unemployed claimants were also registered at job centres. About one-third of the sample had made a direct approach to a potential employer. Hughes and McCormick (1990) suggest that this activity is likely to reflect greater intensity of purpose leading to shorter unemployment durations. However, use of this method is likely to be highly pro-cyclical. It seems reasonable to suppose that the unemployed adapt their search strategies to maximise the possibility of locating a job offer. Hence we would not expect direct approaches to employers to feature strongly when unemployment is high and increasing as during the period covered by our sample. Approximately 20 percent were waiting for a response from a job application, using advertisements, or trying other methods. Only 6 percent had sought work through a private employment agency.

The worker's occupational classification (SOC) has a strong influence on the choice of search method. The GHS

assigns occupational classifications to unemployed workers based on the skill-level of their last job. Non-manuals are approximately five times more likely than manuals to use a private agency and are more likely than manuals to use advertisements, job applications ("Waiting"), and "other" techniques. Manuals, particularly skilled-manuals, are more likely to use Job Centres and direct approaches to employers. Table 6.1 also makes clear that differential use of search techniques appears within the manual and non-manual categories.[12]

The mean number of search methods declines monotonically with uncompleted duration of unemployment spell.[12a] The number of workers using no search method in the previous week increases threefold between the first month of unemployment and the period after the first twelve months. As duration lengthens search efforts appear to concentrate around Job Centres. The breakdown of search activity by year reveals no systematic pattern in aggregate job search behaviour over the sample period, despite the large rise in unemployment which occurred between 1979 and 1982.

Table 6.2 illustrates how the unemployed combine search methods in their attempts to locate job offers. The correlation coefficients in panel (a) suggest the complementarity of most search methods. The matrix in panel (b) shows the number of individuals using the combination of search methods in the row and column corresponding to each element. For example, of the total sample of 1484 individuals, 1033 used Job Centres (row 1, column 1) and 81

used private employment agencies (row 2, column 2). Off-diagonal elements provide further evidence of complementarities. Of the 1033 individuals using Job Centre's, 313 also made direct approaches to employers, while one 59 also used private employment agencies.

Table 6.3 reports binary logistic estimates of the determinants of individual search method use. The results confirm the findings of the cross-tabulations in Table 6.1. Choice of search method is organised broadly across occupational lines. Those groups which theory suggests should have a low probability of search effort (the long-term unemployed, the old, the unqualified), are indeed less likely to use any individual search method, providing further evidence that the aggregation of each method used constitutes a reasonable measure of search effectiveness. Unemployment benefits have no significant effect on the choice of any individual search method (including no search method).

The level of economic activity, as measured by the appropriate vacancy-to-unemployment ratio, is positive and significant for job search through newspaper advertisements. Tight labour markets increase workers' perception of contacting a vacancy in this manner. Similarly, the sign of the VU ratio on direct approaches to employers, whilst not significant, suggests use of this method is also more common under more favourable economic conditions.[13]

B. Number of Search Methods

Our central objective is to test the hypothesis that differential benefit levels affect job search effort. Table 6.4 presents our preferred model, estimated by ordered logit. Column 1 includes the appropriate regional vacancy-unemployment rate facing each worker. Column 2 uses regional and yearly dummies to capture business cycle effects. (Table 6.6 presents marginal effects of key variables using the results from Table 6.4, column 1.)[14a]

The estimated model includes four variables which measure the financial resources available to each unemployed worker: RBEN, RSTBEN, RINC and REPRAT. RBEN, the real level of unemployment-related benefit, and REPRAT, the expected replacement ratio facing each worker, are the main variables of interest. Our preferred specification in Column 1 indicates a small, statistically insignificant positive effect of benefit levels on search effort and a similar negative effect of the replacement ratio.[14] The derivatives of the category probabilities with respect to the level of RBEN and REPRAT (see Table 6.6) confirm that differential levels of unemployment-related benefit have a negligible impact on the likelihood of using more search methods. A permanent 20 percent increase in the average level of benefits, for example, would reduce the likelihood of an average worker using more than one search method by less than one-half of a percent (Table 6.6, Row 1).

Table 6.5 presents several alternative specifications intended to test the robustness of the result. Columns 1, 2

and 3 split the sample according to duration of unemployment spell. It is possible that RBEN and REPRAT may capture unobserved heterogeneity amongst recipients. If those previously employed in high wage jobs, who would therefore qualify for high ERS, are more "keen" to return to employment, they may search harder. This may bias upward both the RBEN and REPRAT coefficients. The division of the sample by duration allows us to control for this effect somewhat, since only those unemployed for under seven months were eligible to receive ERS. The sign and significance of the RBEN coefficient in the short-term unemployed regression (column 1) suggests little substantive bias. Hence, the decomposition of the sample into what are essentially UB+ERS and SB recipients does not affect the conclusions.

We also excluded all those who have used no search method during the reference week (column 4), in order to test for benefit effects amongst a more "active" subset of job seekers. Again there is little change in the benefit coefficient. We have excluded duration as an explanatory variable in column 5. Since those choosing fewer search methods could face longer unemployment spells, other things equal, the inclusion of duration variables may induce endogeneity bias in the benefit variable. Again the results are substantially unchanged. Since current search activity should explain potential rather than elapsed duration, endogeneity may be less of an issue here.[15] In column 6 we have estimated a standard search-benefit specification which includes only the replacement

ratio REPRAT. The coefficient is negative but remains small in absolute value and statistically insignificant (t=1.48).

We therefore find no evidence to support standard search theory that the level of benefits are the channel through which unemployment programmes change search effort. Rather, it seems likely that the positive search and employment transition effects of benefits found by Wadsworth (1991a, 1991b) were due to informational and incentive effects of such programmes which lead claimants to search more extensively relative to non-claimants.

RINC, the real total income available to the worker's family (less all forms of state benefit) does, however, exhibit a significantly positive effect on the total number of search methods. This result provides some support for the notion that financial constraints limit the ability of the unemployed to engage in active job search. Since RINC rises with employed household members, it may also capture better job information flows available from these parties. However, the magnitude of these effects are small.[16]

The insignificant negative coefficient on RSTBEN probably reflects the fact that other forms of state benefit are generally earmarked for particular purposes such as dependent children, disabilities, illnesses, etc. As such, these other forms of state benefit do not necessarily represent net additions to the individual's resources available for job search or consumption.[17]

The results on marginal effects presented in Table 6.6 also support the notion that the number of search methods is

a good proxy for latent search effort or an unobservable exit probability. Those groups we would expect to exert greater effort -- married, "prime-age" workers, the short-term unemployed, those with educational qualifications -- are less likely to fall in categories 0 and 1 and more likely to fall in the higher categories, than an econometrically average worker. Many of these variables capture individual-specific differences in the valuation of employment.[18]

The long-term unemployed are between 8 and 11 percentage points more likely to fall in one of the low search categories, (y=0) or (y=1). This uniform decline in search effort as duration rises may be attributable to duration dependence or heterogeneity in the pool of the unemployed. The variable with the largest (negative) impact on search effort is age (50 to 64 years old). For example, workers in this age group are ten percentage points less likely to use two methods than an average worker in the "prime-age" category. These effects are large relative to the measured benefit effects.

The data provide some evidence that an improvement in local economic conditions induces increased search activity (see Table 6.4, Column 1). This is particularly evident when we split the sample into the short-, medium- and long-term unemployed (Table 6.5, Columns 1, 2 and 3). Local economic conditions have a significant impact on the search effort of the short-term unemployed alone. This differential behaviour raises concerns that an economic recovery may do little to reduce the ranks of the long-term unemployed.[19]

Nevertheless, the magnitude of the search response to local economic conditions for the whole sample is small, even among the short-term unemployed. An increase of one standard deviation (in this case a doubling from the sample mean of 0.085) in the average VUR, raises the probability that the typical worker will use two or more methods by less than one percentage point.

V. Conclusion

We set out to test the hypothesis that unemployment benefits could influence search effort in a model of endogenous job offer arrival. We find little support for the idea that benefits affect search extensiveness in either direction. High benefit levels can facilitate search by providing income with which to finance job search efforts. There may also be a contemporaneous disincentive effect from higher benefits reducing the relative return to employment. Our results indicate that whilst these factors may be at work, their magnitude and statistical significance are negligible. Hence, the level of benefit appears to exert little influence on overall search activity. Other potential sources of income do have a positive effect on search effort, though possibly as a proxy for information flows.

We conclude that previously observed high levels of search effort amongst benefit recipients relative to non-recipients probably reflect participatory factors rather than pecuniary incentives. Receipt of benefit promotes both greater information flows and stronger search incentives through contact with the benefit system.

Our results indicate that the most productive ways to increase the search effectiveness within the unemployed claimant pool, may be to improve educational attainment, to limit the incidence of long-term unemployment, and to address the particular problems facing older unemployed workers.

Appendix 6.1
Data definitions

RBEN	Total unemployment and supplementary benefit received in previous week, in constant January 1979 pounds
RSTB	Total amount of all forms of state benefit received by all family members in previous week, less RBEN, in constant 1979 pounds
RINC	Total amount of all forms of earned income and state benefits received by all family members in previous week, less RBEN and RSTB , in constant 1979 pounds
REPRAT	Expected replacement ratio. Calculated as weighted average of nominal benefit level, NOMBEN, and NOMBEN plus next years average percentage increase i.e. $\frac{12-m}{12}*NOMBEN + \frac{m}{12}*(NOMBEN + X\%)$ where m is the month of observation relative to November, the month for annual update of benefits. This is then deflated by a 12 month forward moving average of Retail Price Index, divided by predicted real weekly earnings based on earnings equations estimated from 1979-82 GHS.
VUR	Ratio of reported vacancies to unemployed workers in worker's region in the year interviewed [Source: Department of Employment, Gazette. Vacancies refer to those excluding Community Programmes and Careers Offices.]
DURMT	Dummy variable equal to one if the worker has been continuously unemployed between six and twelve months
DURLT	Dummy variable equal to one if the worker has been continuously unemployed more than one year
A1619, A2024, A2534, A5064	Dummy variables equal to one if the worker's age is between 16 and 19, 20 and 24, 25 and 34, and 50 and 64, respectively
OTHEMP	Dummy variable equal to one if the any member of the worker's family is employed
MARRIED	Dummy variable equal to one if the worker is married

Data Description (continued)

ETHNIC	Dummy variable equal to one if the worker is not white
DCHILD	Dummy variable equal to one if the worker has a dependent child
COUNCIL, PRIVATE	Dummy variables equal to one if the worker rents a council flat, or rents private accomodation, respectively [the default category for housing tenure dummies is owner-occupied housing]
ED12	Dummy variable equal to one if the worker has a university degree or other post A-level qualification
ED34	Dummy variable equal to one if the worker has A-levels or more than five O-levels
ED5	Dummy variable equal to one if the worker has at least one O-levels or equivalent [the default category for the education dummies is workers with no educational qualifications]
SOC1	Dummy variable equal to one if the worker's last job was professional or managerial
SOC2	Dummy variable equal to one if the worker's last job was as a junior non-manual
SOC3	Dummy variable equal to one if the worker's last job was as a skilled manual worker [the default category for the skill-level dummies is semi-skilled ,SOC4, and unskilled manual workers, SOC5]
ENTRANT	Dummy variable equal to one if the worker is a new or re-entrant to the labour force with no data on previous job
R2-R10	Dummy variables for each of the 10 standard British regions (excluding Northern Ireland) [the default category for the regional dummies is the South East]
Y80, Y81,Y82	Dummy variables for the year in which the worker was interviewed [the default category is 1979]

Appendix 6.2
The Benefit System

Two programmes offered financial assistance to unemployed workers during the period covered in the data set. Unemployment Benefit provided assistance for the first 52 weeks of an unemployment spell. Thereafter, the unemployed received assistance through Supplementary Benefit with no time limit on eligibility.

Unemployment benefit (UB), first established in 1948, is a national insurance, contributory benefit. To qualify, a worker must have made national insurance contributions above a minimum level prior to the unemployment spell. UB is not means-tested and does not depend on workers other income or assets (with a few exceptions). The government pays UB at a fixed rate with additional supplements for dependents. Annual adjustments in the basic rates occurred in November of each year from 1979 to 1982. During almost the entire sample period, UB recipients unemployed between 2 and 28 weeks could also qualify for an Earnings Related Supplement based on the level of their weekly wage prior to entering unemployment. For full details of the ERS scheme see H.M. Treasury (1985).

Supplementary benefit (SB), introduced in 1966 to replace National Assistance, is a means-tested, non-contributory benefit. The DHSS determined the level of a recipient's SB after assessing the household's "resources" (earnings, other benefits, and other income) and "requirements" (a basic rate based on family type, size and expenses). As with UB, the government made adjustments to the basic SB rates in November of each year in our sample.

Notes

1. On this basis, given an average uncompleted duration of 12 months and an estimated elasticity of 0.3, then a 10 percent increase in benefit levels, would raise average spell duration by around 11 days.

2. A third possible explanation for more extensive search is unobserved heterogeneity between claimants and non-claimants.

3. m represents the total number of jobs available in any time period. Therefore, job offers may arrive at differential rates for a given level of search effort.

4. We utilise the full version of the GHS which oversamples Scottish households.

5. The omission of use of personal contacts and the amalgamation of reading and placement of advertisements among the choice of search methods are unfortunate aspects of the data.

6. For example, Jackman and Williams (1985) use the number of job applications, Jones (1989) utilises hours of search, and Blau and Robins (1990) have data on the number of contacts made by unemployed workers.

7. Note that the total number of hours spent searching, a very common proxy for search effort, can perform poorly if it excludes information about the total number of search methods. For example, a worker may use one search method for a period of 10 hours while another may use two methods over the same ten hour period. An hours-based proxy would assign the two individuals the same search effort. However, if search

methods exhibit diminishing returns or complementarities, the second individual will have exerted more "effort".

8. ERS was discontinued in January 1982, but existing claimants were eligible until June of that year. The dataset does not give any indication as to the specific amount of ERS received out of total benefit.

9. The rise in the expected benefit series in the last year of the sample, reflects the real rise in benefit levels that occurred in 1983. Removal of the final year from our sample does not affect our results.

10. Given that almost half of the sample used more than one search method, estimation by ordered logit utilizes more information about the effect of benefits on search than would a simple binary logit which combined the number of methods used into a single measure.

11. The variables in the **x** vector in the log-likelihood equation appear in Appendix 6.1. They include personal and family characteristics, proxies for external labour market conditions, and measures of financial resources available to the individual.

12. Separate evidence from the GHS on successful job search methods used by 861 recently hired workers in 1980, provides additional support for the notion that job type is a major determinant of the choice of search methods.

13. Hughes and McCormick (1990) find employer contact search increases significantly with improvements in local economic conditions.

14. For the record, estimation with only the income variables on the right hand side of gives the following results:

$$\underset{(0.007)}{+\ 0.029\ *\ \text{Rben}} \underset{(0.005)}{-\ 0.017\ *\ \text{Reprat}} \qquad \text{Log L} = -2286.1 \qquad X^2(4) = 49.57$$

15. See also Lindeboom and Theeuwes (1991), who manipulate the joint probability of observing a given level of search and unemployment duration to show that search intensity can be estimated as a function of lapsed unemployment duration.

16. The coefficient on RINC may be smaller than for other forms of income since this income accrues to other family members. The unemployed worker may not have the same claims over these resources as over unemployment-related benefits. The removal of RINC from Table 6.4 does not affect the sign or significance of RBEN.

17. Combining the three income variables into a single variable measuring all potential available income while unemployed yields a positive but statistically insignificant income effect on search.

18. For a discussion of the problem of unobservables in binary models see Yatchew and Griliches (1985). The age and occupation variables partially capture the likelihood of the worker being laid off from the previous job, an important omission from our dataset.

19. Hughes and McCormick (1990) are similarly pessimistic that economic expansion will raise employment of "nonsearching" official claimants. They find that overall search rates don't respond significantly to changes in the local labour market; direct employer contact, by what they

term "active searchers", however, does follow swings in economic activity. The duration effect we identify here may shed light on their results.

12a. This decline in search activity with uncompleted duration may be attributable to duration dependence or heterogeneity among unemployed claimants.

14a. Note that the inclusion of the duration variables in the preferred specification may induce simultaneity bias since the number of search methods affects duration. In Table 6.5 we report reduced-form results which exclude the duration variables.

Table 6.1
Sample search method use

(a) Search method use by occupation

	Sample	SOC1	SOC2	SOC3	SOC4	SOC5	ENTRANT
NONE	16.6	16.9	12.1	17	16.9	17.8	16.7
JOBC	69.6	51.9	71	71.3	70.8	70.2	64.1
PRIVATE	5.5	24.7	12.1	3.8	3.8	3.1	3.8
ADVERT	19.9	29.9	29.8	19.8	16.9	17.3	17.9
DIRECT	27.1	28.6	21	30.8	26.7	24.6	16.7
WAIT	24	37.7	33.1	25.9	18.2	18.8	28.2
OTHER	17	31.2	17.7	17	18	11	11.5
Median NSM	1	2	2	2	1	1	1
Mean NSM	1.6	2	1.8	1.7	1.5	1.5	1.4
Total NSM	2431	157	229	970	687	277	111
N	1484	77	122	571	445	191	78

(b) Search method use by unemployment duration

Duration (months)	<1	1-3	3-6	6-12	12+
NONE	6.8	12.7	10.5	16.2	22.9
JOBC	76.7	71	74.8	72.2	64
PRIVATE	6.8	8.1	8.5	4.5	3.3
ADVERT	27.4	27.1	21.2	23	13.8
DIRECT	42.5	35.3	30.7	25.6	21
WAIT	42.5	32.1	28.1	23.9	16.5
OTHER	27.4	24.4	19.9	16.2	11.9
Median NSM	2	2	2	1	1
Mean NSM	2.2	2	1.8	1.7	1.3
Total NSM	163	438	561	511	758
N	72	220	305	308	579

(c) Search method use by year

	1979	1980	1981	1982
NONE	19.2	14.6	16.5	17.4
JOBC	62.3	74.2	71.5	65.5
PRIVATE	5.4	3.4	6.1	6.8
ADVERT	21.3	22.6	19	17
DIRECT	31.8	31.8	24.6	22.7
WAIT	29.3	25.8	21.6	22.7
OTHER	18	18.3	15.7	17.8
Median NSM	1	2	1	1
Mean NSM	1.7	1.8	1.6	1.5
Total NSM	402	615	1011	403
N	237	347	637	263

Source: General Household Survey.

Table 6.2
Search method correlations and complementarities

(a) Correlation matrix for job search methods

	JC	Private	Advert	Direct	Other	Wait
Job Centre	1					
Private	0.017	1				
Advert	0.107**	0.186**	1			
Direct	0.107**	0.093**	0.318**	1		
Other	0.004	0.025	0.026	-0.036	1	
Wait	0.083**	0.198**	0.348**	0.245**	0.030	1

(b) Search method complementarities
(Sample numbers using each method)

	JC	Private	Advert	Direct	Other	Wait
Job Centre	1033					
Private	59	81				
Advert	233	41	293			
Direct	313	36	163	403		
Other	178	17	56	60	254	
Wait	272	48	158	166	68	356

Source: General Household Survey.
Notes:
(1) Correlations in panel (a) marked with ** significant at 5 percent level.
(2) In panel (b) the main diagonal gives the number of individuals in the sample who used corresponding search method. Off diagonal elements indicate number of individuals who used the methods in corresponding row and column.

Table 6.3
Logistic estimates for choice of job search methods

Variable	Mean	NONE	JOBC	PRIVATE	ADVERT	DIRECT	WAIT	OTHER
CONSTANT	1.00	-2.499**	1.143**	-2.139**	-1.683**	-0.645**	-1.066**	-1.474**
		(0.388)	(0.302)	(0.658)	(0.350)	(0.311)	(0.334)	(0.370)
RBEN	24.60	-0.012	-0.011	0.033	-0.002	0.007	0.006	0.002
		(0.028)	(0.022)	(0.046)	(0.024)	(0.022)	(0.024)	(0.026)
RSTB	9.13	0.004	0.007	0.004	-0.002	-0.004	-0.005	-0.014**
		(0.006)	(0.005)	(0.011)	(0.006)	(0.005)	(0.006)	(0.007)
RINC	54.42	0.001	0.001	0.001	-0.001	0.001	0.003**	0.001
		(0.002)	(0.011)	(0.003)	(0.011)	(0.001)	(0.001)	(0.002)
REPRAT	37.76	0.017	-0.002	-0.020	0.007	-0.011	-0.010	-0.013
		(0.019)	(0.014)	(0.003)	(0.016)	(0.015)	(0.016)	(0.018)
VUR	0.08	-0.040	-0.378	-0.107	1.820**	0.666	0.744	0.476
		(0.918)	(0.716)	(1.467)	(0.787)	(0.747)	(0.788)	(0.846)
DURMT	0.21	0.475**	-0.126	-0.589*	-0.019	-0.397**	-0.223	-0.300
		(0.216)	(0.166)	(0.350)	(0.179)	(0.167)	(0.174)	(0.194)
DURLT	0.39	0.800**	-0.432**	-0.740**	-0.500**	-0.587**	-0.394**	-0.547**
		(0.188)	(0.144)	(0.325)	(0.174)	(0.151)	(0.162)	(0.181)
A1619	0.13	-0.523	0.170	-0.709	-0.041	-0.141	0.232	0.388
		(0.538)	(0.411)	(0.923)	(0.464)	(0.421)	(0.443)	(0.494)
A2024	0.18	-0.510*	0.488**	-0.578	-0.054	0.263	-0.107	0.393
		(0.304)	(0.234)	(0.478)	(0.261)	(0.229)	(0.249)	(0.276)
A2534	0.22	-0.601**	0.116	-0.599	0.266	0.250	0.209	0.608**
		(0.251)	(0.178)	(0.372)	(0.197)	(0.176)	(0.187)	(0.210)
A5064	0.24	0.892**	-0.357**	-0.674*	-0.707**	-0.795**	-1.032**	-0.404*
		(0.213)	(0.178)	(0.383)	(0.233)	(0.204)	(0.223)	(0.243)
MARRIED	0.50	-0.206	0.402**	-0.142	0.168	0.241	0.461**	0.107
		(0.221)	(0.181)	(0.391)	(0.218)	(0.193)	(0.207)	(0.226)
ETHNIC	0.06	0.001	0.072	-0.209	0.208	0.522**	-0.102	-0.374
		(0.311)	(0.249)	(0.577)	(0.272)	(0.241)	(0.272)	(0.336)

(continued)

Table 6.3
Logistic estimates for choice of job search methods (continued)

Variable	Mean	NONE	JOBC	PRIVATE	ADVERT	DIRECT	WAIT	OTHER
DCHILD	0.40	-0.133	0.119	-0.182	-0.003	-0.011	0.048	-0.046
		(0.216)	(0.170)	(0.371)	(0.196)	(0.172)	(0.182)	(0.204)
COUNCIL	0.58	0.036	0.090	-0.819**	-0.253	0.179	-0.403**	-0.032
		(0.181)	(0.143)	(0.300)	(0.163)	(0.149)	(0.153)	(0.172)
PRIVATE	0.12	0.361	-0.110	-0.472	-0.444*	-0.140	-0.214	-0.351
		(0.243)	(0.199)	(0.411)	(0.252)	(0.226)	(0.227)	(0.269)
ED12	0.04	-0.963*	-0.210	2.162**	1.573**	0.439	0.832**	-0.035
		(0.582)	(0.329)	(0.409)	(0.338)	(0.339)	(0.336)	(0.389)
ED34	0.11	0.392	-0.421**	1.000**	0.309	-0.318	0.463**	-0.050
		(0.274)	(0.211)	(0.409)	(0.233)	(0.221)	(0.217)	(0.251)
ED5	0.20	-0.027	-0.129	0.717**	0.398**	0.053	0.459**	0.309*
		(0.202)	(0.155)	(0.346)	(0.181)	(0.166)	(0.168)	(0.180)
SOC1	0.05	0.170	-0.658**	0.665	0.300	0.439	0.503	0.741**
		(0.403)	(0.307)	(0.532)	(0.354)	(0.339)	(0.339)	(0.356)
SOC2	0.08	-0.287	0.063	0.355	0.477*	-0.313	0.543**	0.012
		(0.319)	(0.234)	(0.412)	(0.250)	(0.258)	(0.241)	(0.279)
SOC3	0.39	0.150	0.003	-0.436	-0.026	0.132	0.171	-0.096
		(0.186)	(0.149)	(0.352)	(0.175)	(0.152)	(0.166)	(0.182)
ENTRANT	0.05	0.319	-0.496*	-0.547	-0.121	-0.638*	0.213	-0.407
		(0.388)	(0.296)	(0.750)	(0.363)	(0.352)	(0.321)	(0.414)
LogL		-614.03	-877.79	-257.13	-688.95	-824.64	-747.69	-644.80
Log0		-666.48	-911.38	-314.29	-737.30	-867.85	-817.62	-679.26
Mean D.V.		0.166	0.696	0.055	0.199	0.271	0.24	0.17

Source: General Household Survey.
Notes:
(1) Sample size for all regressions is 1484.
(2) Asymptotic standard errors in parentheses. ** indicates significance at the 5 percent level.
* indicates significance at the 10 percent level.

Table 6.4
Number of search methods: ordered logit estimates

Independent Variable	Sample Means	Specification (1)	(2)
CONSTANT	1.00	2.172**	2.089**
		(0.257)	(0.295)
RBEN	24.60	0.012	0.002
		(0.018)	(0.020)
RSTB	9.13	-0.003	-0.001
		(0.004)	(0.004)
RINC	54.42	0.001*	0.001
		(0.001)	(0.001)
REPRAT	37.76	-0.013	-0.006
		(0.012)	(0.014)
VUR	0.08	0.704	--
		(0.606)	
DURMT	0.21	-0.336**	-0.342**
		(0.132)	(0.133)
DURLT	0.39	-0.776**	-0.750**
		(0.120)	(0.122)
A1619	0.13	0.231	0.095
		(0.345)	(0.373)
A2024	0.18	0.291	0.228
		(0.187)	(0.192)
A2534	0.22	0.358**	0.370**
		(0.147)	(0.148)
A5064	0.24	-0.892**	-0.913**
		(0.150)	(0.151)
MARRIED	0.50	0.285*	0.349**
		(0.150)	(0.152)
ETHNIC	0.06	0.143	0.019
		(0.191)	(0.196)
DCHILD	0.40	0.065	0.098
		(0.137)	(0.142)

(continued)

Table 6.4
Number of search methods: ordered logit (continued)

Independent Variable	Sample Means	Specification (1)	Specification (2)
COUNCIL	0.58	-0.155	-0.155
		(0.118)	(0.120)
PRIVATE	0.12	-0.345**	-0.376**
		(0.162)	(0.164)
ED12	0.04	1.127**	1.157**
		(0.261)	(0.263)
ED34	0.11	0.013	0.037
		(0.169)	(0.173)
ED5	0.20	0.205	0.205
		(0.130)	(0.134)
SOC1	0.05	0.249	0.351
		(0.245)	(0.252)
SOC2	0.08	0.238	0.254
		(0.192)	(0.194)
SOC3	0.39	-0.005	0.057
		(0.122)	(0.126)
ENTRANT	0.05	-0.375	-0.352
		(0.270)	(0.274)
MU(1)		1.962**	1.986**
		(0.076)	(0.077)
MU(2)		3.184**	3.220**
		(0.092)	(0.094)
MU(3)		4.315**	4.359**
		(0.117)	(0.119)
MU(4)		6.008**	6.058**
		(0.213)	(0.216)
Dummies:			
Regions (9)		NO	YES
Years (3)		NO	YES
Log L		-2171.0	-2158.3
Log 0		-2286.1	-2286.1
D.F.		23	34
N		1484	1484

Source: General Household Survey.
Notes: Asymptotic standard errors in parentheses. **,* indicates significance at the 5,10 percent level, respectively.

Table 6.5
Number of search methods: alternative specifications

Independent Variable	(1) STU	(2) MTU	(3) LTU	(4) NSM>0	(5)	(6)
RBEN	-0.009	-0.018	0.035	0.013	0.017	—
	(0.029)	(0.035)	(0.032)	(0.020)	(0.018)	
RSTB	-0.002	-0.002	-0.007	-0.003	-0.005	—
	(0.007)	(0.010)	(0.007)	(0.005)	(0.004)	
RINC	0.002*	0.001	-0.001	0.003**	0.003**	—
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	
REPRAT	0.001	-0.004	-0.021	-0.010	-0.017	-0.007
	(0.019)	(0.024)	(0.022)	(0.014)	(0.012)	(0.004)
DURMT	—	—	—	-0.196	—	-0.395**
				(0.148)		(0.128)
DURLT	—	—	—	-0.654**	—	-0.833**
				(0.134)		(0.115)
VUR	2.101**	1.427	-0.681	1.008	1.030*	0.861
	(0.885)	(1.487)	(1.126)	(0.685)	(0.595)	(0.579)
Log L	-915.8	-455.1	-764.6	-1542.5	-2191.8	-2173.2
Log 0	-952.8	-470.1	812.7	-1619.7	-2286.1	-2286.1
D.F.	21	21	21	23	21	20
N	597	308	579	1484	1484	1484

Source: General Household Survey.
Notes:
(1) All regressions also include the explanatory variables in specification 1 of Table 6.4.
(2) Asymptotic standard errors in paranthesis. ** indicates significance at the 5 percent level. * indicates significance at the 10 percent level.

Table 6.6
Predicted probability of using j search methods

(a) Change in predicted probability of using j search methods

	ΔP(y=0)	ΔP(y=1)	ΔP(y=2)	ΔP(y=3)	ΔP(y=4)	ΔP(y=5)
RBEN, REPRAT (+20%)	0.004	0.005	-0.003	-0.004	-0.002	-0.001
VUR (+1 s.d.)	-0.007	-0.008	0.005	0.006	0.004	0.001
DURMT	0.094	0.102	-0.064	-0.073	-0.046	-0.012
SOC1	-0.025	-0.033	0.016	0.023	0.015	0.004
A5064	0.151	0.098	-0.101	-0.085	-0.049	-0.013
ED12	-0.086	-0.168	0.026	0.107	0.093	0.029

(b) Probability of using j search methods

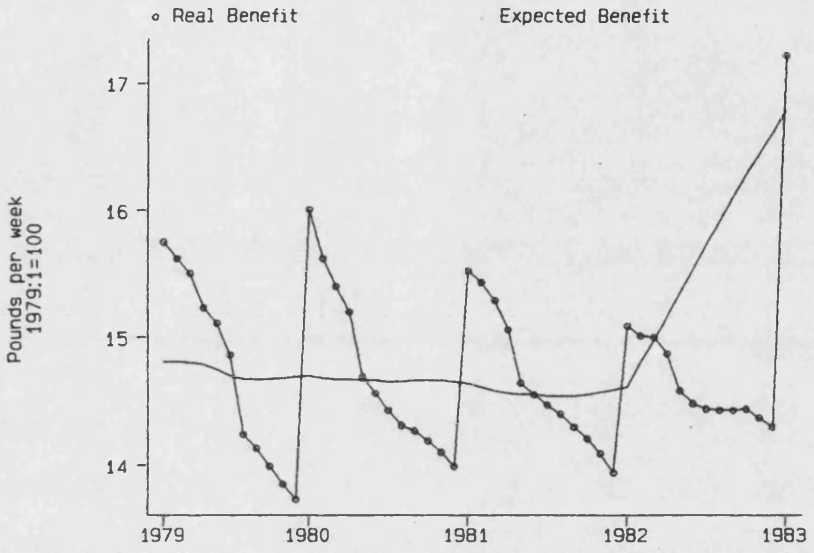
	P(y=0)	P(y=1)	P(y=2)	P(y=3)	P(y=4)	dP(y=5)
Estimated P(y=j)	0.135	0.391	0.264	0.131	0.064	0.015
Sample P(y=j)	0.165	0.371	0.239	0.133	0.072	0.018

(c) Sample distribution

N s.t. y=j	246	551	355	197	107	28

Source: General Household Survey.
Notes:
(1) Estimates in panels (a) and (b) based on model in specification 1 of Table 6.4.
(2) Estimates in panel (a) show deviation from predicted probability (see panel (b)) evaluated at sample means of all other independent variables.
(3) Estimates in panel (b) evaluated at sample mean for all independent variables.

Figure 6.1
Real and expected weekly unemployment benefit



Source: H.M. Treasury (1985) and author's calculations.
Notes:
(1) The real unemployment benefit rate is the weekly nominal unemployment benefit payment for a single male with no dependent children, deflated by the monthly retail price index.
(2) The "expected" real unemployment benefit rate is calculated using the procedure described in the REPRAT variable in Appendix 6.2.

Bibliography

Ashenfelter, O. and J. Ham (1979). 'Education, unemployment and earnings,' Journal of Political Economy, vol. 87, no. 5, pt. 2, pp. S99-S116.

Ashenfelter, O. and R. Layard (1983). 'Incomes policy and wage differentials,' Economica, vol. 50, pp. 127-143.

Atkinson, A. and J. Micklewright (1990). 'Unemployment compensation and labour market transitions: a critical review,' London School of Economics, Taxation Incentives and Distribution of Income, Discussion Paper No. 143.

Barron, J. and W. Mellow (1979). 'Search effort in the labour market,' Journal of Human Resources, vol. 14, pp. 389-404.

Bell, D., R. Rimmer and S. Rimmer (1992). 'Earnings inequality in Great Britain, 1975-90: the role of age,' mimeo.

Ben-Horim, M. and D. Zuckerman (1987). 'The effect of unemployment insurance on unemployment duration,' Journal of Labour Economics, vol. 5., no. 3, pp. 386-390.

Bird, D, M. Stevens, and A. Yates (1991). 'Membership of trade unions in 1989,' Department of Employment Gazette, June issue, pp. 337-343.

Blackburn, M., D. Bloom and R. Freeman (1991). 'The declining economic position less-skilled American males,' in Gary Burtless (ed.), A Future of Lousy Jobs?, Brookings Institution.

Blackburn, M. and D. Neumark (1991). 'Omitted-ability bias and the increase in the return to schooling,' National Bureau of Economic Research Working Paper No. 3693.

Blanchflower, D. and R. Freeman (1991). 'Going different ways: unionism in the U.S. and other advanced OECD countries,' National Bureau of Economic Research Working Paper No. 3342.

Blau, D. and P. Robins (1990). 'Job search outcomes for the employed and unemployed,' Journal of Political Economy, vol. 98, pp. 637-655.

Bluestone, B. (1990). 'The impact of schooling and industrial restructuring on recent trends in wage inequality in the United States,' American Economic Association Papers and Proceedings, vol. 80, no. 2, pp. 303-307.

Bluestone, B. and B. Harrison (1988). 'The growth of low-wage employment: 1963-86,' American Economic Association Papers and Proceedings, vol. 78, no. 2, pp. 124-128.

Bound, J and G. Johnson (1989). 'Wages in the United States during the 1980s and beyond,' University of Michigan, mimeo.

Borjas, G., R. Freeman and L. Katz (1992). 'On the labor market effects of immigration and trade,' in G. Borjas and R. Freeman (eds.), The Economic Effects of Immigration in Source and Receiving Countries, University of Chicago Press.

Browning, M., A. Deaton and M. Irish (1985). 'A profitable approach to labor supply and commodity demands over the life-cycle,' Econometrica, vol. 53, No. 3, pp. 503-543.

Central Statistical Office, Standard Industrial Classification Revised 1980, HMSO: London, 1979.

Central Statistical Office, Economic Trends Annual Supplement 1991, HMSO: London, 1992.

Central Statistical Office, The General Household Survey, annually 1974-1988.

Clark, K. and L. Summers (1983). 'Unemployment insurance and labor market transitions,' in M. Baily, ed., Workers, Jobs and Inflation, Brookings Institution, pp. 279-316.

Davis, S. and J. Haltiwanger (1991). 'Wage dispersion between and within U.S. manufacturing plants, 1963-1986,' National Bureau of Economic Research Working Paper No. 3722.

Deaton, A. (1985). 'Panel data from time-series of cross-sections,' Journal of Econometrics, vol. 30, pp. 109-126.

Department of Employment, New Earnings Survey, Part A, annually 1974-1988.

Economic and Social Research Council, The General Household Survey Codebook, annually, as available, 1974-1988.

Economic and Social Research Council, The General Household Survey Annotated Questionnaire, annually, as available, 1974-1988.

Economic and Social Research Council, The Labour Force Survey Codebook, 1979.

Freeman, R. (1976). The Overeducated American, Academic Press.

Freeman, R. (1991). 'How much has de-unionization contributed to the rise in male earnings inequality?' National Bureau of Economic Research Working Paper No. 3826.

Greene, W. (1990). Econometric Analysis, MacMillan.

H.M. Treasury (1985). 'Tax Benefit Reference Manual,' mimeo.

Hammermesh, D. (1982). 'Social Insurance and Consumption; An Empirical Enquiry' American Economic Review, vol. 72, No. 1, pp. 101-113.

Haskel, J. and C. Martin (1992). 'Do skill shortages reduce productivity? Theory and evidence from the United Kingdom,' Queen Mary and Westfield College, mimeo.

Highly Qualified People: Supply and Demand (1990). (Report of an Interdepartmental Review), London: H.M.S.O.

Holzer, H. (1988). 'Search method use by unemployed youth,' Journal of Labour Economics, vol. 6, pp. 1-20.

Hughes, G. and B. McCormick (1990). 'Measuring unemployment and cyclical participation in the British labour market,' Scandanavian Journal of Economics, vol. 92, pp. 247-269.

Jackman, R. and C. Williams (1985). 'Job applications by unemployed men,' London School of Economics, Centre for Labour Economics Working Paper No. 792.

Jones, S. (1989a). 'Job search methods, intensity and effects,' Oxford Bulletin of Economics and Statistics, vol. 51, pp. 277-296.

Jones, S. (1989b). 'Alternative implications of a structural model of job search,' London School of Economics, Centre for Labour Economics Discussion Paper No. 363.

Juhn, C., K. Murphy and B. Pierce (1989). 'Wage inequality and the rise in returns to skill,' University of Chicago, mimeo.

Katz, L., G. Loveman and D. Blanchflower (1993, forthcoming). 'A comparison of changes in the structure of wages in four OECD countries,' in R. Freeman and L. Katz (eds.), Changes and differences in wage structures, University of Chicago Press.

Katz, L. and K. Murphy (1992). 'Changes in relative wages: supply and demand factors,' Quarterly Journal of Economics, vol. 107, no. 1, pp. 35-78.

Katz, L. and A. Revenga (1989). 'Changes in the structure of wages: the United States versus Japan,' Journal of the Japanese and International Economies, vol. 3, pp. 522-553.

Krueger, A. (1991). 'How computers have changed the wage structure: evidence from microdata, 1984-1989,' National Bureau of Economic Research Working Paper No. 3858.

Layard, R., S. Nickell and R. Jackman (1991). Unemployment, Oxford University Press.

Lindeboom, M. and Theeeuwes, J. (1991), 'Search, Benefits and Entitlements', Leiden University Working Paper, June 1991.

Machin, S. and A. Manning (1991). 'Dynamic monopsony in the British labour market,' mimeo.

Machin, S. and A. Manning (1992). 'Minimum wages, wage dispersion and employment: evidence from the U.K. Wages Councils,' Centre for Economic Performance, London School of Economics, mimeo.

Maddala, G. (1983). Limited Dependent and Qualitative Variables in Econometrics, Cambridge University Press.

Meghir, C. and E. Whitehouse (1992). 'The evolution of wages in the U.K.: evidence from micro data,' Institute for Fiscal Studies, mimeo.

Mincer, J. (1991). 'Human capital, technology, and the wage structure: what do time series show?' National Bureau of Economic Research Working Paper No. 3581.

Mincer, J. (1991). 'Education and unemployment,' National Bureau of Economics Working Paper No. 3838.

Moghadam, R. (1990). 'Wage determination: an assessment of returns to education, occupation, region and industry in Great Britain,' Centre for Economic Performance Discussion Paper No. 8.

Mortensen, D. (1970). 'Job search, the duration of unemployment and the Philips curve,' American Economic Review, vol. 60, pp. 847-862.

Murphy, K. and F. Welch (1992). 'The structure of wages,' Quarterly Journal of Economics, vol. 107, no. 1, pp. 285-326.

Nickell, S. (1979). 'Education and lifetime patterns of unemployment,' Journal of Political Economy, vol. 87, no. 5, pt. 2, pp. S117-S131.

Psacharopoulos, G. and R. Layard (1979). 'Human capital and earnings: British evidence and a critique,' Review of Economic Studies, vol. 46, no. 144, pp. 485-504.

Revenga, A. (1992). 'Exporting jobs: the impact of import competition on employment and wages in U.S. manufacturing,' Quarterly Journal of Economics, vol. 107, no. 1, pp. 255-284.

Schmitt, J. (1992). 'Creating a consistent data set of labour market variables from the General Household Survey, 1974-88,' Centre for Economic Performance Working Paper No. 227.

Schmitt, J. (1993, forthcoming). 'The changing structure of male earnings in Britain, 1974-88,' in R. Freeman and L. Katz (eds.), Changes and Differences in Wage Structures, University of Chicago Press.

Schmitt, J. and J. Wadsworth (1992). 'Unemployment benefit receipt and search activity: pseudo-panel estimates for Britain,' Centre for Economic Performance Working Paper No. 226.

Schmitt, J. and J. Wadsworth (1993, forthcoming). 'Unemployment benefit levels and search activity' Oxford Bulletin of Economics and Statistics.

van den Berg, G. (1990). 'Search behaviour, transitions to non-participation and the duration of unemployment,' Economic Journal, vol. 100, pp. 842-865.

Wadsworth, J. (1991a). 'Unemployment benefits and labour market transitions in Britain,' Centre for Economic Performance Working Paper No. 125.

Wadsworth, J. (1991b). 'Unemployment benefits and search effort in the U.K. labour market,' Economica, vol. 58, pp. 17-34.

Yatchew, A. and Z. Griliches (1985). 'Specification error in probit models,' Review of Economics and Statistics, vol. 66, no. 1, pp. 134-139.