PROGRAMME FOR RESEARCH AND ACTIONS ON THE DEVELOPMENT OF THE LABOUR MARKET

NEW FORMS AND NEW AREAS OF EMPLOYMENT GROWTH

FINAL REPORT FOR THE UNITED KINGDOM

COMMISSION
OF THE EUROPEAN
COMMUNITIES

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 1987

ISBN 92-825-7198-X

Catalogue number: CB-49-87-486-EN-C

Printed in Belgium

Commission of the European Communities

Programme for Research and Actions on the Development of the Labour Market

NEW FORMS AND NEW AREAS OF EMPLOYMENT GROWTH

Final report for UK

By
R.A. WILSON & D.L. BOSWORTH
Institute for Employment Research
University of Warwick
Coventry CV4 7AL
United Kingdom

Document

This document has been prepared for use within the Commission. It does not necessarily represent the Commission's official position.

The research (study 85/8/A) on which these reports were based was financed by the Commission of the European Communities as part of its programme of Research and Actions on the Development of the Labour Market.

The analysis and conclusions are the responsibilities of the authors. They do not necessarily reflect any views held within the Commission of the European Communities nor do they commit it to a particular view of the Labour market or any other policy matters.

Contents

		Page
List of Tables		iii
List of Figures		v
Preface and Acknowledgements		vi
1.	SUMMARY	1
2.	RECENT DEVELOPMENTS IN WORK PATTERNS IN THE UK	3
2.1	Introduction	3
2.2	The Changing Industrial Structure of Employment	4
2.3	Developments in Occupational Structure	6
2.4	Growth of the Proportion of Persons with Formal Qualifications	11
2.5	The Increasing Share of Females in Total Employment	14
2.6	The Increasing Importance of Part-time Work	14
2.7	The Recent Growth in Self-employment	16
2.8	Hours of Work	20
2.9	Shiftwork and Unsocial Times of Work	23
2.10	Magnitude of the Informal Economy	28
2.11	Allocation of Time	29
2.12	The Upward Trend in Unemployment	34
2.13	New Forms of Employment and Work Patterns	35
3.	CHANGING FORMS OF EMPLOYMENT : JOB CONTENT	39
3.1	Introduction	39
3.2	Changes in the Occupational Structure of Employment	39
3.3	Increases in the Numbers with Formal Qualifications	51
3.4	Other Aspects of Changing Job Content	58
4.	NEW FORMS OF EMPLOYMENT : CONTRACTUAL ARRANGEMENTS	61
4.1	Introduction	61

		Page
4.2	Temporary Work	63
4.3	Homeworking and Outworking	65
4.4	Part-time Working	66
4.5	Hours of Work	68
4.6	Shiftwork and Unsocial Hours	72
4.7	Self-employment	78
4.8	The Informal Economy	80
4.9	Government Special Employment and Training Schemes	88
5.	NEW AREAS OF EMPLOYMENT GROWTH	94
5.1	Recent Developments in Industrial Employment	94
5.2	Some Possible Explanations	104
5.3	Future Prospects	107
6.	CONCLUSIONS	111
6.1	New Forms and New Areas of Employment	111
6.2	Policy Issues	115
6.3	Recommendations on Data and Research	122
Appendix A	Shift-share Analysis	125
Appendix B	UK Data Sources on Employment Structure	129
References		139
Annotated Bibliography		150

List of Tables

		Page
2.1	Employment by Broad Industry Sector, 1950-85	5
2.2	Employment by Occupation, 1971-84	7
2.3	Changes in the Proportions of Those Qualified at Advanced Level, 1971-81	12
2.4	Female Employment Shares, 1950-85	15
2.5	Growth of Part-time Employment in Great Britain, 1951-86	15
2.6	Self-employment as a Percentage of Total Employment, 1950-85	17
2.7	Businesses by Turnover Size, 1984	19
2.8	Normal and Actual Hours of Work, 1950-85	21
2.9	Overtime and Short-time Working, 1950-85	22
2.10	Basic Holiday Entitlements, 1951-85	24
2.11	Trends in the Incidence of Shiftworking, 1970-85	25
2.12	Time Spent on Main Activities by Employment Groups, 1974	27
2.13	Allocation of Time, 1983	31
2.14	Average Percentage Participation, 1974 and 1983	33
3.1	Changes in Occupational Employment, 1971-81	42
3.2	Changes in Occupational Employment, 1981-84	43
3.3	Changes in Occupational Employment, 1984-90	44
3.4	Ranking of Occupations by Percentage Growth in Employment, 1971-81	46
3.5	Analysis of Changes in the Numbers of Highly Qualified Persons, 1971-81	52
3.6	Detailed Analysis of Changes in the Numbers of the Highly Qualified, 1971-81	54
4.1	Access to Capital Equipment by the Employed and Unemployed, Brighton, 1982 (males)	82
4.2	Special Employment and Training Measures, 1981-87	89
5.1	Output and Output per Person by Broad Industrial Sector	95
5.2	Employment by Broad Industrial Sector	96

Page

5.3 Employment Growth in Services, 1950-85 98

5.4 Ranking of Industries by Percentage Growth in Employment, 1971-85 100

List of Figures

		Page
2.1	Changes in Industrial and Occupational Employment, 1971-81	8
2.2	Changes in Industrial and Occupational Employment, 1981-84	9
2.3	Changes in Industrial and Occupational Employment, 1984-90	10
2.4	Total Annual Output of First Degree Graduates	13

PREFACE AND ACKNOWLEDGEMENTS

This report by Rob Wilson and Derek Bosworth represents the draft final report for the UK of an international comparative research project entitled 'New Forms and New Areas of Employment Growth'. The aims of the project were to review recent developments in employment patterns; to assess the likely direction of future trends; to identify the limitations of currently available data in this area; to make suggestions for further research; and to consider the policy implications which arise.

The project has been funded by the Commission of the European Communities (Directorate General V) and co-ordinated by Professor Robert Lindley of the Institute for Employment Research, University of Warwick. The Institute gratefully acknowledges the helpful discussions with fellow participants: Henri Nadel and Laurent Schwab (France); Kurt Vogler-Ludwig (Germany); Bruno Contini (Italy); Tammo Oegema and Chris Van der Vegt (Netherlands); Andrew Chapman, Klaus Kaeding and John Morley (Commission DG,V); and Anne Houtman (Eurostat). The views expressed in this report are, however, the responsibility of the authors.

1. SUMMARY

The objectives of this report are to consider the ways in which employment and work patterns are changing in the UK economy and to assess the implications of these trends for government policy. In Chapter 2 the main features of recent developments are described. These include : the changes in the industrial structure of employment in favour of services; the shift in occupational employment shares in favour of white collar professional jobs; the growth in the importance of formal qualifications; the increased participation of females in the formal economy; the growth of part-time work; the increase in self employment; the fall in average hours worked; the increasing importance of shiftworking; the growth of the informal economy; significant changes in the domestic allocation of time; and finally the apparently inexorable rise in unemployment. The reason for these developments and the links between them are outlined.

Most of these changes have been in train for many years. However a number of important new features appear to be emerging. Chapter 3 is concerned with job content. This encompasses not just the changing occupational structure of employment and the qualifications people hold but other aspects concerned with the skills and knowledge required to undertake different jobs. It also highlights the way in which the boundaries between jobs are changing.

In Chapter 4 we concentrate upon changes in contractual arrangements. This is defined very broadly to include not just the formal contract of employment but the changing boundaries between work in the formal economy, domestic work, the black economy and so on.

The growth of part-time work, the increase in self-employment, as well as changing patterns of hours and shift-work, appear to be aspects of the attempts by firms to introduce more flexibility in their input of labour services. In recent years this has also been associated with the increasing fragmentation of jobs characterised by the use of temporary and casual workers, freelances and outworkers rather than full-time permanent workers. This strategy has been characterised as leading to a dual labour market with a group of core workers (with well paid secure jobs) and secondary workers (with varying degrees of attachment to the firm, poor pay and poor job prospects). Another feature of recent developments is the blurring of boundaries between: domestic work and leisure; formal and informal work; and different types of employment contract. The changing pattern of the allocation of time within households and the growth of the informal economy are two major features that are highlighted.

In Chapter 5 developments in the industrial structure of employment are considered with special emphasis on the service sector. The conclusions that emerge are that likely developments in employment in the formal economy over the next decade are not a cause for optimism. All forecasters agree that the primary and manufacturing sectors are not going to provide any new jobs. The only area where there is agreement that additional jobs are likely is in the area of personal services and services to businesses. However even here prospects seem limited

without a major investment in infrastructure in telecommunications. Areas of employment that were in the past major sources of additional jobs such as health and education services appear to have reached a limit beyond which it is impossible to increase employment significantly without radically changing the way in which they are provided.

The overall prospects for unemployment therefore are very gloomy with little prospect of any significant decline to the end of the current decade. This in conjunction with the fragmentation of jobs seems likely to lead to a growth in the importance of the informal economy.

The implications for government policy are manifold. They are considered in detail in Chapter 6. The most important are concerned with the rise in unemployment and the increasing trend towards a divided dual economy. Various suggestions are made as to how employment might be stimulated. These include: measures to strengthen the manufacturing sector (although this is not seen as a direct source of additional jobs); investment in infrastructure, both traditional (roads, dwellings) and novel (telecommunications); changes in modes of provision of health and education services; and finally measures to stimulate the growth of employment in the informal economy.

These measures are unlikely to be sufficient to make a significant impact on the unemployment problem. Furthermore they do nothing to solve the inequality of opportunity and income characterised by the dual economy. The resolution of these problems, it is argued, demands a radical change in the method of distributing income involving the replacement of the means tested social benefits/tax system by the introduction of a social dividend. The advantages and disadvantages of such a policy are assessed. Finally, recommendations regarding the need for new data and further research are made.

2. RECENT DEVELOPMENTS IN WORK PATTERNS IN THE UK

2.1 Introduction

This chapter provides a summary of how work patterns have altered in the UK over recent years. It is concerned both with the structure of employment as well as other aspects of working patterns such as the allocation of time by households, contractual arrangements and the changing nature of work in a developed economy. Many of the changes that can be observed in work patterns have been going on for a very long time. For example, the evolution from a predominantly agrarian to an industrialised economy following the industrial revolution, resulted in very dramatic change in employment patterns. In more recent years this process of economic development has continued with the decline of manufacturing and the growth of services. These broad trends reflect the impact of technological change and rising real incomes. Associated with them have been very substantial changes in other aspects of employment structure and working patterns.

Over the last 30-40 years the main developments may be summarised as follows:

(1) continued changes in the industrial structure of employment, with the shift from primary and manufacturing industries into services being the main feature;

(2) a shift in employment from so called "blue-collar" or manual jobs towards "white-collar" or "non-manual" jobs;

(3) a very substantial increase in the proportion of employees holding formal qualifications (eg. at the higher level, University degrees or equivalent);

(4) a very large increase in female participation in the labour force and a growing share of female employment;

(5) an increasing tendency, especially since the early 1960's for jobs to be part-time rather than full-time;

(6) a significant rise in the proportion of self-employment since the mid-1970's, reversing a previously well established negative trend;

(7) a reduction in the average length of the working year, resulting from both falling average weekly hours and increasing annual holiday entitlements;

(8) the growing importance of shiftworking and changes in associated working patterns, including an increase in unsocial times of work linked with (1) and (7) above;

(9) the growth in the so called "black" or hidden economy with a growing share of income coming from outside the formal economy;

(10) significant changes in the domestic allocation of time with, in particular, a growing degree of self-provision of services while at the same time the proportion of women working in the formal economy has increased (see point 4 above).

(11) finally, as a backdrop to all these changes, there has been the apparently inexorable upward trend in unemployment to levels of 3 - 4 million in the early 1980s.

These developments are clearly not unrelated and one objective of this chapter is to explore some of the links between them as well as their underlying determinants. For expository purposes we prefer to deal with each of these main developments separately, noting, where appropriate, some of the more important inter-relationships. A separate section is therefore devoted to each of the main points. This is followed by a final section which concentrates on the most recent developments and identifies some of the more subtle ways in which work patterns are currently being altered.

2.2 The Changing Industrial Structure of Employment

The industrial structure of employment in the UK has undergone continuous change over the past two hundred years. Even in the relatively short period since the second world war there have been very substantial changes as the data in Table 2.1 illustrate. The share of employment in primary and energy industries has fallen steadily, especially between 1950 and 1970, and by 1985 accounted for just 5 per cent of employment. Manufacturing employment has also fallen since the mid-1950's, declining especially rapidly during the recent recession. It now accounts for less than a quarter of total employment compared with 36 per cent in 1950. This decline was however largely offset, up to the end of the 1970s, by a growing share of employment in services, particularly those in the public sector. Between 1980 and 1985 the growth in marketed services continued while constraints on public expenditure led to a decline in public service employment. This broad brush picture tends to conceal even more dramatic changes within the sectors. In manufacturing, for example, the decline in traditional industries such as shipbuilding and textiles has been to some extent offset by growth in other industries, most notably electrical engineering and especially electronics. In contrast, the substantial growth in hotels and catering within services has been offset to some degree by declining employment in transport and laundries.

The explanations for these developments lie in the impact of technological change upon labour productivity, unit costs and relative prices and the effects of rising real incomes and changing relative prices on the demands for the products of different industries. This includes some significant changes in the pattern of intermediate demands of one industry for another industry's products (or, more especially, services). These phenomenon form one of the main subjects for discussion in Chapter 5. This chapter also presents material on where the most recent changes in employment have been concentrated and speculates about possible future developments.

There are only a limited number of forecasting models of likely future developments in the industrial structure of employment in the UK. Apart from the CGP and IER forecasts,[1] these include : a general assessment

Table 2.1 Employment by Broad Industry Sector, 1950-85

Thousands

	Share of Total Employment (%)				Levels			
	1950	1970	1980	1985	1950	1970	1980	1985
Primary and energy	11.4	6.6	5.4	5.1	2521	1623	1340	1213
Manufacturing	35.7	34.8	28.3	23.7	7888	8514	7079	5666
Construction	6.4	6.5	6.4	6.1	1419	1600	1609	1455
Marketed services	35.0	36.5	41.3	45.9	7735	8937	10314	10976
Public services	11.6	15.6	18.6	19.2	2556	3819	4641	4600
Whole economy	100.0	100.0	100.0	100.0	22120	24493	24983	23911

Thousands

	Net Change			Average Growth % p.a.		
	1950-70	1970-80	1980-85	1950-70	1970-80	1980-85
Primary and energy	-899	-283	-127	-2.2	-1.9	-2.0
Manufacturing	626	-1435	-1413	0.4	-1.8	-4.4
Construction	182	8	-153	0.6	0.1	-2.0
Marketed services	1202	1378	662	0.7	1.4	1.3
Public services	1262	822	-40	2.0	2.0	-0.2
Whole economy	2373	490	-1071	0.5	0.2	-0.9

Source: Wilson (1986).

carried out by the Institute for Manpower Studies (IMS) for the Occupational Study Group (OSG) based on a survey of employers;[2] a number of special studies of individual industries undertaken by the Science Policy Research Unit (SPRU) as part of their TEMPO project;[3] and finally various more qualitative assessments such as those by Gershuny (1983).

These various projections differ in detail but all tend to emphasise the continuing decline in employment in most manufacturing industries, with continued productivity growth outweighing relatively modest increases in output, the latter reflecting the continuing decline in competitiveness of many UK firms. The main increases in employment are seen as emerging within the service sector as a result of changes in the pattern of final and intermediate demands by consumers and producers. However, technological change in sectors such as banking and finance and the continued switch in consumer demand towards self provision in areas such as transport, mean that this is not a general phenomenon across all service industries.

2.3 Developments in Occupational Structure

These developments in industrial structure have been associated with marked shifts in the occupational distribution of employment. The main features are illustrated in Table 2.2, which highlights the growth of white-collar jobs, especially of the more skilled kind and the decline of blue-collar work especially for those with few skills or skills tied to industries in decline.

A very significant proportion of the total change can be directly attributed to the altered industrial structure noted above. However, an increasingly important part of the overall change has been due to changes in the occupational structure of employment within industries, IER (1986), IMS/OSG (1986) and Gershuny and Miles (1983). These changes are attributable to: technological change; organisational changes, including the increasing tendency to sub-contract many service functions; and finally, changing job demarcations. Some insight into the pattern of occupational employment change within industries is given by Figures 2.1-2.3, which show the main increases and decreases over the periods 1971-1981 and 1981-1984, and the IER's forecasts for 1984-1990. They illustrate how the industrial and occupational structure of employment have been changing. The dark crosshatched squares indicate cells of the occupation by industry matrix where employment has risen rapidly, the more lightly shaded squares indicate corresponding areas of employment decline. A dot in the centre of a square indicates that that occupation accounts for more than 20 per cent of employment in the industry concerned.

Over the period 1971-81 the diagram splits roughly down the main diagonal. Those cells below it to the left contain most of the significant areas of employment decline. These are principally lower skilled, white-collar and blue-collar occupations in the non-service sector. In contrast those cells to the top and right contain the main growth areas. These include the highly skilled professional occupations and the service sector. This pattern is repeated if the criteria are changed to absolute changes in employment.

Between 1981 and 1984 the pattern was similar although not quite so clear cut. In terms of growth sectors the main areas of increase were

Table 2.2 Employment by Occupation, 1971-84

Thousands

WOC	Occupation	1971	% of total	1981	% of total	1984	% of total
1	Managers and administrators	577	2.4	730	3.0	741	3.1
2	Education professions	785	3.3	956	4.0	991	4.2
3	Health, welfare professions	753	3.1	1048	4.4	1142	4.8
4	Other professions	835	3.5	1076	4.5	1161	4.9
5	Literary, artistic, sports occupations	154	0.6	197	0.8	227	1.0
6	Engineers, scientists etc.	455	1.9	608	2.5	649	2.7
7	Technicians, draughtsmen	422	1.7	472	2.0	521	2.2
8	Clerical occupations	2703	11.2	2723	11.4	2643	11.2
9	Secretarial occupations	843	3.5	958	4.0	934	4.0
10	Sales representatives	420	1.7	391	1.6	405	1.7
11	Other sales occupations	1075	4.5	1126	4.7	1210	5.1
12	Supervisors	208	0.9	321	1.3	302	1.3
13	Foremen	576	2.4	563	2.3	463	2.0
14	Engineering craft occupations (module)	1500	6.2	1350	5.6	1254	5.3
15	Engineering craft occupations (non-module)	514	2.1	459	1.9	422	1.8
16	Construction craft occupations	817	3.4	751	3.1	832	3.5
17	Other craft occupations	376	1.6	276	1.2	223	0.9
18	Skilled operatives	1008	4.2	771	3.2	687	2.9
19	Other operatives	4974	20.6	3999	16.7	3576	15.1
20	Security occupations	260	1.1	320	1.3	305	1.3
21	Skilled personal service occupations	2150	8.9	2378	9.9	2423	10.2
22	Other personal service occupations	1761	7.3	1894	7.9	1939	8.2
23	Other occupations	980	4.1	619	2.6	601	2.5
	All Occupations	24146	100.0	23987	100.0	23652	100.0

Source: IER (1986), Tables A11 and A12.

Figure 2.1 Changes in Industrial and Occupational Employment, 1971-81

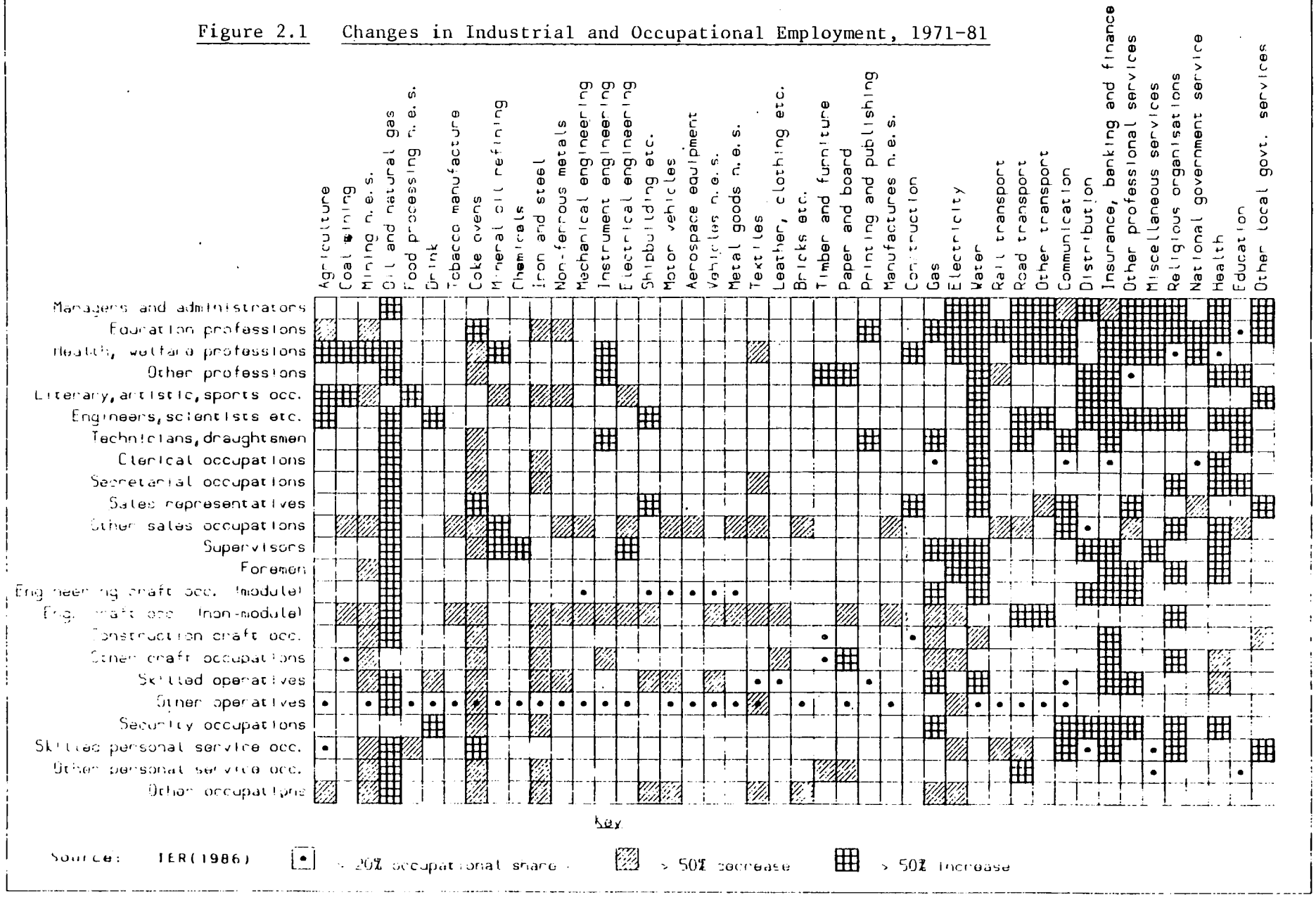


Figure 2.2 Changes in Industrial and Occupational Employment, 1981-84

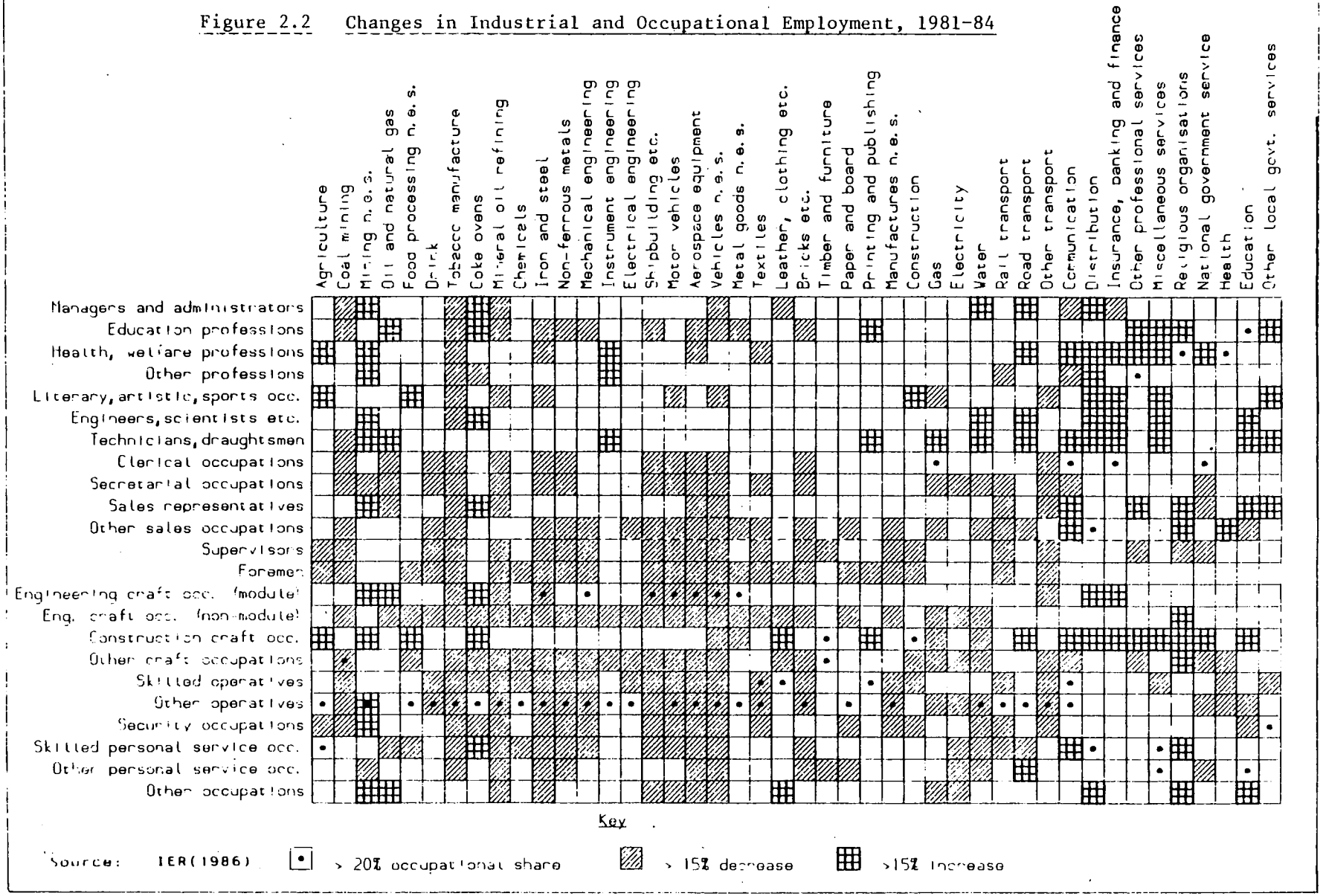
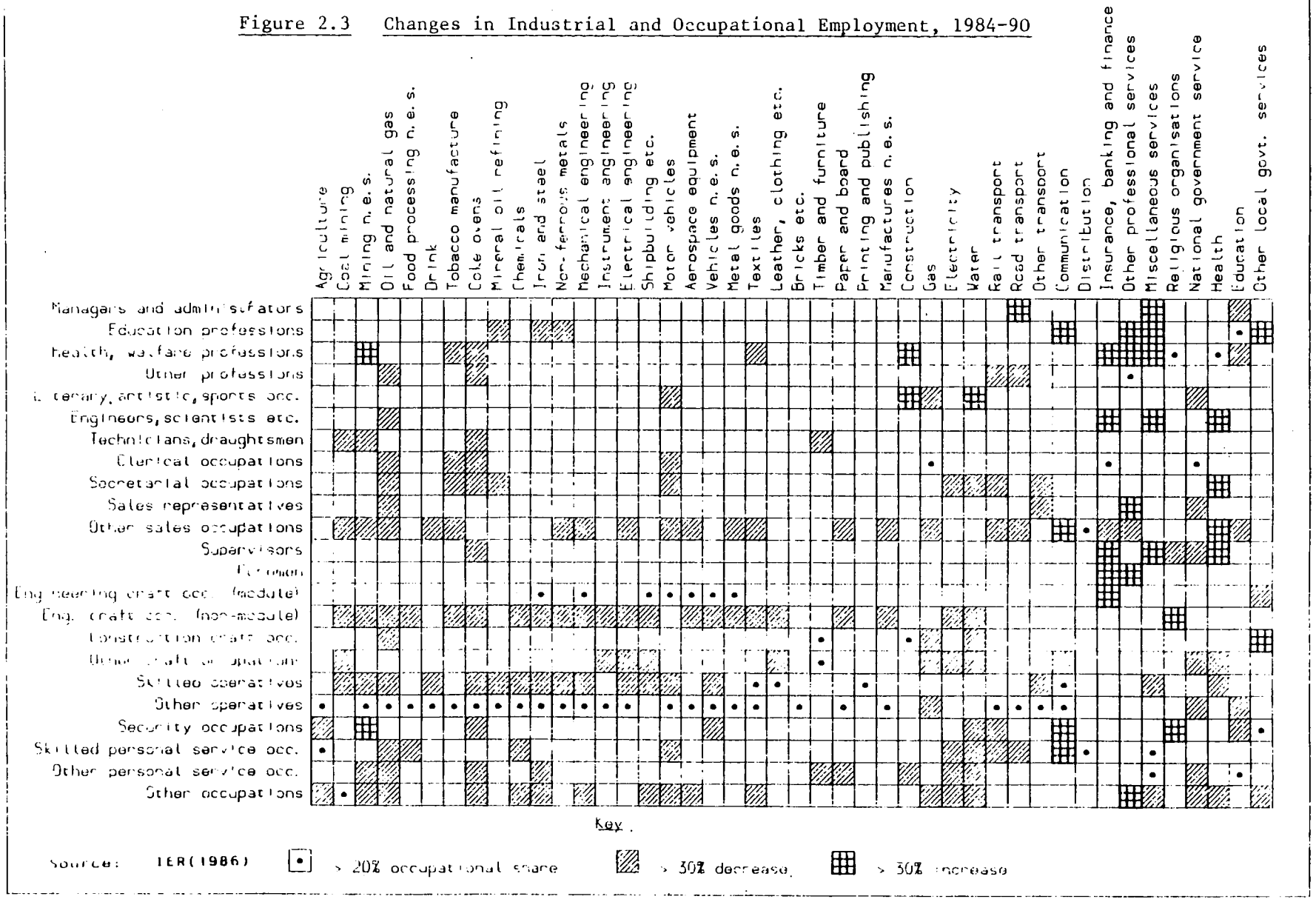


Figure 2.3 Changes in Industrial and Occupational Employment, 1984-90



Key:

Source: IER(1986) ▪ > 20% occupational share ▨ > 30% decrease ⊞ > 30% increase

in service sector again, especially amongst white collar occupations. The areas of significant decline were, in constant, concentrated in a fairly large quadrant in the bottom left of the figure. These broad trends are confirmed in the IMS/OSG study. Within manufacturing industries in particular there is a clear tendency for increasing shares of employment in skill and knowledge-intensive occupations, despite falling employment levels overall. This has benefitted scientists, engineers and certain multifunctional craftsmen and technicians. Within service industries the occupational change within sectors has been relatively less significant. There has been some growth for the less skilled personal and support occupations.

There are few detailed forecasts available of occupational structure other than those prepared by the IER which are summarised in Figure 2.3 (further details may be found in Table 3.3 below) and those in the IMS document referred to in the previous section although authors such as Gershuny (1983) provide some qualitative predictions. These all suggest: an increasing number of highly skilled non-manual jobs; a slow down, if not a reversal, in the growth of routine clerical work; and, with a few exceptions, a declining number of craft, operative and labouring jobs. The only increases in the 'blue collar/manual' part of the job spectrum are likely to be for certain multiskilled technicians and craftsmen and for security and personal service occupations. The IER projections contained in Figure 2.3 suggest a continuation of these developments, with a further concentration of the areas of growth into a few selected industrial sectors such as insurance, banking and finance, professional services and miscellaneous services. Again these areas of increase are expected to especially favour the white-collar occupations.

2.4 Growth of the Proportion of Persons with Formal Qualifications

Related to the changing occupational structure of employment has been an increasing proportion of persons holding formal qualifications. This has been reflected both in rising standards for entry into many occupations coupled with a growing proportion of young people entering higher and further education in order to meet these entry requirements and to compete in the labour market. One of the most dramatic examples of this phenomenon has been the increase in the number of people entering higher education in the UK since the second world war, mirroring changes in many other countries, (see Figure 2.4) Between 1971 and 1981 the total stock of persons qualified at University degree level or its equivalent increased by over 40 per cent. The proportion of those in employment who were highly qualified rose from just under 9 to just under 13 per cent. This was reflected in an increasing proportion of persons qualified in most occupations as shown in Table 2.3. Regrettably the Census data for 1981 do not distinguish those with lower level qualifications. In Chapter 3 data from the LFS are used to assess more recent developments.

The reason for the substantial rise in the numbers of people with higher and intermediate level qualifications is still the subject of considerable debate. It is clear that increased government provision, both in terms of numbers of places and financial support for students, has made access to higher education easier. In combination with growing real incomes this has enabled an ever increasing proportion of young people to undertake courses of higher and further education.

Table 2.3 Changes in the Proportion of Those Qualified at Advanced Level 1971-81

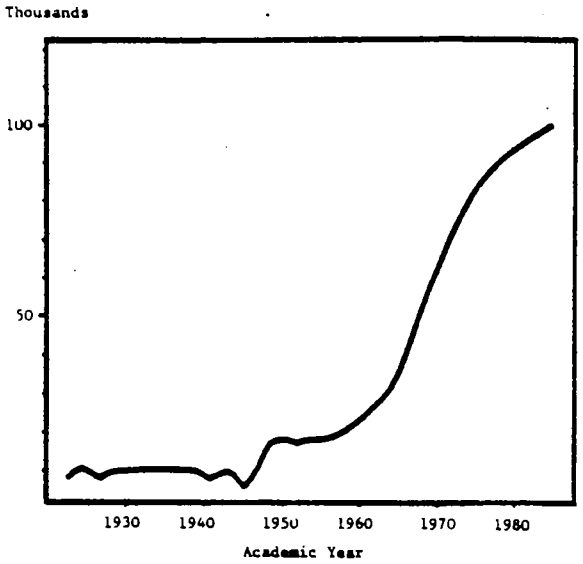
Thousands

Occupation (a)	Occupational Employment		Numbers Qualified		Percentage Qualified		Total Change
	1971	1981	1971	1981	1971	1981	1971-81
Farmers, foresters, fishermen	709.1	585.0	12.4	20.5	1.7	3.5	8.1
Miners and quarrymen	251.2	160.8	0.9	2.5	0.4	1.5	1.5
Gas, coke and chemicals makers	137.5	118.1	1.3	1.9	0.9	1.7	0.7
Glass and ceramics makers	88.3	64.8	0.6	1.2	0.7	2.0	0.7
Furnace, forge, foundry, rolling mill workers	164.5	119.9	0.6	0.7	0.4	0.6	0.1
Electrical and electronic workers	581.3	589.9	9.1	19.7	1.6	3.3	10.6
Engineering and allied trades	2655.1	2388.7	24.8	50.3	0.9	2.1	25.5
Woodworkers	404.3	374.5	2.4	4.9	0.6	1.3	2.5
Leather workers	104.9	65.3	0.5	0.3	0.5	0.5	-0.1
Textile workers	291.0	170.7	1.8	1.2	0.6	0.7	-0.6
Clothing workers	364.2	279.2	1.5	2.8	0.4	1.0	1.3
Food, drink and tobacco workers	347.1	309.6	1.3	2.8	0.4	0.9	1.5
Paper and printing workers	294.5	268.0	1.7	3.4	0.6	1.3	1.7
Makers of other products	294.3	273.5	1.8	4.3	0.6	1.6	2.5
Construction workers	542.1	602.8	4.3	10.7	0.8	1.8	6.4
Painters and decorators	276.5	252.0	0.4	1.6	0.2	0.6	1.1
Drivers of stationary engines, cranes, etc.	308.9	250.8	0.4	0.9	0.1	0.4	0.5
Labourers n.e.c.	1188.7	816.8	1.8	4.4	0.2	0.5	2.6
Transport and communications workers	1400.7	1284.8	17.5	29.0	1.2	2.3	11.5
Warehousemen, storekeepers, packers, bottlers	754.7	726.2	3.4	8.4	0.5	1.2	5.0
Clerical workers	3355.3	3620.1	99.6	196.8	3.0	5.4	97.2
Sales workers	2129.0	2155.1	78.8	136.3	3.7	6.3	57.5
Service, sport and recreation workers	2879.6	3227.7	34.8	74.3	1.2	2.3	39.5
Administrators and managers	925.2	1340.3	201.6	338.1	21.8	25.2	136.4
Professional, technical workers, artists	2720.8	3473.9	1580.2	2149.8	58.1	61.9	569.6
Armed forces (British and Foreign)	237.4	240.3	14.5	18.1	6.1	7.6	3.7
Inadequately described occupations	576.4	814.5	17.3	28.3	3.0	3.5	11.1
All occupations	23982.5	24573.4	2115.4	3113.5	8.8	12.7	998.1

Source: Census of Population 1971 and 1981.

Notes: (a) Occupational orders as defined by OPCS for 1970.

Figure 2.4 Total Annual Output of First Degree Graduates



Source: Wilson (1986).

Notes: (a) Home, overseas, full-time and part-time graduates with degrees awarded by Universities (including the Open University and London University external degrees) and the Council for National Academic Awards (CNAA) (including Diplomas in Technology and Art).

(b) Figures have been adjusted onto a comparable basis.

Furthermore the relative earnings of those with such qualifications continue to provide a substantial incentive to individuals to make this investment. In addition technological and organisational change have resulted in an ever increasing complexity in economic affairs which have resulted in growing demands for those with scientific, technological, business, language and other skills. There are however some schools of though which hold that education (and training) may not impart new skills but simply serves as a "screening" device to identify those with above average natural abilities. Although there is undoubtedly some truth in this view, there is considerable evidence that higher education does increase individual productivity and that the need for people with such training has genuinely increased. These issues are discussed in Chapter 3.

2.5 The Increasing Share of Females in Total Employment

Table 2.4 illustrates the rise in the share of females in total employment. In the past 35 years while male employment has fallen by almost 1.4 million the number of females has increased by over 3 million. This difference in experience has if anything become even more pronounced in recent years. (Although to some extent these figures give a false impression, since as noted in the next section a large proportion of these jobs are part-time.)

It is clear that this phenomenon reflects both supply and demand factors. On the one hand there has been a steady increase in female participation rates and a growing demand for jobs by, in particular, married females. As noted below this has been facilitated to some extent by technological progress in domestic machinery which has enabled informal domestic work to be undertaken more efficiently. On the other hand changes in industrial structure have resulted in a increasing number of jobs that have traditionally been taken by women (e.g. in education and health services). Moreover within many industries changes in occupational structure (e.g. towards clerical work) and increasing requirements for part-time work (to meet needs for greater flexibility) have resulted in a change in the nature of jobs which has tended to favour women.

There are few forecasts of future changes in the proportion of females in employment. The IER (1985) has projected that between 1984 and 1990 the number of females in employment will continue to rise (by some 400 thousand) while male employment falls by over 600 thousand. This growth reflects increasing employment shares across almost every sector but also the continuing movements in industrial structure towards those industries (most notably in the service sector) which have traditionally employed large proportions of women. The IMS/OSG (1986) study predicts a similar trend. According to their analysis over 50 per cent of all jobs could be female by 1990, although a very large proportion of these jobs will be part-time.

2.6 The Increasing Importance of Part-time Work

The proportion of part-time jobs has risen steadily over most of the post-war period. The data in Table 2.5 illustrate the significant increases for both sexes between 1951 and 1981, although the absolute share of females (almost 42 per cent in 1981) remains much higher than

Table 2.4 Female Employment Shares, 1950-85

Thousands

	Share of Total Employment (%) 1950	1970	1980	1985
Primary and energy	9.7	13.9	16.2	16.3
Manufacturing	32.5	30.1	29.2	28.5
Construction	2.4	5.1	7.4	9.1
Marketed services	37.3	42.7	46.4	48.5
Public services	49.3	56.9	61.8	62.8
Whole economy	31.6	36.2	40.3	42.5

Source: Wilson (1986).

Table 2.5 Growth of Part-time Employment in Great Britain, 1951-86

Thousands

	Employees in employment, all industries								
	Male				Female				All
	FT	PT	All	%	FT	PT	All	%	
1951(a)	13438	45	13483	0.3	5752	754	6506	11.6	19989
1961(a)	13852	174	14026	1.2	5351	1892	7243	26.1	21269
1971(a)	12748	572	13320	4.3	5166	3152	8318	37.9	21638
1971(b)	12840	584	13424	4.4	5467	2757	8224	33.5	21648
1981(b)	11511	718	12229	5.9	5304	3781	9085	41.6	21314
1986(b)	n/a	n/a	11619	n/a	4900	4428	9328	47.5	20947

Sources: (a) Census of Population: 1951, Great Britain, one per cent sample, Table 11.2; 1961, England and Wales, Industry tables-Part I, Table 2; Scotland, Occupation, Industry and Workplace, Part II, Industry, Table 2; 1971, Great Britain, Economic Activity Table 5, Part IV, Tables 26 and 34.
(b) Employment Gazette: August 1973, Census of Employment, June 1971: December 1983, Census of Employment, September 1981 and August 1986, Table 1.5 for March 1986 estimate.

Note: Percentages are of part-time/total employment.

that for males (at around 6 per cent). The phenomenon of the shift towards part-time working has clearly been closely linked with the rising employment share of females.

Information from various sources, such as the Labour Force Survey, New Earnings Survey, General Household Survey and many others, all confirm that the main growth in employment in the UK in recent years has continued to be in the form of part-time jobs, especially for women. The DE's Census of Employment based estimates show that between September 1981, and March 1986, while the number of male employees in Great Britain fell by over 600 thousand and the number of full-time female employees by around 350 thousand, the number of part-time females in employment increased by over 600 thousand. The DE has not published information on part-time males since 1981 but analysis of data from the other sources referred to above suggests that a similar pattern has emerged for both sexes. Blanchflower and Elias (1985) suggest that the industrial pattern of part-time employment for men and women are very similar with the great majority being employed outside the manufacturing sector, especially in services.

The reasons for these developments have been vigorously debated in the literature. Some explanations emphasise the demand side and firms' attempts to improve efficiency and flexibility in their operations including the introduction of new shift systems. Others have stressed the supply side pressures for jobs that can be fitted in more easily with child rearing.

There are only a few projections of future trends in part-time working. Those conducted by both the IER and the OSG suggest that the various factors that have resulted in past increases in part-time working are likely to continue to operate in the future. The IER for example projects that while the number of full-time employees in employment is likely to decline by over a million between 1984 and 1990 there will be an increase in the number of part-time jobs of about 900 thousand. This growth reflects both increasing shares of part-timers in all industries together with a continued shift in industrial structure towards those service industries which traditionally employ a large proportion of such workers. The IMS/OSG study projects a similar picture, with growth in medium to large sized service organisations being the main influence in increasing the share of part-time jobs to 25 per cent of total employment by 1990.

2.7 The Recent Growth in Self-Employment

Until recently the trend in proportion of the self-employed in total employment in the UK has been one of slight decline. This phenomenon occurred despite increasing proportions in certain sectors such as agriculture and construction (see Table 2.6). Over the last few years however this has altered, with a quite significant increase from a share of total employment of 8 per cent in 1980 to 11 per cent in 1985. This recent upsurge has occurred in all sectors of the economy but has been especially marked in construction. In absolute terms the largest increases have been in the service sector however in industries such as distribution, hotels, catering and repairs, "other services" and business services. In total these sectors saw an increase of almost 350 thousand between 1981 and 1985, while the increase for construction was 80-90 thousand. This over a period when employment as a whole fell by over a million.

Table 2.6 Self-employment as a Percentage of Total Employment, 1950-85

Thousands

	Share of Total Employment (%) 1950	1970	1980	1985
Primary and energy	15.3	20.6	19.0	22.3
Manufacturing	3.0	1.7	1.9	3.4
Construction	11.0	20.0	22.1	34.2
Marketed services	14.6	13.6	12.2	15.1
Public services	0.0	0.0	0.0	0.0
Whole economy	8.6	8.2	8.0	11.0

Source: Wilson (1986).

The causes of this recent growth in self-employment are still unclear. It seems likely that a significant part of the increase in certain sectors, such as construction, simply represents a reclassification of persons who were previously employees. Legislative changes, and the desire of employers to avoid certain fixed employment costs have resulted in a move towards sub-contracting in preference to a normal employment contract. Another school of thought regards the growth as a reflection of an outburst of entrepreneurial activity as a result of various policies introduced by the Thatcher Government, (including some explicitly aimed at encouraging self-employment), together with the growth in new opportunities opened up by technological advances, especially in the area of micro-electronics. This type of explanation may be especially important for some manufacturing industries where increases have been very rapid, as well as certain business services.

A related phenomenon has been the apparent growth in the numbers of small firms (defined as those with an annual turnover of £1 million or less in 1981 prices (£250,000 outside manufacturing). Although there are few reliable data on this, British Statistics Office data about the number of registered businesses (i.e. registered for VAT purposes), give some idea of the importance of small businesses within the economy. Table 2.7 reveals that of the approximately 1.5 million businesses registered in 1984, 237 thousand (16 per cent) had a turnover less than £17,000 and 735 thousand (50 per cent) had a turnover of less than £50,000 (British Business, December 14, 1984). The distribution was skewed further towards low turnover in the case of sole proprietorships. Despite the likely under-reporting of smaller businesses and the exclusion of those which are VAT exempt, they are, nevertheless, numerically extremely important and particularly in terms of employment because of their relatively high labour intensity.

Government figures on turnover are not reported in constant prices and it is therefore difficult to make use of the same source for comparative purposes. The general view appears to be that the small firm sector exhibited a secular decline from the late 1930s to the end of the 1960s, but, since then, has shown marked growth (Storey, 1982). Data on registrations and liquidations over the period 1970 to 1980 suggested a 2.31 fold increase in registrations and a 1.88 fold increase in liquidations (Bannock, 1981). This is consistent with a significant growth in the number of small businesses (Cross, 1983, p. 97), which, after a hiccup in 1980, appears to have continued (British Business, 13th July 1982 and 14th December, 1984). An important feature is that the growth in trading as unlimited liability enterprises appears to suggest a trend towards non-manufacturing sectors (Cross, 1983, p. 97). Certainly the growth in registered manufacturing businesses from 1978/9 to 1984 was only 141 to 152 thousand (7.8 per cent), compared with 1.2 to 1.3 million in non-manufacturing (8.9 per cent). The growth in services alone was from 834 to 913 thousand (9.5 per cent). The IMS/OSG study also suggests that annual job creation from small firms may have been substantial in recent years although information on the "death" rates of small firms from VAT returns presents a contrasting picture. It does appear that large firms have been shedding jobs in an attempt to reduce over-capacity as well as introducing new labour saving technologies. This can be expected to have resulted in a reduction in the average size of firms. Another related factor has been the growing tendency for larger firms to sub-contract production to smaller enterprises which has resulted in a relatively buoyant picture for small firms in certain parts of manufacturing as well as in the service sector.

Table 2.7 Businesses by Turnover Size, 1984

Number (percentage) of legal units in 1984

Trade classification	Turnover band (£ 000's) in 1982								
	0-17	18-49	50-99	100-249	250-499	500-999	1000-4999	5000 and over	Total
Agriculture	50180(31)	49370(30)	31180(19)	23337 (4)	6462 (4)	2147 (1)	961 (1)	88 (-)	163725
Mining and quarrying and public utilities	396(22)	261(15)	207(12)	297(17)	172(10)	142 (8)	179(10)	125 (7)	1779
Manufacturing industries	20926(14)	38170(25)	24577(16)	28016(18)	14194 (9)	10074 (7)	11496 (7)	4531 (3)	151986
Construction	45992(21)	90038(41)	33213(15)	26698(12)	10651 (5)	5872 (3)	4334 (2)	987 (-)	217785
Transport industries	10352(16)	25551(40)	8749(14)	8303(13)	4351 (7)	2903 (5)	2647 (4)	813 (1)	63669
Wholesaling and dealing	15269(13)	24493(20)	17786(15)	23191(19)	13470(11)	10445 (9)	12318(10)	3492 (3)	120464
Retailing	19197 (7)	89248(34)	74016(28)	57508(22)	13417 (5)	4902 (2)	2608 (1)	718 (-)	120464
Finance, property and professional services(a)	26089(25)	37839(36)	13490(13)	13437(13)	5545 (5)	3120 (3)	3056 (3)	1660 (2)	104236
Catering	6077 (5)	45986(38)	40853(34)	22662(19)	3963 (3)	1073 (1)	610 (1)	150 (-)	121374
Motor trades	7815(10)	23259(31)	11664(16)	12866(17)	7244(10)	5421 (7)	5380 (7)	1001 (1)	74650
Business services	14095(21)	27804(41)	9319(14)	8468(13)	3451 (5)	2157 (3)	1763 (3)	449 (1)	67596
All other services(a)	20932(21)	45278(46)	14643(15)	10664(11)	3437 (3)	1867 (2)	1590 (2)	624 (1)	99035
Total	237322(16)	497297(34)	279697(19)	235447(16)	86357 (6)	50123 (3)	46942 (3)	14638 (1)	1447823

Source: British Business: 14th. December 1984.

Notes: (a) The coverage of this heading is substantially deficient because of Vat exemptions.

Existing forecasts of the share of self-employment are very limited. The IER using simple extrapolative models has suggested that between 1984 and 1990 self-employment is likely to continue to increase by over 300 thousand while the number of employees in employment falls by almost 200 thousand. The IMS/OSG study presents a very similar picture. Their analysis also points to a quite strong employment growth for small businesses (defined by turnover as described above). They suggest that there were probably about 5 million people employed in small firms in 1985. This is forecast to increase by at least 700 thousand jobs by 1990, with corresponding declines for large enterprises. The increase is expected to arise partly as a result of organic growth of new firms, partly due to competition with larger enterprises and partly as a consequence of the increasing degree of out-sourcing by larger companies in manufacturing and the general move towards sub-contracting for many service activities.

2.8 Hours of Work

Over the period since 1850, the long-term trend in average weekly hours has been downward, with few relatively shortlived reversals.[4] Normal hours were close to 60 per week in most sectors in 1850. This had fallen to around 55 per week by 1880 in many sectors, with a considerable degree of dispersion, and nearer to 50 by 1900. Further major reductions followed each of the World Wars and, by 1950, normal hours of manual workers were around 44. A further reduction took place in the 1960s, reaching 40 by the next decade. This level was maintained throughout the 1970s and only in the last few years is there evidence of a further downward movement to around 39 or slightly less.[5]

With such major movements in normal hours, average actual hours per week have also tracked downwards, as shown in Table 2.8. Male and female normal hours under collective agreements converged in the early to mid 1970s with the introduction of equal opportunities legislation. While both male and female average actual hours have decreased over time, female hours have remained below male because of the higher incidence of part-time working amongst women (i.e. in recent years, over 30 per cent for women compared with 6 per cent for men). As the whole frequency distribution of hours of work has shifted downwards, an increasing proportion of employees have moved across the 30 hour boundary which marks the official divide between full-time and part-time employment in the UK.

Returning to Table 2.8, it can be seen that average actual hours have exceeded normal hours throughout the post-War period, indicating the existence of net overtime working (i.e. overtime exceeding short-time working). In certain years, such as 1969, the difference between average actual and normal hours has been over 4 hours per manual employee in manufacturing. Given that overtime is not worked by all manual workers, those on overtime were clearly working more than four hours of overtime per week.

Separate information, reported in Table 2.9, shows how important overtime is amongst operatives. Bearing in mind that there are some differences in definition vis a vis the discussion of average hours above, it can be seen that the percentage of operatives on overtime in manufacturing rose from around 20 per cent in 1952 to over 30 per cent by 1960. In addition, average hours of overtime per operative on

Table 2.8 Normal and Actual Hours of Work, 1950-85

Year	Normal weekly hours of manual workers			Actual weekly hours of manual workers		
	Men	Women	All	Men	Women	All
1950	44.4	44.5	44.4	47.3	41.7	45.9
1951	44.4	44.5	44.4	47.9	41.6	46.3
1952	44.4	44.5	44.4	47.5	41.2	45.9
1953	44.3	44.5	44.4	47.9	41.8	46.3
1954	44.3	44.4	44.4	48.4	41.8	46.7
1955	44.3	44.4	44.4	48.9	41.7	47.6
1956	44.3	44.4	44.3	48.6	41.3	46.8
1957	44.2	44.4	44.3	48.4	41.2	46.6
1958	44.2	44.3	44.3	47.9	41.0	46.2
1959	44.2	44.3	44.2	48.3	41.4	46.6
1960	43.0	43.4	43.1	48.0	40.7	46.2
1961	42.3	42.3	42.3	47.7	39.8	45.7
1962	42.1	42.2	42.1	47.2	39.5	45.3
1963	42.0	42.1	42.0	47.8	39.7	45.8
1964	41.9	42.1	42.0	47.8	39.7	45.8
1965	41.0	41.2	41.0	47.3	38.9	45.3
1966	40.3	40.5	40.3	46.2	38.3	44.3
1967	40.2	40.4	40.2	46.2	38.2	44.3
1968	40.1	40.2	40.1	46.3	38.4	44.5
1969(a)	40.1	40.1	40.1	46.5	38.1	44.6
1970	40.1	40.0	40.1	45.7	37.9	43.9
1971	40.0	40.0	40.0	44.7	37.7	43.2
1972	40.0	40.0	40.0	45.0	37.9	43.5
1973	40.0	40.0	40.0	45.6	37.7	43.9
1974	40.0	40.0	40.0	45.1	37.4	43.4
1975	40.0	40.0	40.0	43.6	37.0	42.2
1976	40.0	40.0	40.0	44.0	37.4	42.6
1977	40.0	40.0	40.0	44.2	37.4	41.4
1978	40.0	40.0	40.0	44.2	37.4	41.4
1979	40.0	40.0	40.0	44.0	37.4	41.2
1980	39.8	38.5	39.6	43.0	37.5	40.7
1981	39.7	38.4	39.5	43.0	37.7	40.7
1982	39.4	38.3	39.2	42.9	38.0	40.8
1983	39.2	38.3	39.0	43.3	38.2	42.4
1984	39.1	38.1	39.0	43.4	38.2	42.5
1985	39.1	38.0	38.9	*	*	42.8

Source: British Labour Statistics: Historical Abstract, Department of Employment Gazette and New Earnings Survey.

Note: (a) Change in series

Table 2.9 Overtime and Short-time Working, 1950-85

Year	Overtime: % of all operatives	Overtime: Average hours/week per operative on overtime	Short-time: % of all operatives	Short-time: Average hours/week per operative on short-time
1950	n.a	7.3	n.a	14.8
1951	n.a	7.5	n.a	13.0
1952	20.7	7.7	3.8	15.0
1953	24.0	7.8	1.0	11.1
1954	26.5	8.0	0.7	11.4
1955	27.5	8.0	0.8	13.3
1956	25.7	7.9	1.5	10.9
1957	26.1	7.8	1.1	10.5
1958	23.1	7.6	2.8	14.0
1959	26.4	7.6	1.3	11.9
1960	30.5	7.9	1.0	10.5
1961	29.1	7.9	1.2	12.4
1962	28.1	7.8	1.7	10.4
1963	29.3	7.9	1.3	10.9
1964	33.0	8.2	0.4	10.3
1965	34.6	8.5	0.5	12.4
1966	33.9	8.5	1.2	9.8
1967	32.4	8.4	1.6	10.8
1968	35.1	8.5	0.5	11.2
1969	35.7	8.5	0.5	13.0
1970	34.4	8.5	0.6	12.4
1971	29.8	8.1	1.6	11.8
1972	29.9	8.2	2.6	12.2
1973	35.0	8.5	0.4	15.0
1974	33.0	8.4	4.5	14.5
1975	30.3	8.3	3.2	15.6
1976	32.2	8.4	1.6	11.7
1977	34.6	8.7	0.9	17.4
1978	34.8	8.6	0.7	15.1
1979	35.6	8.6	0.9	15.9
1980	29.5	8.3	5.9	14.3
1981	26.6	8.2	7.8	12.6
1982	29.8	8.3	3.5	12.4
1983	31.5	8.5	2.0	12.9
1984	34.3	8.9	1.5	14.4
1985	34.9	9.0	0.7	14.9

Source: DE Gazette

overtime were over 8 per week for much of the post-war period and, if anything, increased over the period as a whole.

Interestingly, at the same time, there have been marked movements in hours lost through short-time working. As firms move back into equilibrium or are removed through bankruptcy and liquidation, we would expect the incidence of short time to fall to zero, although in each period there will clearly be some firms in disequilibrium. The incidence of short-time certainly returns to very low levels in some years, such as 1968 and 1973. The average number of hours lost through short time per operative on short time has varied considerably, although generally maintaining a level of over 10 hours per week.

A further dimension of hours concerns the annual work period and, therefore, holiday entitlements. Table 2.10 shows the trends over the post-war period. The whole distribution of holiday entitlements has shifted rightwards and this has caused the average length of holiday to rise from 1.7 weeks per year in 1951 to 4.6 weeks per year in 1985, a 2.7 fold increase over the period as a whole. The period from 1978 to 1983 showed an increase of a whole week, with most of that change occurring in 1979 and 1980. Additional holidays for long service and the like are also received by a minority of the workforce. This percentage has fluctuated over the period as a whole. The low of 12 per cent in 1972 was followed by rapid growth to 40 per cent in 1980, since when it has fallen back again. However, extra service entitlements per employee are generally quite low, and the general picture of a steady growth in holidays is not markedly affected by the fluctuations in this variable.

2.9 Shiftwork and Unsocial Times of Work

Shiftwork and unsocial times of work have been the subject of considerable debate both in the UK and, more widely throughout Europe, during the post-War period. More intensive shiftwork has often been seen as a means of increasing employment opportunities in less developed economies with under-utilised labour and capital, capital shortages at current utilisation levels and foreign reserve problems. However, shiftwork is also recognised to incur potential physiological and social costs. Encouragement to increase shiftworking, where it has occurred at all (i.e. by the ILO in less developed countries), has often been limited to the socially more acceptable double day, two shift system.

Until recently shiftwork in the UK was thought to be following a significant long-term upward path (Bosworth and Dawkins, 1981, pp. 88-90). More recent data, however, suggests a slackening of the trend. Thus, the evidence is that the incidence of shiftwork amongst manual workers in manufacturing industry increased from 12.5 per cent in 1954 to 20 per cent in 1964 (Ministry of Labour, 1954 and 1965). However, since that time, it has only grown a further 2 or 3 percentage points. Column 8 of Table 2.11 from the New Earnings Survey (NES) supports this view, with a figure of 22.1 per cent in 1985 for manual workers in the manufacturing sector, although for non-manufacturing there is evidence of a continued increase. Evidence from the Workplace Industrial Relations Survey, (WIRS), (Daniels and Millward, 1980), lends further support, suggesting an incidence rate of 16 per cent for all workers in all industries and services in 1980, compared with 14 per cent in the NES. The 1970 figures from the NES were collected on a somewhat

Table 2.10 Basic Holiday Entitlements, 1951-85

per cent

	Percentage of manual workers who have a basic holiday with pay of:										Percentage with extra service entitlement
	1 week	1-2 weeks	2 weeks	2-3 weeks	3 weeks	3-4 weeks	4 weeks	4-5 weeks	5 weeks & over	Average	
1951	28	3	66	2	1					1.7	4
1955		1	96	2	1					2.0	9
1960			97	1	2					2.0	9
1962			97	2	1					2.0	10
1963			97	2	1					2.0	10
1964			92	7	1					2.1	20
1965			75	22	3					2.2	22
1966			63	33	4					2.2	27
1967			60	34	6					2.3	27
1968			56	34	10					2.3	27
1969			50	35	14	1				2.3	30
1970			41	7	49	3				2.6	25
1971			28	5	63	4				2.7	17
1972			8	16	39	33	4			3.0	12
1973			6	9	36	45	4			3.2	14
1974			1	1	30	40	28			3.5	20
1975			1	1	17	51	30			3.5	26
1976				1	18	47	34			3.6	32
1977				1	18	47	34			3.6	32
1978				1	17	47	35			3.6	36
1979				1	7	42	50			3.7	38
1980					2	24	19	55		4.1	40
1981					2	11	25	61	1	4.2	37(a)
1982						5	21	53	19	4.4	35(a)
1983						5	17	60	18	4.5	36(a)
1984						5	15	61	19	4.6	35(a)
1985						1	16	63	20	4.6	32(a)

Source: DE, British Labour Statistics Yearbook and Gazette

Note: (a) Decline caused by alteration in Wages Council Orders.

Table 2.11 Trends in the Incidence of Shiftworking, 1970-85

Percentages working shifts

	All Industries and Services					Non-manufacturing	Manufacturing	
	Manual	Nonmanual	Male	Female	All	All	All	Manual
1970	(19.6)	(4.7)	(15.1)	(7.4)	(12.9)	(10.4)	(16.4)	(22.8)
1973	16.6	4.9	12.9	7.0	11.2	9.5	13.9	19.0
1974	17.9	5.3	14.0	7.1	12.0	10.2	14.6	19.8
1975	20.6	6.4	15.9	8.0	13.6	12.8	14.9	20.4
1976	21.2	6.9	16.1	9.3	14.1	13.5	15.1	20.9
1977	20.4	6.7	15.4	9.2	13.5	12.7	14.9	20.3
1978	22.1	7.6	15.9	9.2	13.9	12.6	16.0	21.7
1979	21.5	7.3	16.1	10.0	14.2	13.1	16.2	21.9
1980	21.0	7.3	15.5	9.9	13.8	12.9	15.4	21.3
1981	21.1	7.4	15.1	10.3	13.6	13.1	14.5	20.9
1982	21.2	7.7	15.0	10.9	13.7	13.5	14.1	20.3
1983	23.2	9.3	16.8	12.3	15.3	15.1	15.9	22.5
1984	22.0	8.9	15.8	12.2	14.7	14.4	15.4	21.5
1985	22.4	9.2	16.2	12.3	14.9	14.7	15.5	22.1

Source: New Earnings Survey.

Note: Estimates for 1970 are not directly comparable with those for later years.

different basis, but, taken at face value, they indicate that shiftwork may well have continued along an upward trend until the late 1960s or early 1970s, although at a slower pace than the 1954 to 1964 period). Since 1970, however, the trend has been roughly level, with the decline in shiftwork during the early 1970s broadly matched by a recovery during the early 1980s in manufacturing. Elsewhere there has been a rising trend however, and the overall incidence for all industries and services has risen from 11 per cent in 1973 to 15 percent by 1985. This growth has been especially pronounced for females and for non-manual workers.

The NES data highlight a number of other important features of shiftworking in the UK. Not least of these are the important differences in the incidence of shiftworking between manufacturing and non-manufacturing, manuals and non-manuals, and males and females at the beginning of the period, around 1973. However, while there are still some differences, by the end of the period they are much smaller in magnitude. Finally, taken individually, some of these series, such as those for non-manuals, show quite rapid rates of increase in the incidence of shiftworking. These changes provide important clues about the reasons for the overall pattern of shiftworking in the UK and we return to this topic in Chapter 4.

This overall picture conceals changes in the relative importance of the different types of shift system. Comparisons of the 1964 (Ministry of Labour, 1965) with the results available for 1978 (IFF, 1978) and 1980 (WIRS, 1980) Surveys indicate the growth of double day working within the total. Double day is the most social of the various systems in terms of the timing of work, measured simply against the deviation from the normal 9.00 am to 5.00 pm, Monday to Friday period. On the other hand, this type of system does involve an early start to the day on the morning shift, as well as working during the peak social period of the evening (see Table 2.12 below). Both of these have comparatively high, if short-lived social costs (Bosworth and Dawkins, 1980). Two other types of comparatively unsocial systems, three shift working and permanent nights, showed only minor declines. Three shift working maintained its overall ranking as the most important type of shift operation. Permanent nights came close to maintaining its comparative importance, although it was less common than double days or three shift working.

Comparision of the UK allocation of time data for the years 1974 and 1983 (BBC, 1978 and 1984) reveals some interesting changes in unsocial hours. Noting that there are some minor problems of comparability between the two years, it is possible to construct measures of changes in non-domestic work activity in each half hour period from 6.00 am to 1.30 am, separately for weekdays, Saturdays and Sundays, distinguishing full-time and part-time employees (the results of such an analysis are reported in detail in Section 2.11). There was an increase in non-domestic work for full-time adults during the weekday periods of 6.00 to 7.30 am and 7.00 to 10.30 pm, with declines during the period from 7.30 am to 7.00 pm. This change is consistent with the growth in double day working. Second, overall, there is a decline in Saturday and an increase in Sunday working amongst full-time adults. Part-time work exhibited an increase in activity during the evening period of 4.30 to 8.30 pm weekdays. Similar sorts of increases in activity took place on Saturdays between 1.00 and 8.30 pm and on Sundays between 9.00 am and 5.30 pm with a further small increase in the early evening.

Table 2.12 Time Spent on Main Activities by Employment Groups, 1974

	Hours per week (Winter and Summer combined)					
	Sleep	Personal care/Meals	Work including travelling	Domestic work	The rest mainly free time	Total
Males employed full-time	56.3	16.5	44.5(a)	8.4	41.4	168.0
Females employed full-time	57.5	18.1	38.4(a)	17.4	35.6	168.0
Females employed part-time	56.9	18.0	19.5(a)	32.4	39.8	168.0
Housewives	59.2	18.3	0.6	41.9	46.1	168.0

Source: BBC(1978), p 656

Note: (a) These accord fairly well with Department of Employment figures of the average working week in April, 1975, viz. males full-time, 43 hours: females full-time, 41.4 hours; females part-time, 21.4 hours. These did not include travelling time.

The evidence of both the shiftwork and the allocation of time data indicate important changes in the timing of work. The slower growth of shiftwork appears to have been accompanied by a growth in other forms of unsocial time of work arrangements, particularly amongst part-time workers, that have tended to re-schedule work, particularly during the weekday evening and weekend periods.

2.10 Magnitude of the Informal Economy

In this section we briefly review evidence regarding the size of the informal economy. As the discussion in Chapter 4 makes clear, there are many different aspects to the informal economy ranging from criminal activities, through the so called "black economy" to domestic work. Handy (1984) distinguishes three main components: first, the "black" or underground economy which consists essentially of illicit or illegal activities carried out in such a manner as to avoid tax. In the extreme this can include outright criminal acts; second, the so called "grey" economy which consists of domestic and voluntary work undertaken without payment; and third, the "mauve" economy which is defined to include all those activities on the fringe of the economy which fall outside the net of the official statisticians' measures of production (for example, "kissagrams").

These different elements are often very difficult to measure. Nevertheless the general feeling seems to be that the importance of the informal, relative to the formal economy has been increasing. One set of indicators which are at least suggestive are the trends in employment and unemployment referred to elsewhere in this chapter. In particular, we can point to the rapid growth in unemployment over the last fifteen years, which, if anything, is an underestimate of the true growth because of the rise in discouraged workers (see Section 2.11 and Bosworth and Westaway, 1986). In addition, there are the recent significant upward trends in part-time employment, self-employment and the growth in small businesses, as well as the rising proportion of females in total employment in the formal economy. Of these trends, only the growth of female employment in the formal workforce appears likely to have slowed the growth of the informal sector, (in the sense of reducing the amount of time spent on domestic work). On the other hand, part-time workers (most of whom are female), the self-employed and small businesses may often operate at the fringes of the formal economy, with a significant part of their activities actually falling outside its bounds, while the growth of unemployment will have forced many individuals to operate outside the formal economy. Coupled with these changes are the long-term reductions in lifetime working hours (in the formal economy) which means that individuals have much more time to devote to activities in the informal economy as well as to leisure.

More direct measures of the informal economy are notoriously problematic. Some of the main difficulties are discussed in Chapter 4. At one end of the spectrum there are obvious practical difficulties in measuring the volume and value of criminal activities. At the other end of the spectrum there are serious theoretical problems in attempting to measure the value of domestic work done outside the formal economy (Gershuny, 1983). In between these extremes there are problems of both kinds in attempting to measure the level of activity in the "underground" economy. These activities can range from the illicit (because they are undeclared for taxation) activities of small

businesses and self-employed persons to the perfectly legal but unmeasured activities of those involved in voluntary work or informal bartering arrangements.

Because of the nature of the black economy, it is very difficult to be precise about its size. On the other hand, the growing body of somewhat qualitative evidence suggests that it is not particularly large in the UK compared with a number of other European economies, such as Belgium and Italy (Heertje, et al., 1982, p. 108). In the early 1980s, the general view appeared to be that the black economy accounted for about 7½ per cent of GNP (Smithies, 1984, p. 3 and Shankland and Turner, 1984, p. 120). It should be added, however, that there are considerable variations in the available estimates, some much lower (Macafee, 1980) and others considerably higher (Fiege, 1981).

The differences in the estimates of the black economy amongst various subgroups of the population are a general feature across a number of studies (Macafee, 1980, O'Higgins, 1980).[6] In particular, it is the group receiving income from self-employment that is by far the most important with regard to the black economy. Estimates for 1978 suggest a ratio of income from the black economy to declared income of over 20 per cent on certain fairly reasonable assumptions for this group.

The long-term trends are even more difficult to establish. Taking a fairly limited focus, drawing particularly on evidence concerning crimes and associated prosecutions, Smithies (1984) examines the evolution of the black economy in five UK towns over the period from 1914. Several interesting features emerge. First, that the black economy has varied in importance over time, associated with particular stimuli, such as wartime shortages and associated controls on the operation of markets. Second, that, at least in the towns surveyed, the black economy was invariably small scale. Finally, that there is some evidence to support the hypothesis of a growth in the black economy in the recent post-war period. Macafee (1980) argues that there has been slow growth over the last 20 years, although his figures indicate a small fall between 1975 and 1978. The O'Higgins (1980) results,[7] however, were consistent with continued growth over the period 1972 to 1978. Fiege (1981) suggested a much more rapid growth than Macafee over the period 1960 to 1979, but also reported a decline in the black economy as a percentage of GNP after 1974.

Small businesses and self-employment (which merge at the extreme), form a further potentially important element of the informal economy (see the discussion in the previous sections). We do not have direct information about the informal activities of these groups. Shankland and Turner (1984, p. 119), suggest that as much as 50 per cent of their time may be allocated to the informal sector. It is interesting to note that the strong upward movement in self-employment in recent years is only partially captured in the company registration and turnover statistics discussed above.

2.11 Allocation of Time

Traditionally, labour economics has focussed on the paid work/leisure trade-off and choice. In the typical model, leisure (measured as total time available net of the hours spent at work in the formal economy) is regarded as a normal good, while work is regarded as something to be

minimised, subject to obtaining a certain level of income. This model regards work or labour as an activity that is solely conducted with a view to obtaining income. In its traditional form it excludes from consideration domestic work or any other work that is not paid for. Nor does it consider that work may itself provide the worker with utility. The problem of defining work precisely, and distinguishing it from leisure and domestic work, is a very thorny one which could itself fill a large volume. We provide a brief overview of this in Chapter 4 below.

Leisure has also been the subject of investigation by economists in its own right in attempts to measure aggregate welfare. This is on the grounds that it is an important component of individuals' utility but does not appear in measures of national income. Research by Beckerman (1978) has shown just how important leisure might be in adjusting the income measures in some countries. However, he suggests, for the UK, that leisure per active person increased only marginally over the period 1950/2 to 1971/3 (6 per cent for males and just over 3 per cent for females) and leisure per total population aged 15 and over was static, while the average level per head of total population of all ages fell slightly. Here leisure is defined very broadly as all time other than that spent in formal work. Apparent contradictions between these trends in leisure time and those for hours of work are in part due to compositional effects with regard to the ratio of active to inactive persons in the population, etc. More important is the fact that leisure (as defined by Beckerman) is larger in absolute terms than work (even in 1950) and the percentage increase is therefore correspondingly smaller than the equivalent percentage reduction in hours.

Some attempts have been made by labour economists to generalise the work/leisure trade-off to include the choice between market and domestic work, where domestic work is that element both produced and consumed by the same household, (Gronau, 1973). There have been a number of estimates of the value of domestic work (Gronau, 1973; Goldschmidt-Clermont, 1982). While the precise result depends on the methodology adopted, the general view is that this is a substantial area of productive activity. One early estimate, for example, indicated a value of output equivalent to 42 per cent of the net national product of the UK (Clark, 1958).

Table 2.12 provides information about the hours spent per week on broad activities in 1974/5, broken down by category of employment (BBC, 1978, p. 656). The principle activity is sleep for all four groups. However, if we aggregate non-domestic and domestic work, it can be seen that the week is divided into three fairly equal parts: sleep, work and leisure (mainly free time). There are, however, important differences between the activities of the four employment categories. While their periods of sleep and personal care are broadly similar in length (although housewives appear to sleep somewhat longer), market and domestic work are quite different. Even summing the two there are notable differences. Full-time males total 52.9 hours, full-time females work 55.8 hours, part-time females total 51.9 hours and housewives work 42.5 hours. Leisure is also quite different, with full-time females having the least leisure and housewives having the most. Comparable length of activity data do not exist from the other surveys (BBC, 1965 and 1984), however, we return to the question of changes over recent years below.

Table 2.13 presents information about the percentage of the population aged 4+ participating in the broad activities outlined above during

Table 2.13 Allocation of Time, 1983

per cent

Time	Leisure	Work	Domestic Work	Personal	Asleep	Total Activity
6.00	5	4	3	7	81	100
6.15	7	4	2	8	79	100
6.30	10	4	4	13	68	100
6.45	13	4	7	14	62	100
7.00	20	5	11	20	44	100
7.15	24	6	11	23	37	100
7.30	28	7	15	25	25	100
7.45	31	8	17	23	21	100
8.00	34	10	18	25	12	100
8.15	36	13	19	21	11	100
8.30	35	19	20	16	9	100
8.45	32	26	22	11	8	100
9.00	32	27	24	12	5	100
9.15	32	28	25	9	6	100
9.30	34	27	27	8	4	100
9.45	33	28	28	7	4	100
10.00	36	24	26	12	2	100
10.30	40	24	24	10	2	100
11.00	39	25	26	9	1	100
11.30	39	26	27	6	1	100
12.00	39	22	22	17	1	100
12.30	44	19	17	19	1	100
1.00	45	20	17	17	1	100
1.30	47	23	19	10	1	100
2.00	49	24	19	7	2	100
2.30	51	24	17	6	2	100
3.00	50	23	19	7	2	100
3.30	50	21	20	7	1	100
4.00	53	14	22	10	1	100
4.30	56	12	21	10	1	100
5.00	55	9	19	16	1	100
5.30	60	5	17	17	1	100
6.00	62	4	17	17	1	100
6.30	69	3	15	13	1	100
7.00	73	3	13	11	1	100
7.30	77	3	9	9	2	100
8.00	75	3	8	10	3	100
8.30	77	2	6	12	4	100
9.00	72	2	6	15	6	100
9.30	68	2	6	15	8	100
10.00	60	2	6	19	14	100
10.30	51	1	4	20	23	100
11.00	38	1	4	19	39	100
11.30	27	1	2	16	54	100
12.00	17	1	2	11	69	100
12.30	7	1	0	7	86	100
1.00	5	1	0	3	91	100
1.30	1	1	0	1	97	100
2.00	0	1	0	1	98	100
2.30	0	1	0	1	98	100

Source: BBC(1984)

Note: Percentage participation, Monday to Thursday (Winter), population aged more than 4 years.

weekdays. Schooling is classified as non-domestic work. The analagous data for 1974 are not reported here although they show similar patterns over the day. We return to the main differences below. As we might expect, the vast majority of the population is asleep before 6.00 am and after 12.00 midnight. The proportion asleep falls close to zero around the period 5.00 to 6.30 pm. Personal activities peak around 7.00 - 8.30 am, 12.00 - 1.30 mid-day, 5.00 - 6.30 in the evening and around 10.30 at night. Domestic work is spread across the period between 7.30 am and 7.30 pm, although there is a considerable tail at both extremes of the day. Non-domestic work is largely compressed in the period from 8.00 am to 5.00 pm, although, again there is clear evidence of a small proportion of unsocial hours of work and shiftworking. Leisure peaks in the evening period, being extremely important between 5.00 and 11.00 pm. What is perhaps so surprising is the extent of participation in leisure time activities throughout the whole period during which people are awake.[8]

Table 2.14 provides the average participation rates over the day period from 6.00 am to 1.30 pm. It clearly shows the marked increase in leisure, reduction in non-domestic work and increase in domestic work. Personal activities are almost unchanged as a proportion, although the average figures show more clearly that sleep during the period covered has fallen somewhat. The relatively small proportions of sleep in this table, vis a vis Table 2.12 above, are accounted for by the fact that the principle period of sleep is only partly covered by the table (2.00 am to 6.00 am is omitted). If this period is included (i.e. assuming close to 100 per cent participation in sleep, the proportions are very close to those in Table 2.12).

While these changes correspond closely with our a priori views about changes in the patterns of working in the UK economy, they are only a partial picture and some caution should be exercised in taking them at face value. In particular, the analogous breakdowns by category of employment are not currently available. In addition, the period reported above excludes the weekends and some of the increases and reductions observed during the week may be offset by countervailing changes during the weekends.

These trends in domestic work are apparently a reversal of those identified by Gershuny (1983) who observed a decline for the UK in the period 1961 - 1974/5. He argues that these changes in the allocation of time can be understood in terms of rational choices made by households: between time spent working in the formal and informal economies; between self-provision of services and buying them in from outside; and about the numbers of hours worked in the formal economy. These choices depend upon the relative productivity and costs of carrying out work or leisure activities internally or externally. This in turn will depend upon the level of real wages and the (quality adjusted) price of consumer durable goods. As the terms of trade between formal and informal economies alters, so the balance of activities will change. In the recent past, rising real wages and falling relative prices of consumer durables has resulted in more time being spent within the household on self-provision of services (both in the sense of domestic work and leisure services). At the same time, rising real incomes, coupled with a diminishing margainal utility of income have resulted in the trend reduction in average hours worked in the formal economy. The increase in domestic work reflects the increased productivity of such activity due to the application of more efficient equipment. There may well be an important

Table 2.14 Average Percentage Participation, 1974 and 1983

	Leisure	Work	Domestic Work	Personal	Asleep	Total Activities
1983	44.16	11.45	14.06	12.71	17.62	100.00
1974	27.59	25.63	12.25	12.72	21.80	100.00
Ratio 83/74	1.60	0.45	1.15	1.00	0.81	1.00

Note: Constructed from Table 2.13 and comparable data for 1974

relationship here for specific activities with particular product cycles. Innovations in equipment such as washing machines, for example, may lead initially to increased use of time within the household. Then further improvements (e.g. the introduction of the automatic washing machine) may lead to subsequent reduction. The overall allocation of time will therefore depend upon the particular bundle of domestic equipment available at any one time.

Gershuny appears to believe that the overall pattern will be one of an initial increase in the use of domestic time followed by decline, positing 1961 as the watershed (op cit. p. 149). Our analysis suggests a further upturn since the mid 1970s. This could reflect a new cycle in the use of domestic equipment. Alternatively it may simply be a short-run effect of relatively high unemployment levels leading to an enforced increase in work in the informal economy.

2.12 The Upward Trend in Unemployment

Unemployment has shown an upward trend in most OECD countries since well before the recession at the end of the 1980s. The UK has experienced one of the largest rises. Although there has been some cyclical variation around the trend, and despite various revisions to the official measure (most of which have tended to reduce it), unemployment rose fairly steadily from around 500 thousand in the late 1960s to over a million in 1976. By 1981 it had reached almost 2½ million and at the time of writing is over 3 million and is still rising. Most forecasts (see, for example, IER, 1985) suggest that there is little likelihood of the figure being reduced before the end of the decade.

There is still considerable dispute about the causes of this rise. Some attribute it to macroeconomic mismanagement, due to inflation induced by too rapid growth in the money supply on the one hand or due to lack of demand resulting from inappropriate fiscal policies on the other. Others attribute a major part of the increase to demographic factors with the effects of post-war bulges in population and rising participation rates for females resulting in a significant rise in the number of people looking for jobs. In the UK in particular, much emphasis has been placed on the failure to compete in world markets although the reasons for that failure are often hotly disputed.

These kinds of explanation suggest that unemployment is a temporary (albeit possibly quite long-lived) problem that will eventually go away as economies adjust to external events and macroeconomic policies are corrected. However, despite quite rapid rates of recovery (in terms of growth in output) in many countries during the 1980s, unemployment has shown little sign of being reduced. Indeed, it still appears to be on an upward trend in most EEC countries. This has been explained by a number of authors in terms of a long-run stagnation of the economy due to the combination of labour saving technological change in process technologies and the lack of development of new products and services to provide the source of expansion to take up the slack in the labour market that has arisen as a consequence (Freeman and Soete, 1985).

In Section 2.1 we outlined the changing industrial structure of employment. From the discussion there it is clear that primary and in particular manufacturing industries are no longer expected to provide many jobs for the future. Although the decline in manufacturing

employment in the UK during the 1970s and 1980s has been particularly severe, the basic trend is common to most OECD countries other than Japan and the United States and even there the share of the manufacturing sector is in decline (OECD, 1985). The disturbing thing about the projections presented in Table 2.1, however, is the relatively modest growth in employment prospects in the service sector. During the 1950s and 1960s service employment grew very rapidly and mopped up the employment displaced by the primary and manufacturing sectors. During the late 1970s, however, this picture altered. Although privately marketed services have continued to increase their employment, the growth in the public sector (primarily health and education services) was brought to an abrupt halt. This was partly a consequence of demographic factors (falling school rolls) but primarily reflected the cessation of growth in public expenditure on such services. This in turn reflected a very widespread (international) dissatisfaction with the growth of the welfare state and the increasing burden of taxation and its concomitant effects on inflation. In most developed economies, services such as health and education have traditionally been delivered through the state. One of the key difficulties facing such countries today is that while there is apparently a considerable demand for expansion of health and education services, individuals have, because of the method of provision, no way of making this demand effective. Given the unwillingness of governments to substantially increase expenditure in these areas,there seems little prospect at present therefore that such services can provide significant increases in employment. While the prospects for marketed services (especially business, professional, leisure and tourist services) are much brighter (see Table 2.1) these are unlikely to produce sufficient jobs to more than outweigh the losses elsewhere. This reflects the fact that although demand for such services is expected to increase, the implications for employment are less substantial. This is because of the introduction of labour-saving technologies and the fact that the tendency for services to be self-provided is expected to continue.

The secular growth in unemployment has been a significant factor in encouraging the growth of the informal economy (both "black","mauve" and "grey" forms as defined in the previous section). It has also been directly responsible for the introduction of the various government schemes aimed at moderating the impact of unemployment on young people in particular. These range from training schemes such as the Youth Training Scheme through to the Community Programme aimed at assisting long-term unemployed. In 1981 the DE estimated that in total these schemes covered over half a million people. By 1987 the Government has planned for an expansion to just under 900 thousand with a further quarter of a million on the "Wider Opportunities" programme, (Wilson, 1985). The role of such schemes in a situation of rising unemployment is discussed in Chapter 4.

2.13 New Forms of Employment and Work Patterns

The discussion in this chapter has highlighted some of the most obvious ways in which the pattern of employment has been changing in recent years. This picture is coloured to a considerable degree by the availability of relevant statistical data. There is a tendency however for the conventional systems of classification and measurement, upon which most readily available data are based, to become obsolete. A characteristic of current developments appears to be the emergence of much more complex and subtle work patterns which often cut across

conventional definitions and classifications.

The following three chapters concentrate upon different aspects of these more novel developments in employment and work patterns in the UK economy. Chapter 3 is concerned with job content. The changing occupational and qualificational structure of employment have already been noted. The increasing specialisation of many tasks and the rising level of skill and knowledge required in their undertaking in many cases has been reflected by changes in occupational structure and qualificational structure within industries. There are however other changes in job content and in the nature of tasks and functions themselves which are not measured along these dimensions. Moreover the skills and knowledge required to undertake such tasks may alter over time.

A second major change in the form of employment concerns contractual arrangements which affect work patterns. We have already noted various aspects of this, such as the growth in part-time working, the increasing numbers of those who are self-employed as well as changing patterns of hours and shift work. The trend towards self-employment has often been associated with an increase in sub-contracting and franchising. There are however various other aspects which have become of increasing importance in recent years. Often these have been introduced under the heading of "flexible employment strategies" by employers but this seems an over simplification and many of the changes we observe can equally well be regarded as reflecting the strategy of individuals wanting to achieve their own personal flexibility. From the point of view of the firm it may be helpful to use the concept of a dual labour market, emphasising the distinction between core workers (with job security, retraining and re-employment opportunities, favourable career and proportion prospects and improving employment conditions) and various other secondary groups (which have varying degrees of attachment to the firm and of job security). However, it is clear that often those work patterns which have been introduced as a means of increasing flexibility from the firms point of view, at the same time increase job insecurity from the employees viewpoint. From the latter perspective the growing importance of temporary work, casual labour, seasonal weekend and holiday jobs may be undesirable. However many jobs of this kind are held in addition to a main job or by people who do not want a permanent post. Furthermore, many of the changes that are taking place can be regarded as leading to greater independence and flexibility for the individual in allocating his or her time. These issues are discussed in detail in Chapter 4.

Another feature of recent developments is the blurring of boundaries between domestic work and leisure; formal and informal work; and different types of employment contract. This again highlights the increasingly limited nature of the more conventional systems of definition and classification. Gershuny (1983) and others have emphasised the changing pattern of time allocation within households and in particular the trend towards self-provision of services and "do-it-yourself". There has of course always been a question mark about the distinction between formal work which is paid for in the market economy and domestic work which is not. Technological change, together with changing institutional arrangements and changing attitudes have however radically altered the manner in which we organise our lives. Labour saving devices in the house have on the one hand enabled women more easily to take an active part in the formal economy. On the other hand

the same equipment has enabled households to self-provide services which might otherwise have been purchased in the market place (eg laundry services, transport services etc.). The boundaries between these various activities have therefore become much less clear cut. Many more women now work in the formal economy while much "work" is now conducted at home in the self-provision of services that in previous epochs might have been bought in the formal economy. The boundaries between formal and informal work, wage and non-wage work (including voluntary work), temporary and permanent work have become increasingly difficult to discern. This problem has been reinforced in recent years with the growth in the "black" or "hidden" economy and the increase in numbers taking part in government schemes. These issues are also discussed in Chapter 4 although certain aspects form the subject matter for Chapter 5.

The latter Chapter is primarily concerned with identifying new areas of employment growth with special emphasis on the service sector. The main issues discussed in addition to those connected with the domestic allocation of time include the increasing specialisation of service functions and the tendency for firms to sub-contract out many functions previously carried out internally. This chapter concentrates upon how technological change, economic growth and changes in the pattern of international competition have affected the industrial structure of employment in the UK. It speculates on the prospects for increases in employment in the service sector in general over the next decade.

Notes

(1) See for example, Cambridge Econometrics (1985) and IER (1985 and 1986). A brief description of the type of model used is given in Chapter 5.

(2) See IMS/OSG (1986). This study is based on a relatively large and comprehensive survey of employers. It suffers, of course, from all the well known difficulties of trying to find out what people will do in the future by asking them. These include: problems of inconsistency in basic assumptions; the absence of clearly formulated employment plans, and incompatible projections (e.g. forecasting growth in employment for certain occupations which in sum are well in excess of the numbers of such persons available for work). The IMS researchers have attempted to avoid as many of these difficulties as possible in ascertaining respondents' views, including making corrections for such things as inconsistent market share assumptions. The authors argue that a key advantage of their approach is that it highlights recent changes which have been exceptional. This still begs the question of whether such changes are likely to continue; a point we discuss in Chapter 5. Despite these reservations, the study presents a great deal of valuable new material on recent changes in employment structure and work patterns.

(3) See, in particular, Soete (1985), Guy (1984), Freeman (1985), Clark (1984) and Smith (1986).

(4) More detailed discussion can be found in Bosworth and Dawkins (1981).

(5) Data from DE New Earnings Survey and Employment Gazette.

(6) The O'Higgins work is discussed in Heertje (1982) and does not appear in the full references given in this Report.

(7) See Footnote 6.

(8) This probably reflects the age composition of the sample, which includes both pre-school and retired individuals.

3. CHANGING FORMS OF EMPLOYMENT : JOB CONTENT

3.1 Introduction

This chapter is concerned with how the content and nature of jobs are changing. This has various aspects. A very important one is the occupational structure of employment. As modern economies have developed there have been very substantial changes in the division of labour between different types of occupation. Gradually the emphasis has changed from the need for low skilled, physical labour, requiring considerable strength or dexterity, to an emphasis on higher skilled jobs, involving mental rather than physical abilities. Trends in occupational employment offer, in principal, a means of measuring these developments. Changes in the nature of jobs in the economy as expressed by occupations has changed because of two prime factors: first changes in the industrial structure of employment; and second changes in the structure of employment within industries. Developments in industrial structure form the subject of Chapter 5. Nevertheless since these structural changes are so intimately connected, some discussion of the links between the two are contained in Section 3.2.

Occupational change is however merely one of the most obvious ways in which the nature of jobs are changing. The actual work undertaken by people with the same occupational title may alter enormously. For example consider the tasks undertaken by a clerk in 1946 and 1986. One visible aspect of changing requirements for people in jobs with a common title has been the rise in the formal qualifications required for entry and the average qualifications held. This phenomenon may also reflect supply side influences, with a much larger proportion of people following courses of higher education and training as a means of competing for jobs. These issues are discussed in Section 3.3.

This is only one of the more visible ways in which job content is altering. There have been numerous other changes in the mental and physical requirements of jobs. The greater use of capital equipment has gradually modified the physical and mental demands on workers. This phenomenon has reached a new stage recently with the microprocessor taking over many of the more skilled tasks both from a physical and mental viewpoint. Furthermore there has been a tendency for rigid demarcation lines between trades to be broken down, as technologies associated with electronics result in a blurring of the boundaries between what were previously distinct jobs. These issues are discussed in Section 3.4.

3.2 Changes in the Occupational Structure of Employment

Gershuny (1983) argues that there are three separate influences on the distribution of employment between occupations. First, are those factors which affect the pattern of final demand by households for commodities. These factors, which include the operation of Engels' law and the impact of changing real incomes and relative prices on the structure of demand for goods and services, determine the industrial structure of output and employment. These developments have very direct

implications for the occupational structure of employment because of the concentration of certain types of job in particular industries.

Second are those factors connected with the division of labour within industries. Gershuny argues that before the division of labour became so extensive there was a very close correlation between the industry (defined by the product or services that was produced) and the key occupation that was necessary to conduct this business. Until recently this has been reflected in the systems of classification used for occupations which have often been very closely tied to definitions of industry. Typically therefore a cross tabulation of employment by industry and occupation produced a matrix with a heavy concentration along the main diagonal, with, for example, "miners" constituting the bulk of employment in mining and so on. This, of course, severely limits the value of such information as a guide to changes in job content. As economies developed however the advantages of specialisation outlined by Adam Smith (1970), became clear and we observe a progressive division of labour within industries as the various activities are split up into less complex tasks. This specialisation of tasks results in a breakdown of the rigid one to one correspondence between industry and key occupation. This has been reflected by changes in occupational classification so that the latter have become more divorced from the industrial ones and this means that the occupational dimension can add important new information about changing job content.

Thus the jobs associated with, for example, processes, such as the manufacture of clothing, have progressively become more diverse. Most notably in recent years there have been significant increases in the proportion of management, administrative and clerical workers and decreasing numbers of those actually making clothes. Indeed as this process continues it may eventually lead to each industry employing every conceivable specialised occupation. For example, a firm specialising in clothing may employ nurses, security guards, teachers and gardeners as well as tailors, dressmakers labourers, clerks and managers. As this kind of change proceeds it offers the opportunity of the reaping of economies of scale if these less directly relevant tasks can be grouped together and supplied to the industry by a sub-contractor. Thus specialised producers of intermediate services can emerge. This latter process can lead to a reconcentration of occupations within these new service industries. Gershuny argues that this constitutes a third influence on occupational employment structures. However, because it reveals itself in changes in industrial structure it may be confused with those structural developments that occur as a result of changes in the pattern of commodity demand. A considerable part of the initial development of distinct industrial sectors, and the consequent changes that can be observed in industrial structure, are attributable to specialisation of tasks and the division of labour in comparison with a pre-industrialised society, in which there are no clear boundaries between different industries, and each individual or household tends to carry out all of the tasks necessary for life. Furthermore it appears that this process of subcontracting is simply another aspect of the continuing division of labour which enables smaller firms to enjoy the same benefits from specialisation on particular tasks as larger ones (who may have a separate department or section devoted to this end). It is not obvious therefore that Gershuny's distinction between these influences is of much value in assessing the determinants of changes in occupational structure.

Essentially we can identify just two separate influences on occupational structure : the first connected with the division of labour within industries as a result of the specialisation on separate tasks as described by Adam Smith; and the second connected with the changing patterns of the industrial structure of employment, that is the division of labour between industries. The latter may arise for two reasons however : first, due to the changing pattern of final demand for commodities and services; and second, due to the ever increasing "roundaboutness" of production and the consequent changes in the pattern of sub-contracting and intermediate demand between industries. Both of these can be seen as determined by growth in the extent of the market for goods and/or services.

In this section recent changes in the occupational structure of employment are considered in terms of these two influences. The reasons for the developments in industrial structure are discussed in Chapter 5 below. Here we concentrate upon the implications of the observed changes for occupational structure.

This process of division of labour within occupations is now very advanced in most industries. Furthermore, occupational classifications in the UK are sufficiently independent of the industrial ones to enable us to distinguish groups by reference to level of skill required. This is possible due to the fact that, although occupational classifications are still closely linked to the industrial ones, data are available at a very disaggregated level and these distinguish, to some extent at least, levels of skills and knowledge necessary to undertake different jobs. The disaggregated information published by OPCS has been aggregated by IER into occupational categories bearing these considerations in mind. This illustrates that it is possible to make considerably progress using existing data sources. The occupation by industry matrices presented in Figures 2.1 - 2.3 in the previous chapter illustrate this quite well, with there being no clear domination within each industry of key occupations (as defined by having a dominant share in total employment in the industry).

This data forms the basis for the analysis of occupational change presented here. The results in Tables 3.1 - 3.3 divide the total change in occupational employment between two years into four parts. The first is the so called scale effect which measures the increase in employment that would have occurred in each occupation had it grown at the same rate as total employment (ceteris paribus). The second, termed the industrial effect, shows the change arising from developments in industrial structure. This is calculated by working out what the change in employment would have been, assuming that occupational structure within industries remains the same as in the base year. The third element is the occupational effect. This measures the effect of changing occupational structure within industries between the two years. Both these abstract from the scale effect. The remainder of the observed change can be divided into two parts. The first can be termed an industry-specific occupational effect. This is analagous to the overall occupational effect. The latter arises from the changing shares of different occupational groups in total employment. The former is attributable to changing occupational shares within each industry. Finally there is an interactive effect which is a measure of those changes arising from the interaction of changing industrial structure and occupational structure not elsewhere specified. Precise definitions are contained in Appendix A. It should be stressed that this analysis

Table 3.1 Changes in Occupational Employment, 1971-81

thousands

WOC	Occupation	1971	% of total	1981	% of total	Change 1971-81: net change	% change	Change attributable to: scale	ind	occ	iso	int	%Change attributable to: scale	ind	tocc	int
1	Managers and administrators	577	2.4	730	3.0	152	26.4	-3	-43	156	80	-35	-0.7	-7.6	40.9	-6.3
2	Education professions	785	3.3	956	4.0	171	21.7	-4	111	176	-118	7	-0.7	14.2	7.3	0.9
3	Health, welfare professions	753	3.1	1048	4.4	295	39.2	-4	221	300	-237	17	-0.7	29.3	8.3	2.3
4	Other professions	835	3.5	1076	4.5	241	28.8	-4	72	246	-60	-10	-0.7	8.6	22.2	-1.3
5	Literary, artistic, sports occupations	154	0.6	197	0.8	43	28.2	0	23	44	-21	0	-0.7	15.0	14.5	-0.7
6	Engineers, scientists etc.	455	1.9	608	2.5	153	33.5	-2	3	156	0	-2	-0.7	0.7	34.2	-0.6
7	Technicians, draughtsmen	422	1.7	472	2.0	50	11.9	-2	1	53	-4	4	-0.7	0.3	11.4	0.8
8	Clerical occupations	2703	11.2	2723	11.4	20	0.7	-17	162	38	-159	-1	-0.7	6.0	-4.5	-0.1
9	Secretarial occupations	843	3.5	958	4.0	114	13.5	-5	87	120	-93	7	-0.7	10.3	3.0	0.9
10	Sales representatives	420	1.7	391	1.6	-28	-6.8	-2	25	-25	-11	-12	-0.7	5.9	-9.0	-3.0
11	Other sales occupations	1075	4.5	1126	4.7	52	4.8	-6	72	59	-68	-2	-0.7	6.7	-1.0	-0.3
12	Supervisors	208	0.9	321	1.3	113	54.6	0	15	115	-24	9	-0.7	7.4	43.4	4.4
13	Foremen	576	2.4	563	2.3	-12	-2.3	-3	-72	-8	84	-10	-0.7	-12.7	12.9	-1.8
14	Engineering craft occupations (module)	1500	6.2	1350	5.6	-149	-10.0	-9	-224	-139	240	-15	-0.7	-15.0	6.7	-1.0
15	Engineering craft occupations (non-mod	514	2.1	459	1.9	-54	-10.6	-2	19	-50	-22	3	-0.7	3.8	-14.4	0.7
16	Construction craft occupations	817	3.4	751	3.1	-65	-8.1	-4	-34	-59	32	3	-0.7	-4.2	-3.5	0.3
17	Other craft occupations	376	1.6	276	1.2	-99	-26.7	-1	-61	-97	54	8	-0.7	-16.5	-11.6	2.1
18	Skilled operatives	1008	4.2	771	3.2	-236	-23.5	-6	-202	-229	207	-3	-0.7	-20.2	-2.3	-0.4
19	Other operatives	4974	20.6	3999	16.7	-974	-19.6	-32	-570	-941	546	25	-0.7	-11.5	-8.0	0.5
20	Security occupations	260	1.1	320	1.3	61	23.3	-1	-2	62	3	0	-0.7	-1.3	25.3	0.0
21	Skilled personal service occupations	2150	8.9	2378	9.9	228	10.6	-13	246	243	-241	-3	-0.7	11.4	0.0	-0.2
22	Other personal service occupations	1761	7.3	1894	7.9	133	7.6	-11	275	145	-266	-7	-0.7	15.6	-6.9	-0.5
23	Other occupations	980	4.1	619	2.6	-360	-36.8	-5	-115	-353	89	27	-0.7	-11.9	-27.0	2.8
	All Occupations	24146	100.0	23987	100.0	-158	-0.7	-158	0	0	0	0	-0.7	0.0	0.0	0.0

Source: IER estimates

Notes: For definitions of scale effect (scale), industrial effect (ind), occupational effect (occ), industry specific occupational effect (iso), and interaction effect (int) see Appendix A. In the penultimate column, 'tocc' is the sum of the % contribution from 'occ' and 'iso'.

Table 3.2 Changes in Occupational Employment, 1981-84

thousands

WOC	Occupation	1981	% of total	1984	% of total	Change 1981-84 net change	Change 1981-84 % change	Change attributable to scale	ind	occ	iso	int	%Change attributable to scale	ind	tocc	int
1	Managers and administrators	730	3.0	741	3.1	11	1.6	-9	-28	22	31	-1	-1.4	-4.0	7.2	-0.3
2	Education professions	956	4.0	991	4.2	35	3.6	-12	35	48	-35	0	-1.4	3.7	1.3	0.0
3	Health, welfare professions	1048	4.4	1142	4.8	94	9.0	-14	47	109	-49	3	-1.4	4.5	5.6	0.3
4	Other professions	1076	4.5	1161	4.9	86	8.0	-14	19	101	-17	0	-1.4	1.7	7.7	-0.1
5	Literary, artistic, sports occupations	197	0.8	227	1.0	30	15.2	-2	9	33	-9	1	-1.4	4.7	11.5	0.4
6	Engineers, scientists etc.	608	2.5	649	2.7	41	6.7	-7	-7	49	10	-1	-1.4	-1.3	9.8	-0.4
7	Technicians, draughtsmen	472	2.0	521	2.2	49	10.5	-6	-9	56	12	-1	-1.4	-2.1	14.3	-0.4
8	Clerical occupations	2723	11.4	2643	11.2	-79	-2.9	-37	33	-41	-29	-2	-1.4	1.2	-2.6	-0.1
9	Secretarial occupations	958	4.0	934	4.0	-22	-2.4	-12	28	-9	-26	0	-1.4	2.9	-3.9	0.0
10	Sales representatives	391	1.6	405	1.7	14	3.5	-4	9	19	-7	0	-1.4	2.2	2.8	-0.1
11	Other sales occupations	1126	4.7	1210	5.1	84	7.5	-15	76	100	-76	1	-1.4	6.8	2.0	0.1
12	Supervisors	321	1.3	302	1.3	-19	-6.1	-3	8	-14	-7	0	-1.4	2.6	-7.2	-0.1
13	Foremen	563	2.3	463	2.0	-99	-17.8	-7	-30	-91	28	3	-1.4	-5.6	-11.4	0.6
14	Engineering craft occupations (module)	1350	5.6	1254	5.3	-95	-7.1	-18	-97	-76	100	-1	-1.4	-7.2	1.7	-0.2
15	Engineering craft occupations (non-mod	459	1.9	422	1.8	-36	-8.1	-5	6	-30	-6	1	-1.4	1.3	-8.2	0.1
16	Construction craft occupations	751	3.1	832	3.5	82	10.9	-9	-14	92	17	-1	-1.4	-2.0	14.5	-0.3
17	Other craft occupations	276	1.2	223	0.9	-52	-19.3	-3	-19	-48	17	2	-1.4	-7.1	-11.7	0.8
18	Skilled operatives	771	3.2	687	2.9	-83	-10.9	-10	-35	-72	35	1	-1.4	-4.7	-5.0	0.2
19	Other operatives	3999	16.7	3576	15.1	-422	-10.6	-55	-176	-366	170	7	-1.4	-4.4	-4.9	0.2
20	Security occupations	320	1.3	305	1.3	-14	-4.6	-3	1	-9	0	0	-1.4	0.2	-3.5	0.1
21	Skilled personal service occupations	2378	9.9	2423	10.2	45	1.9	-32	108	78	-104	-1	-1.4	4.5	-1.2	-0.1
22	Other personal service occupations	1894	7.9	1939	8.2	44	2.3	-25	76	71	-75	0	-1.4	4.0	-0.3	0.0
23	Other occupations	619	2.6	601	2.5	-17	-3.0	-8	-32	-9	35	-1	-1.4	-5.3	4.1	-0.4
	All Occupations	23987	100.0	23652	100.0	-334	-1.4	-334	0	0	0	0	-1.4	0.0	0.0	0.0

Source: IER estimates

Notes: For definitions of scale effect (scale), industrial effect (ind), occupational effect (occ), industry specific occupational effect (iso), and interaction effect (int) see Appendix A. In the penultimate column, 'tocc' is the sum of the % contribution from 'occ' and 'iso'.

Table 3.3 Changes in Occupational Employment, 1984-90

thousands

WOC	Occupation	1984	% of total	1990	% of total	Change 1984-90 net change	Change 1984-90 % change	Change attributable to scale	ind	occ	iso	int	%Change attributable to scale	ind	tocc	int
1	Managers and administrators	741	3.1	824	3.5	82	11.1	5	-28	78	33	-3	0.6	-4.0	15.0	-0.5
2	Education professions	991	4.2	982	4.1	-8	-0.9	6	-46	-14	47	0	0.6	-4.7	3.2	0.0
3	Health, welfare professions	1142	4.8	1288	5.4	146	12.7	7	86	139	-92	7	0.6	7.5	4.0	0.6
4	Other professions	1161	4.9	1275	5.4	114	9.8	7	17	106	-14	-1	0.6	1.5	7.9	-0.2
5	Literary, artistic, sports occupations	227	1.0	255	1.1	28	12.2	1	12	26	-11	0	0.6	5.4	6.4	-0.2
6	Engineers, scientists etc..	649	2.7	727	3.1	78	12.0	4	-5	74	7	0	0.6	-0.9	12.5	-0.2
7	Technicians, draughtsmen	521	2.2	548	2.3	27	5.1	3	-7	23	10	-2	0.6	-1.5	6.5	-0.5
8	Clerical occupations	2643	11.2	2613	11.0	-29	-1.1	16	33	-45	-30	-1	0.6	1.3	-2.9	-0.1
9	Secretarial occupations	934	4.0	1000	4.2	66	7.1	6	35	60	-33	0	0.6	3.7	2.8	-0.1
10	Sales representatives	405	1.7	381	1.6	-23	-5.9	2	2	-25	0	-1	0.6	0.6	-6.6	-0.5
11	Other sales occupations	1210	5.1	1217	5.1	7	0.6	7	8	0	-6	0	0.6	0.7	-0.6	-0.1
12	Supervisors	302	1.3	374	1.6	72	24.0	2	9	70	-10	3	0.6	3.0	19.5	0.8
13	Foremen	463	2.0	474	2.0	11	2.3	3	-23	8	26	-1	0.6	-5.2	7.3	-0.5
14	Engineering craft occupations (module)	1254	5.3	1208	5.1	-45	-3.7	8	-85	-53	90	-2	0.6	-6.9	2.8	-0.3
15	Engineering craft occupations (non-mod	422	1.8	425	1.8	3	0.7	3	23	0	-23	1	0.6	5.5	-5.6	0.2
16	Construction craft occupations	832	3.5	847	3.6	15	1.8	5	1	10	0	0	0.6	0.1	1.1	0.0
17	Other craft occupations	223	0.9	193	0.8	-29	-13.3	1	-14	-30	13	2	0.6	-6.8	-8.2	1.1
18	Skilled operatives	687	2.9	610	2.6	-76	-11.2	4	-59	-80	59	0	0.6	-8.7	-3.2	0.0
19	Other operatives	3576	15.1	3279	13.8	-296	-8.3	22	-162	-318	156	6	0.6	-4.6	-4.6	0.2
20	Security occupations	305	1.3	317	1.3	12	3.8	2	-3	10	4	0	0.6	-1.3	4.4	0.1
21	Skilled personal service occupations	2423	10.2	2544	10.7	121	5.0	15	124	107	-120	-2	0.6	5.1	-0.6	-0.1
22	Other personal service occupations	1939	8.2	1969	8.3	31	1.6	12	121	19	-122	2	0.6	6.2	-5.4	0.1
23	Other occupations	601	2.5	449	1.9	-151	-25.3	4	-29	-155	27	3	0.6	-4.9	-21.5	0.5
	All Occupations	23652	100.0	23797	100.0	144	0.6	144	0	0	0	0	0.6	0.0	0.0	0.0

Source: IER estimates

Notes: For definitions of scale effect (scale), industrial effect (ind), occupational effect (occ), industry specific occupational effect (iso), and interaction effect (int) see Appendix A. In the penultimate column, 'tocc' is the sum of the % contribution from 'occ' and 'iso'.

is essentially a descriptive device which does not necessarily imply any casuality.

Over the period, 1971-81 employment in total fell slightly. This obscured some very significant differences between different occupational groups. While certain professional groups experienced substantial increases, there were very large job losses amongst craftsmen, semi-skilled operatives and operatives. The expansion of employment in sectors such as education and health services, together with changes in occupational structure within industries in favour of managers, business professionals, scientists, engineers and technologists were the prime factors behind the expansion of employment for the former groups. In the case of the blue collar/manual workers, changing industrial structure, particularly the declining employment levels in many traditional manufacturing industries, was a major factor. The results in Table 3.1 suggest that, in contrast to the results reported by Gershuny (1983), a very substantial part of the overall change in occupational structure over this period was therefore attributable to the industrial effect. It was important in explaining both the rapid growth of certain occupations such as health and education professions, secretarial staff and unskilled personal service occupations as well as sharp declines for engineering and certain other craftsmen and for operatives. Occupational effects are of great significance in the growth for other professions, and engineers, and the decline for skilled and unskilled operatives, and other occupations (mainly labourers). One reason for this contrast with Gershuny's results is that his definition of the occupational effect is broader than that used here, since it includes what we have termed industry-specific occupational effect and the interactive effect which are quite significant in a number of cases. Other reasons for differences may be: that Gershuny conducted his analysis at a much more aggregate level than that used here; that his analysis is based on a less comprehensive data set (NES as opposed to the Census of Population); and that the periods covered are different (he considered averages over the years 1968-73 compared to 1974-78).

More recently however the results suggest that the division of labour with industries has become rather more important. Between 1981 and 1984 the industrial effect is dominant in only a few occupations. Nevertheless, as illustrated in Table 3.2, it remains a significant factor in many cases, most notably in explaining something in the order of 45 per cent of the decline in employment for operatives and engineering craftsmen. Occupational effects have become of greater importance in a number of occupations. This seems to be more the result of a much reduced industrial effect than of an increase in the occupational effect per se. This applies particularly to health and education professions. Examining occupational structure within industries however, it is clear that in many cases there have been significant changes in occupational structure which are obscured by this aggregate analysis. In particular, within much of the production sector there has been an increasing tendency to employ high skill, high knowlege intensive occupations such as business professions, scientists, engineers and certain multifunctional craftsmen/technicians. The IMS/OSG study attributes this to a combination of the impact of new technologies, the reduction in job demarcations and the diversifications in selling of technical expertise. They did find that this pattern was less prevalent amongst smaller firms where, because of reorganisation of production within industries via out-sourcing and sub-contracting

Table 3.4 Ranking of Occupations in Percentage Growth in Employment, 1971-81

Thousands

Occ. No.	Occupation	Total employment incl self employment 1971	1981	Net change 1971-1981	% Growth 1971-81
47	Retail shop cashiers, check-out and cash and wrap operators	1.09	77.74	76.65	7032.11
67	Supervisors - housekeeping and related	7.70	19.78	12.08	156.88
71	Supervisors, foremen - caretaking, cleaning and related	7.26	18.59	11.33	156.06
158	All other in transport operating, materials moving and storing, etc.	3.88	7.49	3.61	93.04
13	Welfare workers	91.78	173.33	81.55	88.85
26	Mechanical and aeronautical engineers	61.83	109.87	48.04	77.70
12	Vocational and industrial trainers, education officers, etc.	41.43	72.42	30.99	74.80
70	Ambulancemen, hospital orderies	67.81	117.60	49.79	73.43
24	Scientists, physicists, mathematicians	66.98	109.69	42.71	63.77
33	Professional and related in science, engineering etc.	80.51	131.21	50.70	62.97
133	Painters, decorators, french polishers	2.97	4.78	1.81	60.94
23	All other literary, artistic and sports	23.42	37.64	14.22	60.72
37	Office managers	132.41	210.48	78.07	58.96
43	Senior police, prison and fire service officers	11.86	18.53	6.67	56.24
32	Officers (ships and aircraft), air traffic planners and controllers	27.17	41.06	13.89	51.12
63	Catering supervisors	33.05	49.15	16.10	48.71
54	Sales supervisors	26.25	38.78	12.53	47.73
4	Economists, statisticians, systems analysts, computer programmers	66.28	97.60	31.32	47.25
1	Judges, barristers, advocates, solicitors	36.09	53.00	16.91	46.86
5	Marketing, sales, advertising, public relations and purchasing managers	177.22	252.54	75.32	42.50
45	Supervisors of clerks, civil service executive officers	127.85	180.47	52.62	41.16
48	Supervisors of typists, office machine operators, telephonists, etc.	24.12	33.92	9.80	40.63
16	Nurse administrators, nurses	418.14	586.86	168.72	40.35
18	All other professional and related in education, welfare and health	59.89	83.98	24.09	40.22
17	Pharmacists, radiographers, therapists n.e.c.	55.15	76.34	21.19	38.42
59	NCOs and other ranks, foreign and Commonwealth armed forces	18.12	24.09	5.97	32.95
155	Mechanical plant, fork lift, mechanical truck drivers, crane drivers, etc.	42.07	55.63	13.56	32.23
2	Accountants, valuers, finance specialists	172.71	226.86	54.15	31.35
36	Managers in transport, warehousing, public utilities and mining	110.20	142.15	31.95	28.99
11	Teachers n.e.c.	512.03	646.42	134.39	26.25
21	Actors, musicians, entertainers, stage managers	36.11	45.46	9.35	25.89
60	Supervisors (police sergeants, fire fighting and related)	20.64	25.76	5.12	24.81
7	General administrators - national government	39.79	49.39	9.60	24.13
15	Medical and dental practitioners	78.14	96.99	18.85	24.12
34	Production, works and maintenance managers, works foremen	301.64	373.96	72.32	23.98
148	Deck, engine-room hands, bargemen, lightermen, boatmen	7.21	8.90	1.69	23.44
35	Site and other managers, agents and clerks of works, general foremen etc.	95.24	117.06	21.82	22.91
31	Architects, town planners, quantity, building and land surveyors	93.58	114.47	20.89	22.32
62	Other security and protective service sorkers	98.99	121.00	22.01	22.23
44	All other managers	132.61	162.05	29.44	22.20
61	Policemen, firemen, prison officers	133.61	162.18	28.57	21.38
120	Foremen - production fitting and wiring (electrical)	29.24	34.99	5.75	19.66
69	Travel stewards and attendants, hospital and hotel porters	45.55	53.83	8.28	18.18
65	Waiters and bar staff	183.00	215.94	32.94	18.00
76	Foremen - farming, horticulture, forestry	16.82	19.72	2.90	17.24
19	Authors, writers, journalists	45.27	52.82	7.55	16.68
8	Local government officers (administrative and executive functions)	28.66	32.90	4.24	14.79
99	Foremen - printing	7.58	8.66	1.08	14.25
28	Engineers and technologists, n.e.c.	108.61	123.25	14.64	13.48
22	Photographers, cameramen, sound and vision equipment operators	29.14	32.82	3.68	12.63

Table 3.4 (Continued)

Thousands

Occ. No.	Occupation	Total employment incl self employment 1971	1981	Net change 1971-1981	% Growth 1971-81
64	Chefs, cooks	155.05	173.21	18.16	11.71
130	Goldsmiths, silversmiths, etc., engravers, etchers	10.76	11.86	1.10	10.22
20	Artists, designers, window dressers	53.61	58.86	5.25	9.79
145	Face-trained coalmining workers	60.91	66.63	5.72	9.39
39	Managers of hotels, clubs, etc., and in entertainment and sport	251.75	275.35	23.60	9.37
129	Foremen - other processing, making and repairing (metal and electrical)	2.45	2.65	0.20	8.16
3	Personnel and industrial relations managers; O and M, etc.	63.20	67.87	4.67	7.39
49	Secretaries, shorthand typists, receptionists	817.35	877.24	59.89	7.33
25	Civil, structural, municipal, mining and quarrying engineers	50.00	53.62	3.62	7.24
138	All other in painting, repetitive assembling, product inspection, etc.	60.97	65.05	4.08	6.69
30	Laboratory and engineering technicians, technician engineers	125.15	133.23	8.08	6.46
111	Foremen - engineering machining	18.65	19.83	1.18	6.33
139	Foremen - building and civil engineering n.e.c.	331.09	344.28	13.19	3.98
27	Electrical and electronic engineers	64.31	66.63	2.32	3.61
117	Metal working production fitters and fitter/machinists	461.47	473.14	11.67	2.53
83	All other in farming and related	26.35	26.85	0.50	1.90
72	Caretakers, road sweepers and other cleaners	681.62	684.93	3.31	0.49
58	NCOs and other ranks, UK armed forces	196.90	197.81	0.91	0.46
122	Telephone fitters, cable jointers, linesmen	112.01	112.50	0.49	0.44
73	Hairdressing supervisors	0.00	0.39	0.39	0.00
46	Clerks	2290.70	2273.14	-17.56	-0.77
9	All other professional and related supporting management and administration	149.68	148.53	-1.15	-0.77
135	Repetitive assemblers (metal and electrical goods)	20.40	20.15	-0.25	-1.23
92	Butchers	73.83	72.47	-1.36	-1.84
66	Counter hands, assistants, kitchen porters, hands	334.33	327.37	-6.96	-2.08
53	Postmen, mail sorters, messengers	156.27	152.39	-3.88	-2.48
10	Teachers in higher education	117.69	114.06	-3.63	-3.08
93	Foremen - paper and board making and paper products	7.77	7.48	-0.29	-3.73
88	Foremen - chemical processing	18.42	17.71	-0.71	-3.85
38	Managers in wholesale and retail distribution	723.65	695.66	-27.99	-3.87
141	Concretors, road surfacers, railway lengthmen	26.62	25.41	-1.21	-4.55
116	Instrument and watch and clock makers and repairers	38.80	36.92	-1.88	-4.85
114	Foremen - production fitting (metal)	58.89	55.66	-3.23	-5.48
68	Domestic staff and school helpers	562.72	530.80	-31.92	-5.67
51	Telephonists, radio and telegraph operators	135.72	127.94	-7.78	-5.73
90	Foremen - food and drink processing	26.25	24.70	-1.55	-5.90
104	Foremen - woodworking	20.14	18.91	-1.23	-6.11
163	Inadequately described and not stated	218.96	205.33	-13.63	-6.22
55	Salesmen, sales assistants, shop assistants, shelf fillers, etc.	927.95	865.28	-62.67	-6.75
42	Officers, foreign and Commonwealth armed forces	2.78	2.57	-0.21	-7.55
118	Motor vehicle and aircraft mechanics	245.22	226.39	-18.83	-7.68
121	Production fitters, electricians, electricity power plant operators, etc.	330.70	304.07	-26.63	-8.05
151	Foremen - road transport operating, bus inspectors	721.20	661.10	-60.10	-8.33
91	Bakers, flour confectioners	42.71	39.15	-3.56	-8.34
124	Foremen - metal working, pipes, sheets, structures	25.51	23.11	-2.40	-9.41
57	Sales representatives and agents	449.86	406.99	-42.87	-9.53
101	Foremen - textile materials working	10.24	9.26	-0.98	-9.57
82	Fishermen	13.45	12.05	-1.40	-10.41
97	Rubber and plastics workers	30.17	27.00	-3.17	-10.51
147	Foremen - ships, lighters and other vessels	21.58	19.30	-2.28	-10.57

Table 3.4 (Continued)

Thousands

Occ. No.	Occupation	Total employment incl self employment 1971	1981	Net change 1971-1981	% Growth 1971-81
105	Woodworkers, pattern makers	318.91	281.90	-37.01	-11.61
156	Foremen - materials moving and storing	458.27	403.59	-54.68	-11.93
80	Forestry workers	14.76	12.95	-1.81	-12.26
40	Farmers, horticulturists, farm managers	263.95	230.94	-33.01	-12.51
14	Clergy, ministers of religion	40.83	35.71	-5.12	-12.54
56	Roundsmen, van salesmen	72.59	63.46	-9.13	-12.58
74	Hairdressers, barbers	98.52	86.06	-12.46	-12.65
123	Radio, TV and other electronic maintenance fitters and mechanics	69.67	60.77	-8.90	-12.77
125	Plumbers, heating and ventilating fitters, gas fitters	183.49	159.19	-24.30	-13.24
100	Printing workers, screen and block printers	151.85	130.84	-21.01	-13.84
162	Foremen and trainees (engineering and allied trades)	8.59	7.39	-1.20	-13.97
154	Foremen - civil engineering plant operating, etc.	182.90	157.17	-25.73	-14.07
75	All other in catering, cleaning and other personal service	206.55	177.21	-29.34	-14.20
115	Tool makers, tool fitters, markers-out	80.64	68.95	-11.69	-14.50
146	All other in construction, mining, quarrying, well drilling etc.	1.51	1.28	-0.23	-15.23
126	Sheet metal workers, platers, shipwrights, riveters, etc.	138.77	117.45	-21.32	-15.36
50	Office machine operators	161.88	136.97	-24.91	-15.39
127	Steel erectors, scaffolders, steel benders, fixers	35.89	30.30	-5.59	-15.58
143	Civil engineering labourers, craftsmen's mates etc.	17.84	15.06	-2.78	-15.58
128	Welders	148.16	124.99	-23.17	-15.64
132	Foremen - painting and similar coating	261.80	219.97	-41.83	-15.98
79	Agricultural machinery drivers, operators	20.35	16.71	-3.64	-17.89
6	Statutory and other inspectors	30.30	24.60	-5.70	-18.81
106	Sawyers, veneer cutters, woodworking machinists	46.83	37.86	-8.97	-19.15
98	All other in processing materials (other than metal)	234.26	188.93	-45.33	-19.35
41	Officers, UK armed forces	33.12	26.53	-6.59	-19.90
84	Foremen - tannery and leather (including leather substitutes) working	3.95	3.16	-0.79	-20.00
96	Glass and ceramics furnacemen and workers	33.21	26.34	-6.87	-20.69
89	Chemical, gas and petroleum process plant operators	88.59	69.52	-19.07	-21.53
103	Coach trimmers, upholsterers, mattress makeers	30.76	24.05	-6.71	-21.81
153	Bus conductors, drivers' mates	2.91	2.27	-0.64	-21.99
95	Foremen - glass, ceramics, rubber, plastics, etc.	17.78	13.85	-3.93	-22.10
78	Horticultural workers, gardeners, groundsmen	149.32	116.02	-33.30	-22.30
107	All other in making and repairing (excluding metal and electrical)	304.27	227.13	-77.14	-25.35
140	Building and construction workers	54.51	40.65	-13.86	-25.43
52	Supervisors of postmen, mail sorters, messengers	7.46	5.56	-1.90	-25.47
112	Press and machine tool setter operators and operators, turners	518.77	385.66	-133.11	-25.66
29	Draughtsmen	135.63	100.16	-35.47	-26.15
136	Foremen - product inspection and packaging	479.71	351.91	-127.80	-26.64
149	Foremen - rail transport operating	80.31	58.77	-21.54	-26.82
131	All other in processing, making and repairing (metal and electrical)	322.88	234.26	-88.62	-27.45
142	Sewage plant attendants, sewermen (maintenance), etc.	213.49	150.96	-62.53	-29.29
77	Farm workers	201.29	141.80	-59.49	-29.55
86	Foremen - textile processing	16.13	11.16	-4.97	-30.81
157	Storekeepers, stevedores, warehouse, market and other goods porters	87.18	59.20	-27.98	-32.09
137	Inspectors, viewers, testers, packers, bottlers, etc.	225.50	152.56	-72.94	-32.35
102	Tailors, dressmakers and other clothing workers	317.04	213.58	-103.46	-32.63
108	Foremen - metal making and treating	11.53	7.75	-3.78	-32.78
144	Foremen/deputies - coalmining	96.13	62.45	-33.68	-35.04
134	Foremen - product assembling (repetitive)	189.32	122.95	-66.37	-35.06

Table 3.4 (Continued)

Thousands

Occ. No.	Occupation	Total employment incl self employment 1971	1981	Net change 1971-1981	% Growth 1971-81
150	Rail transport operating staff	23.00	14.20	-8.80	-38.26
109	Furnacemen (metal), rollermen, smiths, forgemen	46.44	28.25	-18.19	-39.17
85	Tannery and leather (including leather substitutes) workers	84.12	50.36	-33.76	-40.13
94	Paper, board and paper product makers, bookbiners	55.01	32.92	-22.09	-40.16
160	General labourers	43.41	25.42	-17.99	-41.44
159	Foremen - miscellaneous	659.67	381.04	-278.63	-42.24
110	Metal drawers, moulders, die casters, electroplaters, annealers	61.73	35.28	-26.45	-42.85
113	Machine attendants, minders, press and stamping machine operators, etc.	109.14	57.48	-51.66	-47.33
161	All others in miscellaneous occupation n.e.c.	122.35	60.76	-61.59	-50.34
87	Textile workers	188.75	91.91	-96.84	-51.31
119	Office machinery mechanics	9.49	3.88	-5.61	-59.11
152	Bus, coach, lorry drivers etc.	72.54	23.09	-49.45	-68.17
81	Supervisors, mates - fishing	0.55	0.12	-0.43	-78.18

Source: Censuses of Population, 1971 and 1981.

Notes: Data for 1971 has been converted to a corresponding occupational classification to that used in 1981 as described in the text.

arrangements, there had been quite strong growth of employment for relatively less skilled workers. Amongst service industries the occupational changes tend to be of less significance relative to the industrial effect, although the former are still often quite important in explaining increases amongst professional occupations and lower skilled personal and support occupations. Projections prepared by the IER for 1984 -1990 given in Table 3.3 suggest that industrial factors will remain relatively less significant over the remainder of the present decade.

The broad trends described in these various tables have been confirmed in numerous case studies which have examined the likely effects of future technological change in employment structure. (See, for example, the work of the Science Policy Research Unit and the survey conducted as part of the OECD project on the impact of IT).[1] For example, Freeman (1985), reviewing the likely developments in the engineering industry, highlights the increasing need for high level skills in applied technology, research and development, design marketing and management functions; technician and maintenance craftsmen are also mentioned. In contrast, the need for middle level managers and administrators, supervisory grades, draughtsmen, routine clerical workers, traditional craftsmen, operatives and labourers will decline.

It is important to stress however that although such high skill/knowledge occupations are regarded as being crucially important in maintaining competitiveness and the pace of technological advance and growth in manufacturing industries, most commentators do not see "high tech" industries or "high tech" occupations as providing the main source of new jobs in the future. In their study of employment prospects for the US, for example, Rumberger and Levin (1985) suggests that most future jobs will be low level personal service or clerical support jobs that require little or no post-secondary schooling and that pay low wages. However, the latest generation of technological advances seem likely to have very significant effects on both the numbers and nature of clerical jobs available (see, for example, NEDO, 1983). Consequently, many commentators have expressed serious concern about whether there will be sufficient jobs available, at this low level to stem, if not reverse, the inexorable upward trend in unemployment.

Table 3.4 highlights in somewhat greater detail those occupations which have shown some of the most dramatic change in recent years. Data from the 1971 Census of Population have, for this purpose. been converted as to a comparable basis to those for 1981. This conversion was done at the most detailed level, however they have been aggregated to 163 occupational groups for the present analysis. Ranking occupations by the percentage growth in employment between 1971 and 1981 reveals few surprises. Of the 35 occupations growing by more than 24 per cent : 9 are from the professions (engineering, science,medicine, education, the law and business professions); 10 are in supervisory or lower level management occupations; and 7 are public service occupations connected with welfare, health and security (most notably nurses). All are white-collar or non-manual occupations. If we consider the absolute change in employment then the pattern is somewhat different. Nursing and teaching stand out as the biggest areas of growth while the numbers of secretarial occupations, retail staff, waiters and bar staff also experienced increases of 30 thousand or more. Nevertheless the professional occupations, management and supervisory occupations and health and welfare occupations remain at the top of the ranking.

In contrast the bottom of the rankings contain mainly manual or blue collar occupations. Ranking by net change results in draughtsmen appearing at the 142nd position and sales representatives and agents and salesmen, sales assistants etc. at 145th and 154th positions respectively. The remainder of the bottom 30 are all relatively low skilled manual workers or, as in the case of tailors and dressmakers etc., occupations in industries which were in sharp decline. This pattern is not substantially altered if we consider ranking by percentage change. Developments over more recent period (1979-1983) based on data from the LFS suggests that although the precise ranking of occupations may alter the basic trends remain the same as those in 1971-81. The main difference that does emerge is the much slower growth for certain occupations which have been affected by changes in the pattern of public expenditure (most notably education professions).

3.3 Increases in the Numbers with Formal Qualifications

As already noted in Chapter 2, these changes in occupational structure have been associated with a significant growth in the numbers of persons in possession of formal qualifications. This appears to be a general phenomenon affecting all levels of qualification. One aspect of this is the increase in the level of formal qualifications required for entry into different professions. Regrettably there are no comprehensive data on this but casual observation suggests that it is of some importance. For example, there have been significant moves towards all graduate entry into professions such as teaching, engineering and accountancy and a university degree is often accepted as part of the necessary conditions for attaining professional status. At lower levels the entry requirements for courses of training have also been increased although this is often a reflection of competition for places and the average qualifications held by prospective entrants.

The availability of data for the UK makes the increase in numbers holding formal qualifications most visible at the upper end of the spectrum (i.e. for those qualified at university degree level or its equivalent and above). According to data from the Censuses of Population, over the period 1971-81, the proportion of those in employment who held higher level qualifications rose from 8.8 to 12.7 per cent. Evidence from the Labour Force Surveys for more recent years suggest a continuation of this trend with an increase of about 3 percentage points between 1979 and 1983.

An analysis of developments for the highly qualified using shift share techniques is presented in Table 3.5. This is analagous to the analysis of industrial and occupational employment structure in the previous section. For each occupational category the observed change between 1971 and 1981 is devided up into four parts. First, there is a scale effect, which is the increase that would have arisen if the numbers had increased at the same rate as total employment. Second, there is an occupational effect, which measures how much the number of highly qualified persons in employment would have increased if the share of total employment in the occupation had remained the same as in 1971 (after abstracting from the scale effect). Third, there is the qualificational effect which measures the change arising from the growth (or decline) in the share of qualified persons in all occupations. The remainder of the observed change can be attributed to an occupation-specific qualification effect defined as that increase in qualified

Table 3.5 Analysis of Changes in the Numbers of Highly Qualified Persons, 1971-81

Thousand

Qualified Persons Employed in 1971	Qualified Persons Employed in 1981	1981 Expected No. of Qualified Persons in Employment Given Overall Growth Rate	1981 Expected No. of Qualified Persons in Employment Assuming Constant Proportion Qualified Within Occupations	Actual Change	Expected Change (Scale Effect)	Net Shift	Occupational Effect	Qualificational Effect and Interaction Effect	Interaction Effect
(1)	(2)	(3)	(4)	(5) [(2)-(1)]	(6) [(3)-(1)]	(7) [(5)-(6)]	(8) [(4)-(3)]	(9) [(2)-(4)]	(10) [(9)-(8a)]
2115.40	3113.51	2167.53	2649.41	998.10	52.13	945.97	481.88	464.10	54.27

Qualified Persons Employed in 1971	Qualified Persons Employed in 1981	1981 Expected No. of Qualified Persons in Employment Given Overall Growth Rate	1981 Expected No. of Qualified Persons in Employment Assuming Constant Occupational Structure	Actual Change	Expected Shift	Net Shift	Qualificational Shift Effect	Occupational Effect and Interaction Effect	Interaction Effect
(1)	(2)	(3)	(4a)	(5) [(2)-(1)]	(6) [(3)-(1)]	(7) [(5)-(6)]	(8a) [(4a)-(3)]	(9a) [(2)-(4a)]	(10a) [(9a)-(8)]
2115.40	3113.51	2167.53	2577.36	998.10	52.13	945.97	409.83	536.15	54.27

Sources: IER estimates, based on data from Censuses of Population. For further details on methodology see Appendix 1.

persons that is attributable to rising qualification shares in each individual occupation, calculated in such a manner as to net out both the scale effect and the overall qualification effect, and an interactive effect which measures changes that cannot be attributed solely to occupation or qualification. These definitions are analogous to those used in the previous section. The 56 occupational categories chosen for this purpose are based on the 1980 Classification of Occupations. The first 44 groups are the 3 digit occupational categories (001-044) where a significant proportion of highly qualified persons are employed. The remaining groups (44-56) correspond to orders 6-17 of the 1980 Classification of Occupations. Data for 1971 have been converted on to a comparable basis using a convertor derived by OPCS. We have assumed that the same conversion factors apply to both qualified and unqualified persons. This assumption is strictly speaking invalid, but appears to provide a reasonably sensible looking conversion with the exception of one or two occupational groups such as 'Officers, ships, aircraft etc' and 'Officers, UK armed forces'. For both of these, the numbers in the occupational categories were subsumed within much larger groups containing mostly unqualified persons in 1971.

The scale effect of 52 thousand amounts to 2½ per cent (the increase in total employment between 1971 and 1981). Somewhat over half of the total increase in employment of the highly qualified can be attributed to increases in the employment of those occupations employing significant proportions of such people. Abstracting from the scale effect the occupational effects in total sum to 480 thousand. With a few minor exceptions these are positive for all the 3 digit occupations distinguished (see Table 3.6). Especially large effects are found for teachers and nurses, while substantial increases are observed for scientists etc, mechanical and aeronautical engineers, accountants etc. as well as various other medical, legal and managerial professions. The occupational effects for the remaining occupational orders are mainly negative, but all fairly small.

The overall qualificational effect is by definition the same for all occupations. It accounts for a 45 per cent growth in each case. In absolute terms these benefit most the largest groups such as teaching, medical and engineering professions (for obvious reasons). More interesting perhaps are the occupation-specific qualificational effects and the sum of these two. For almost all occupations the occupation-specific qualificational effects are negative. Thus the overall qualification effect for teachers, n.e.c., for example, is an increase of 213 thousand. This is the growth that would have occurred if the number of qualified teachers grew at the same rate as the total number of qualified persons. In practice, allowing for the scale effect and the occupational effect, the numbers of qualified teachers have not increased by anywhere near this amount. There is therefore a negative occupation-specific qualification effect of -203. Together, these amount to a net qualification effect of +10. This net effect is quite significant for accountants and other business professions, for engineers and for various managerial occupations. This appears to reflect moves towards formalising qualification requirements in recent years. The proportions of highly qualified persons have also risen in orders 6-17. This appears to be more indicative of supply side than demand side factors, with "filtering-down" of graduates into what have traditionally been non-graduate jobs. However as noted by Adams and Meadows (1985) this may still obscure changes in the nature of the job

Table 3.6 Detailed Analysis of Changes in the Numbers of the Highly Qualified, 1971-81

Thousands

Occ. No.	Occupation	Occupational Employment		Numbers Qualified		Percentage Qualified		Change 1971-81					
								Total Change	Scale Effect	Occupation Effect	Qualification Effect		Interaction Effect
		1971	1981	1971	1981	1971	1981				Overall Effect	Occ. Effect	
1	Legal professions	37	54	33	52	90.6	96.4	19	1	15	15	-12	1
2	Accountants, etc.	174	231	71	130	41.1	56.3	59	2	22	32	-4	8
3	Personnel managers etc.	64	71	18	28	28.9	40.1	10	0	2	8	0	1
4	Economists, statisticians, etc.	66	99	20	52	29.9	52.2	32	0	9	9	6	7
5	Marketing, sales etc.	180	262	35	65	19.2	24.7	30	1	15	15	-4	4
6	Statutory inspectors etc.	30	25	11	10	36.0	40.2	0	0	-1	5	-3	0
7	Administrators - national govt.	40	50	9	11	22.9	21.6	2	0	2	4	-4	0
8	Local government officers	29	34	7	12	24.9	35.4	5	0	1	3	0	0
9	Other professional and related etc.	151	152	38	54	25.0	35.7	16	1	0	17	0	0
10	Teachers in higher education	120	116	88	104	73.1	89.5	16	2	-4	39	-18	0
11	Teachers n.e.c.	517	659	477	619	92.1	93.9	142	12	119	213	-203	2
12	Vocational trainers, etc.	42	75	25	32	59.7	42.7	7	1	19	11	-18	-4
13	Welfare workers	93	178	18	67	19.3	37.6	49	0	16	8	9	15
14	Clergy, ministers of religion	41	36	19	18	46.0	49.9	0	0	-2	9	-6	0
15	Medical and dental practitioners	79	98	77	97	97.3	98.7	20	2	17	35	-32	0
16	Nurse administrators, nurses	416	598	230	341	55.2	57.1	111	6	94	103	-94	3
17	Pharmacists, radiographers, etc.	56	77	45	63	80.9	81.6	18	1	17	20	-19	0
18	Other professional in education, etc.	60	86	20	32	32.6	37.1	12	0	8	9	-5	1
19	Authors, writers, journalists	47	55	12	20	26.4	35.6	7	0	2	6	0	1
20	Artists, designers, window dressers	53	62	10	18	18.6	28.8	8	0	2	4	1	1
21	Actors, musicians, etc.	42	54	7	14	15.9	25.8	7	0	2	3	1	1
22	Photographers, cameramen, etc.	30	34	1	3	1.7	9.0	3	0	0	0	2	0
23	All other literary, artistic etc.	23	37	2	2	7.8	5.1	0	0	1	1	0	0
24	Scientists, physicists, etc.	68	113	54	87	78.9	77.5	33	1	34	24	-24	0
25	Civil engineers, etc.	51	55	32	42	64.0	76.2	10	1	2	15	-7	0
26	Mechanical engineers, etc.	63	113	39	79	62.3	69.8	40	1	30	18	-12	4
27	Electrical engineers, etc.	65	68	39	45	59.8	66.6	6	1	1	17	-12	0
28	Engineers and technologists n.e.c.	110	128	46	57	42.0	44.9	11	1	6	21	-16	0
29	Draughtsmen	136	105	31	27	22.6	26.1	-3	1	-7	14	-8	0
30	Laboratory technicians, etc.	123	134	35	32	28.4	24.2	-1	1	2	16	-20	0
31	Architects, town planners, etc.	94	117	53	82	56.9	70.3	29	1	12	24	-10	3
32	Officers (ships and aircraft), etc.	28	43	0	18	1.3	41.6	18	0	0	0	11	6
33	Other professional in science, etc.	80	132	26	32	32.5	24.3	6	1	16	12	-17	-3

Table 3.6 (continued)

Thousands

Occ. No.	Occupation	Occupational Employment		Numbers Qualified		Percentage Qualified		Change 1971-81					
								Total Change	Scale Effect	Occupation Effect	Qualification Effect		Interaction Effect
											Overall Effect	Occ. Effect	
		1971	1981	1971	1981	1971	1981						
34	Production managers and foremen etc.	307	389	66	95	21.4	24.5	30	2	16	29	-19	2
35	Site managers, agents, etc.	98	122	13	27	13.7	21.8	13	0	3	6	2	2
36	Managers in transport, etc.	112	149	18	20	15.8	13.2	2	0	5	8	-10	0
37	Office managers	133	216	17	51	12.7	23.7	34	0	10	8	7	9
38	Managers in distribution	710	716	33	45	4.7	6.3	12	1	0	15	-2	0
39	Managers of hotels, clubs, etc.	256	290	4	19	1.4	6.4	15	0	0	2	11	1
40	Farmers, horticulturists, etc.	261	232	4	14	1.7	6.1	10	0	0	2	10	-1
41	Officers, UK armed forces	31	27	2	10	6.4	38.6	8	0	0	1	9	0
42	Officers, foreign and Commonwealth	3	3	0	0	2.8	18.5	0	0	0	0	0	0
43	Senior police, prison officers, etc.	12	19	0	2	3.4	8.7	1	0	0	0	0	0
44	All other managers	134	166	13	25	9.7	15.2	12	0	3	6	2	2
45	Clerical and related	3589	3887	103	191	2.9	4.9	88	3	6	46	30	4
46	Selling	1429	1372	51	60	3.5	4.4	9	1	-2	23	-10	0
47	Security and protective service	463	534	16	15	3.4	2.9	0	0	2	7	-8	0
48	Catering, cleaning, etc.	2395	2538	39	35	1.6	1.4	-3	1	1	17	-23	0
49	Farming, fishing and related	438	353	8	6	1.8	1.8	0	0	-1	4	-2	0
50	Materials processing, etc.	2059	1719	12	18	0.6	1.1	7	0	-1	5	5	-1
51	Processing, etc. (metal/electrical)	3149	2867	36	65	1.2	2.3	29	1	-3	16	20	-3
52	Painting, assembling, etc.	1173	965	12	12	1.0	1.3	0	0	-1	6	-2	0
53	Construction, mining, etc. n.e.s.	915	910	5	12	0.6	1.3	7	0	0	2	5	0
54	Transport operating, etc.	1754	1623	16	12	0.9	0.7	-3	0	-1	7	-9	0
55	Miscellaneous	765	508	1	3	0.2	0.5	1	0	0	1	2	0
56	Inadequately described and not stated	585	815	17	28	3.0	3.5	11	0	6	8	-4	1
	All Occupations	23982	24573	2115	3114	8.8	12.7	998	52	482	946	-535	54

Source: Censuses of Population, 1971 and 1981. (Tables 6 and 4 respectively)

Notes: (a) Data for 1971 has been converted to a corresponding occupational classification to that used in 1981 as described in the text.

(b) Details of the methodology used in the shift share analysis are given in Appendix A.

and the way in which it is performed that cannot be revealed by aggregate data of this kind.

In total, the overall qualificational effect amounts to just under 950 thousand, although this is offset by a negative occupation-specific qualification effect. In combination these two effects are somewhat smaller than the occupational effect. It is notable however that 140 thousand of this increase arises in the occupational orders that have not been traditionally areas of employment for graduates. These orders accounted for 316 thousand out of a total of 2.1 million highly qualified persons in employment in 1971. The interactive effect resulted in a further rise of 50 thousand between 1971 and 1981.

These basic conclusions are invarient to the level of aggregation across occupations that is used for the analysis. Similar results are obtained for males and females separately, although the occupational effect is of much greater significance for the latter, mainly due to their heavy concentration in teaching and nursing. (Together these professions accounted for over 2/3 of female highly qualified employment in 1971.) Using data from the LFS for 1979 to 1983 suggests a broad continuation of these trends although the cessation of employment growth in education services in particular as a result of restraints on public expenditure has had a predictable impact.

The analysis of changes in occupational structure and qualificational structure presented above is based on what has actually occurred to employment patterns. It therefore reflects both demand and supply side influences. However, since the titles of the jobs people are doing are essentially defined by the employer it seems likely that the occupational effect will mainly reflect the demand side (assuming employers are not supply constrained). On this basis our analysis suggests that at least half the growth in the numbers employed who are highly qualified reflects changes on the demand side. Furthermore to the extent that <u>some</u> of the increase in the proportion of persons qualified within occupations reflects real changes in the job content i.e. in the technical demands on the incumbent[1], then an even larger proportion of the total change may be attributed to demand side factors.

There has however been considerable debate about the causes of the increase in the proportion of people in employment with higher qualifications. Authors such as Freeman (1971, 1976) and Berg (1970) have argued that in the Unites States the phenomenon is primarily a supply side one. Improved access to higher education and higher real incomes have encouraged a growing proportion of young people to remain in education beyond the minimum school leaving age. Increasingly the possession of higher qualifications has been seen as a necessary part of an individuals strategy for obtaining and retaining a job. Berg (1970) and others have argued that from the employer's view point such qualifications are used as a "screening device" to sort out candidates for jobs rather than providing evidence of improved productivity as a result of undertaking the course.

However it is easy to exaggerate the case for the so called "screening hypothosis". More detailed case studies of the impact of education and training on individual productivity suggests that there is a significant relationship (Psacharopolous,1981). Furthermore most case studies of the impact of technological change as employment suggest that there has been an important demand side influence on the numbers of highly

qualified persons in employment. (See, for example, the studies by SPRU and IMS/OSG referred to in the previous section.) Although few people believe in the mechanistic links between technological change, economic development and labour requirements that were the vogue during the early 1960's, it is clear that the pattern of demand for skills is changing. An important aspect of this change is the increasing need for highly qualified technical personnel in engineering and computing. However the growing complexity of organisational arrangements within companies and government and the increasing specialisation of tasks in the "professional" services areas (and the associated sub-contracting arrangements), mean that the demands for the highly qualified are much broader than simply for engineering and computing graduates.

Some detailed case studies conducted by the DE Employment Market Research Unit, (Adams and Meadows, 1985), suggest that while some of the growth in the proportion of qualified persons does simply reflect increased competition for jobs, a significant part is due to real changes in the nature of the job. Their study attempts to analyse how the labour market has responded in recent years to the large influx of new graduates. They highlight three main phenomenon : first, "filtering-down" whereby graduates are competing for lower level jobs previously filled by non-graduates; second, changes in job functions reflecting new technology and changes in product markets which result in jobs now requiring the higher level technical and organisational skills typically possessed by graduates; and third the change in the industrial and occupational structure of employment in favour of "graduate" jobs. The first can be seen as essentially a supply side phenomenon, the second and third as reflections of demand side forces.

The EMRU case studies found examples of all three factors. There is evidence of "filtering" down especially in more recent years with the decline in opportunities in major areas such as teacher training. There has been significant recruitment by banks, retail and catering sectors and the civil service of graduates into what were previously jobs held by those possessing 'A' levels as their highest qualification. Hartland and Gibbs (1986) find considerable evidence of disillusionment about such jobs. However as Adams and Meadows note, it is still unclear whether the influx of graduates into such work will alter the nature of the jobs ex post. Even though they may have been previously performed adequately and efficiently by non-graduates, productivity may rise and the nature and content of the jobs be transformed when they are undertaken by someone with a broader and higher level education. There has been little or no research into these questions however and many important questions remain unanswered.

The EMRU study also found plentiful evidence that changes in technology, changes in the nature of products and services bring provided and changes in organisational structure within employing organisations are leading to significant increases in the number of opportunities for graduates. These changes are tending to re-inforce the developments in the industrial and occupational structure of employment in favour of the highly qualified. The case studies conducted cover such diverse categories as banking, insurance, retailing, the police, the civil service and secretarial work.

Detailed analysis of the impact of new technologies by NEDO (1983) and others covering all occupations emphasise a polarisation of many occupational structures, with for example secretarial jobs requiring

much greater responsibility, initiative and discretion as well as a broader range of skills, while at the same time other clerical work is becoming mechanised, and deskilled if not eliminated altogether. Similarly, further down the occupational spectrum it is also possible to discern trends in demand patterns favouring better qualified technicians as well as certain craft occupations.

3.4 Other Aspects of Changing Job Content

Occupational titles and qualifications held are the most visible signs of changing job content. There are many other aspects which are less well documented and quantified. From an economic point of view occupations should ideally be defined in terms of the skills required to undertake them. In practice, this has not been the case. As noted above, many early systems of classification were almost indistinguishable from the industrial classification used (using occupational titles such as "miners", "textile workers" etc.). More recent systems of classification still suffer from such problems. Furthermore, current systems of classification are often based on aspects of class or status as much as skill content. Traditionally there has also been a strong link between occupational titles and qualification held. Certain occupations are defined in terms of minimum qualifications (e.g. many professional occupations) although these criteria do not always seem to be met in practice (see, for example, the proportion of qualified engineers in Table 3.6).

At the early stages of economic development in the UK the typical job requirements were physical strength and manual dexterity. The labour inputs required were craft skills and hard physical labour. As the process of economic development continued and, in particular, the mechanisation of the production process increased, the emphasis changed. The need for machine minders with mechanical skills increased. Technological progress, embodied in capital equipment, resulted in a gradual change in the tasks and skills required of workers. Typically the mechanisation process has taken over those tasks involving heavy or dangerous work as well as repetitive operations.

Over time the process of specialisation and the division of labour resulted as we have seen in the transformation of employment from blue collar, manual jobs to white collar, non-manual ones. This reflected a gradual change in emphasis from physical to mental work. Skills involving mainly physical dexterity were replaced by those requiring mental dexterity. This can of course be seen in the changes we have already noted in occupational structure and in the qualifications people hold. However, the systems of clasification used for these dimensions often obscure changes in the level of knowledge and/or the practical tasks that are involved in particular jobs.

For example, a clerk working 100 years ago would require very different technical skills (basic literacy, numeracy) from someone employed in that capacity today (where knowledge of computing, operation of office equipment, etc. may be necessary). Similarly, an engineer working today would need a much deeper knowledge of his subject than was necessary in Brunel's time. Again, to some extent, such changes will be reflected in the qualifications that people hold, but this is not necessarily the case. Consider, for example, the skills required by a police constable today compared with 100 years ago. The tasks undertaken by many police

men and women now include clerical, administrative and social welfare elements. They may need to be able to drive a car, run a computer, type a report, yet their occupational title is the same today as it was at the turn of the century. This, of course, is a fundamental problem facing those charged with developing occupational classifications. By making such classifications more detailed it is possible to take into account some of these developments but there will always be new tasks and new skill requirements emerging from technological developments which cannot be foreseen, while other tasks and skills become redundant.

Skill is only one aspect of job content however. NEDO (1983) lists a number of other factors that have been identified as structuring a job. These include: variety of work; level of decision making; degree of interest; control of work flow; feedback; supervision; interpersonal relationships; and general working conditions. Many of these relate to more basic aptitudes necessary to do the job such as: physical strength; manual dexterity; intelligence; numerical ability, verbal ability; powers of concentration and personability. Although there have been detailed job evaluation studies that have analysed particular jobs there has been no general study of the job content of different occupations in the UK published which provides such information.

Detailed job evaluation studies can be used to assess the content of particular tasks associated with different occupations. These can include such factors as intelligence, physical strength and dexterity, organisational abilities and so on as listed above. Such studies are however very expensive and it would be impractical to conduct them on a regular basis. Nevertheless, some such analysis, carried out in conjunction with the detailed examination of occupational employment published in the Census of Population, would be a valuable aid in understanding some of the longer-term trends in job requirements. This would be an important element in trying to establish the extent to whcih the growth in the average level of qualification held is attributable to changing job requirements or whether it is simply due to "inflation" of qualification requirements due to competition for jobs.

Although comprehensive job evaluation type studies are not available for the UK covering the whole of employment, there has been some research into specific aspects such as, for example, the study by NEDO (1983), on how new technologies are likely to affect job content and job boundaries. The NEDO study considered in considerable detail the changing skill/task requirements for various occupational groups due to the introduction of advanced information systems. Their conclusions were that although there was some displacement of jobs, especially involving routine clerical work, the main impact was to raise the average level of initiative, understanding and creativity involved in the remaining jobs. On balance the average skill requirements rose substantially. Some key skills may become necessary for many groups (e.g. computer literacy, keyboard skills etc.). Jobs involving less discretion (such as data entry and typing) are frequently eliminated altogether. Furthermore, many of the day to day office activities of looking for missing papers, collating returns, adding up figures etc. are no longer necessary. In their place new goals or performance targets are installed which often greatly enrich the job. A key aspect of these developments is the blurring of boundaries between jobs, for example, between managers and data processing specialists, between engineers, designers and draughtsmen and between managers (and professionals) and secretaries.

This blurring of job boundaries appears to be a quite general phenomenon appearing both in the office and on the shop floor. Senker et al. (1980) and the IMS/OSG study both emphasise the changing technical demands on specialists and managers who need to have knowledge of marketing and sales techniques as well as managerial skills and technical qualifications. On the shopfloor the boundary between craftsmen, technicians and machine operators, is becoming blurred. Often the new jobs require elements of tasks normally undertaken by all three occupational groups. Craft jobs may frequently require skills that were previously the province of more than one specialist (for example, electronics and mechanical engineering skills or plumbing/hydraulic experience). This has prompted some commentators to talk about the so called flexible craftsman or multi-skilled operative. Many case studies of the impact of new technologies on employment have emphasised that at the same time as hard, hazardous, dull and repetitive jobs are taken over by the new automated equipment, new jobs are created which involve higher skill requirements or a broader range of skills (Wilson, 1984, IMS/OSG, 1986). This change often demands a breakdown of traditional barriers between different trades. It is typically characterised by operatives doing maintenace or quality control work, but covers all aspects of work on the shopfloor (and indeed on the boundaries between the shopfloor and design and development activities). The Secretary of State for Employment, in a memorandum to NEDO (1986), refers to a number of companies in the UK where such changes in working practices are being made.

It is a more general phenomenon than the simple breaking down of trade demarcation lines in the name of greater flexibility however. In many sectors the blurring of tradesmen/technician distinctions is a reflection of the growing importance of electronics as a central technology. This may at first appear to be a reversal of the historic movement towards an increasing division of labour and specialisation of tasks. This particular phenomenon reflects the coming together of various technologies in the latest capital equipment and the concentration of labour input in the production process into predominantly maintenance activities rather than machine minding or routine operations.

The MSC monitoring of skill shortages also suggests that employers are looking for people with a much broader set of skills than has traditionally been the case at professional, technician and shopfloor level. Knowledge or experience of information technologies is, of course, a key new skill requirement. However, the keynote in all of these developments is the emphasis on flexibility. Employers are increasingly demanding from employees a more flexible attitude towards job demarcation and less narrowly defined range of skills and expertise.

Notes

(1) See the references in footnote 3 in Chapter 2 plus Stoneman (1984), Barras (1984), Wilson (1984) and Rush and Hoffman (1984).

4. NEW FORMS OF EMPLOYMENT : CONTRACTUAL ARRANGEMENTS

4.1 Introduction

The meaning of work

One of the key ways in which employment patterns are changing concerns the nature of contractual arrangements for work. As noted in Chapter 2, there are significant trends towards more flexible contractual arrangements within the formal economy. At the same time there have been significant changes in the balance between the formal and informal economies. The latter raises important questions about exactly what we mean by work.

We have already alluded to the problem of defining work. In a survey conducted in Cauldmoss, an ex-mining area of high unemployment, the vast majority of respondents appeared to regard work as synonymous with paid employment (Leach and Wagstaff, 1986). Furthermore, "real" work was in most people's minds associated with physical labour. Obviously the sample was not representative, containing a large proportion of ex-miners, but most people did not regard office work, for example, as "real" work. Domestic work or DIY (digging the garden for instance) was not regarded as work. This type of definition appears to accord quite closely with that lying at the heart of the typical economic analysis of the choice between paid for work in the formal economy and "leisure". Work is essentially an unpleasant activity necessary to achieve certain ends for which people are compensated by being paid, while leisure includes all those activities which are not paid for, including housework. Gershuny (1983) argues that this is too narrow a definition and that work is any activity pursued for an instrumental purpose. This more general definition would include activities pursued within the house connected with the running of the household as work. Hawrylyshyn (1978) defines work (an "economic activity") as an activity that can be done by a third party (in principle at a market price) without affecting the utility value to the individual. It is important to note that work need not necessarily be unpleasant. Most work typically has two elements: a commodity element in that it can be exchanged; and a vocational element. The artist is an obvious example of someone for whom the division between work and pleasure is often indistinguishable. While this is probably its purest form there are obvious parallels in many more mundane jobs, from professions (such as being a scientist) to manual work (such as a skilled cabinet maker or tailor), where the act of work itself can be the source of direct utility to the individual rather than simply a cost to be borne. In Hawrylyshyn's definition the artist's "work" would probably not qualify as such, nor would an activity like jogging (even though the latter might be regarded as a necessary task for maintaining human capital in running order!).

Jahoda (1982) argues that (paid) work may fulfil various other functions for the worker in addition to any inherent utility from the work itself. These include the provision of: a temporal structure to the individual's life; a sense of worth; social contact; status; a means of self-expression; and a source of physical exercise. These are not

necessarily associated with paid work but typically individuals do not appear to attain the same status or sense of worth from work unless it is paid for. People want to feel that they have earned the income and status associated with a paid job. This apparently is not so easily achieved via voluntary work with the individual receiving some kind of state benefit, (Handy, 1984). It is not clear however whether this is an inevitable state of affairs or whether it simply reflects current mores. Various authors (Leach and Wagstaff, 1986, Handy, 1984, Standing, 1985 and many others) argue that we need to radically rethink our views of work and pay. Typically paid employment has been the main means of distributing income in modern capitalist economies. These authors argue that this link may need to be broken if work and income are to be more equitably distributed. Their suggestions are centred around the introduction of a "social dividend", providing a basic source of income for every adult. This would be equivalent to a kind of negative income tax. One major advantage of such a policy would be the fact that it would obviate the need for minimum wage legislation and for concern about low pay, since the basic income floor would be set by the social dividend. Employers would be free to offer jobs at whatever wage they could afford while individuals would then be free to take whatever work they wanted without problem of poverty traps etc. Such a proposal would, in principle, get around the problem that people feel they need to "earn" to matter. It could open the way to a vast expansion in activities which are in human terms very worthwhile but which could not be paid for in the formal economy in its present state. This could include, for example, all kinds of voluntary work, care for humans, animals and the environment.

The problems with such a scheme are of course numerous. The most obvious ones are: the cost (and the political problem of selling such a scheme to the taxpayer); and the possibly deleterious effect such a scheme would have for incentives (and the means by which resources would be allocated). These authors suggest that these problems are solvable, given the political will.

Changing contractual arrangements

A part of the explanation for many recent developments in work and employment pattern lies in the desire for the greater flexibility by employers. Rather than employ someone on a permanent basis to undertake the tasks they require there has been an increasing tendency for firms to adopt some alternative means of achieving the same end. This may mean buying in certain services such as catering or cleaning which were previously supplied internally. It may also involve "out-sourcing" to buy in intermediate products that were previously produced internally. Both of these can be seen as part of the long established process of learning by doing, specialisation and the division of labour.

It may also however have direct implications for the contractual arrangements of those who are still employed by firms. Atkinson (1984) has argued that a dual labour market is emerging across industry with a growing polarisation of the work force into "core" and "peripheral" groups. While the former are likely to enjoy favourable career and promotion prospects, good jobs security and opportunities for acquisition of new skills retraining and redeployment, the latter face much less satisfactory conditions. According to Atkinson current trends are likely to re-inforce these differences.

The peripheral group will contain some employees on permanent contracts (albeit enjoying poor career prospects and limited job security). Increasingly however the peripheral groups will become more divorced from the firm, with the use of temporary contracts, sub-contracting, agency relationships and buying in of, in particular, professional services from self-employed persons. The use of part-time workers, home workers and those on government schemes can also be seen as part of this same tendency.

It would however be a mistake to see all these developments as the consequence solely of pressures from the demand side. Individuals are also interested in increasing control over their own lives and the rapid increase in part-time working amongst married women clearly reflects this, at least in part. Some of the recent trend towards more working at home, especially amongst professional women may be seen in the same light, while the growth in self-employment in recent years may reflect similar factors.

Related to these changes are two other phenomenon: first the increase in the relative importance of the informal economy; and second changes in the allocation of time by households between paid work in the formal economy and domestic work, leisure and other activities. The secular rise in unemployment has been an important factor in forcing individuals to adopt working patterns that they might not otherwise have preferred (temporary and casual work, homeworking, freelancing, part-time working and so on). At the same time it has been a determinant of the expansion of the informal economy in the form of more illegal activities, more emphasis on domestic work including DIY, and a growth in the importance of barter, voluntary work etc.

Another phenomenon that has developed as direct consequence of high unemployment has been the growth in various government schemes, essentially aimed at mopping up the large numbers of people (in particular the young) who cannot find work in the formal economy.

4.2 Temporary Work

There is no generally accepted definition of "permanent" and "temporary" employment. A recent study by Meager (1986) defines a "temporary worker" as referring to someone whose employment is recognised by both the firm and the worker as being for a limited period. This definition could therefore include seasonal and casual workers, those employed on short fixed term contracts, agency workers ("temps") as well as someone who is self-employed, temporarily doing work for the firm on a sub-contractual basis.

According to the Labour Force Survey there were some 1½ million people in Great Britain falling into this category in 1984 which is 6½ per cent of total employment (MSC, 1985). This represented a slight increase compared with 1983. However, an earlier survey, conducted by the then Employment Services Agency in 1975 and reported in Blanpain and Drubigny (1980), suggests little change, with a figure of 7 per cent of total employment. A large proportion of those in temporary employment were female (54 per cent) or part-time (also 54 per cent). The highest proportions of temporary workers were employed in industries such an agriculture and construction and in services such as distribution, hotels, catering and other miscellaneous services. It was, however the

service industries which accounted for the bulk of the total of 1½ million (over 60 per cent). Most of those employed were in "service" occupations, both high and low skilled.

Casual employment was the predominant form of employer/employee relationship before the present century. According to Blanpain and Drubigny (1980) the "de-casualisation" movement has been less complete in the UK than in many other countries. Traditionally temporary workers have been used: to cover temporary absences; to deal with peak loads arising from seasonal or other factors; or to cover temporary shortages. Meager (1986) reporting results from the IMS study suggests that in recent years newer rationales associated with flexible manning policies have become increasingly important especially in manufacturing industries.

The reasons for the recent increase in temporary work are unclear. The growth between 1983 and 1984 was just 150,000, which could easily be explicable in terms of a cyclical change. (Indeed given the errors in the estimates the increase could well be entirely spurious.) It is however notable that the changes in the industrial structure of employment noted in Chapter 2 are likely to result in increasing numbers of temporary workers ceteris paribus. A number of authors, including Meager (1986), IDS (1983) and Atkinson (1984), have argued that it may reflect a permanent change in employers' employment strategies, aimed at reducing fixed labour costs and shifting the burden of risk associated with fluctuations in demand on to labour. However, it is probably still too early to say whether these developments reflect a long-term change or merely a short-term response to the cyclical state of the labour market. As the Secretary of State for Employment has himself admitted, the information available from official sources is rather inadequate both in terms of clarifying trends and in interpreting their causes, (see NEDO, 1985b). Additional data are necessary if the picture is to be clarified. One thing that is clear is that the state of the labour market has also been such that many individuals have been forced to take temporary work in the absence of more permanent jobs. Whether this will continue to be the case if the labour market recovers is difficult to judge at present.

Looking towards the future some increase in temporary work seems likely, simply because of the way structural shifts in employment will probably favour those sectors which make most use of temporary workers. This could be reinforced if the move towards more flexible manning strategies identified by IMS continues. On the other hand if there is an improvement in the unemployment situation the pressures from the supply side may work against such a trend. It is important to recognise that many of the advantages of flexibility from the firms viewpoint appear as disadvantages in the form of greater job insecurity for the workers. Such problems are of growing concern to Trade Unions and to individuals in the labour market and seem likely to require the attention of policy makers as we approach the 1990s. Indeed the EEC draft Directive on temporary work aims to protect workers who might be exploited by unscrupulous employers. However, this has been strongly opposed by employers organisations such as the CBI, EEF etc. arguing that the only effect of further regulations will be to reduce the amount of temporary work without replacing it by any permanent jobs (see IDS, 1983).

4.3 Homeworking and Outworking

As with temporary work there is at present no generally agreed definition of homework or outwork. Hakim (1984b) discusses some of the problems in distinguishing different types of "off-site workers", (homeworkers, outworkers, freelances, labour only subs-contractors etc). For the last two categories in particular there is considerable overlap with various categories of "temporary" worker discussed in the previous section. There is also potential for considerable confusion with regard to employment status, many homeworkers regarding themselves as self-employed. Indeed some would go so far as to include franchises within this general category, arguing that the latter's status as independent entrepreneur is often more illusory than real (Stanworth et al, 1983, 1984). Leighton (1983) has also emphasised the difficulties of defining the contractual arrangements for these various types of worker. Hakim (1984b) argues that many old terms are being given new shades of meaning which makes analysis very difficult. Both authors note that often workers with apparently different status and titles may be doing very similar work for the same company. Detailed analysis of pay, conditions of employment, contractual arrangements for these workers can be found in Hakin (1984b) and Leighton (1983).

Traditionally homework and outwork were concentrated in manufacturing firms. However the national survey for England and Wales for 1981 reported by Hakim (1984a) presents a very different picture. Excluding those "living at work", the number working at/from home was just under 11 million. This figure reduces to 660 thousand if family business and the construction, transport and haulage sectors are omitted. Of the 660 thousand, just 250 thousand were actually working at home and less than 30 per cent of the latter were engaged in manufacturing work. Comparison with results from earlier surveys for 1968 and 1971 suggest a significant increase (Hakim, 1984a). Although the data are not strictly comparable, estimates of just over a million in 1968 and 1½ million in 1971 for the UK as a whole compares roughly with the 1.7 million for England and Wales only. The overall trend therefore appears to be upwards and to be encompassing an increasing range of tasks and activities. Manufacturing homework as noted already is now a relative rarity, service work both of a traditional kind and new services based on information technologies are now much more important. In the 1981 survey a considerable proportion (1/3) were in professional, managerial and related occupations working for two or more employers/clients (those would fall under the "freelance" or independent sub-contractor heading). Selling accounted for a quarter of the total, again many of whom appear to be treated by their employers as self-employed freelances. The results from these surveys suggest that the pattern of off-site working has been changing for some time in favour of the service sector.

Various authors have emphasised the importance of new technologies in changing the nature of homeworking in a very significant manner in the future. Hakim (1984b), Blandy (1984) and Upton (1984), referring to evidence from case studies and to the experience of the US in "teleworking" and the "home office" argue that significant changes are in prospect. New technologies have an enabling effect; the possibilities of networking etc. providing new opportunities for working from home which have not existed previously. The high costs of maintaining offices, of transport to and from centralised offices also provide incentives for radical rethinking about the organisation of

economic activity in information processing. There are of course disadvantages most notably connected with monitoring and supervision. Other less obvious disadvantages may arise for the individuals concerned due to the loss of social contact normally associated with work. As Upton (1984) notes, these disadvantages may also affect employers who benefit indirectly from "office serendipity" and the synergy arising from social contact. It seems likely that moves in this direction will be limited to the more "peripheral" activities of the firms that have a clearly defined output rather than to "core" activities which are more directly concerned with the continued existence of the firm.

Hakim (1984b) argues that firms in the UK have used outworking as a means of achieving flexibility, off loading risks on to workers while not paying any premium. Indeed costs are often lower. (Although the situation is somewhat different for the professional freelances who are truely in business on their own account). This appears once again to support Atkinson's (1984) general hypothesis. However it remains unclear whether this represents a long-term trend or a short-run cyclical response, with employers exploiting the stronger bargaining position they have as a result of currently high unemployment levels.

The answers to this latter question cannot be obtained from national statistical sources because they fail to distinguish such novel types of working arrangements and contractual arrangements. The Census of Employment for 1984 will provide some information on employee homeworkers but will exclude the great majority of self-employment labour-only sub-contractors. The Labour Force Surveys and Population Censuses also provide no clear distinction between labour-only sub contractors and the genuine entrepreneur or small businessman. Although the number of self-employed without employees given in the Census of Population provides a rough indicator.

It is apparent from Hakim's (1984a) analysis that there is a significant difference in the pattern of off-site working for males and females. For men, working from home as a base is the most important type. This is especially associated with jobs in selling and insurance. For women, actually working at home it is much more important. This difference appears to reflect the effects of family responsibilities falling disproportionately upon women. Further extensions of the use of off-site working may have implications for attempts to bring about equality between the sexes in the labour market.

4.4 Part-time Working

Part-time employment was highlighted in Chapter 2 as the fastest area of growth in employment. We also noted that this growth has been concentrated in the service sector. A shift-share analysis of recent changes suggests that although a substantial part of the total growth is explicable in terms of the overall change in industrial employment structure in favour of services, only about 15 per cent of the total increase of 1.6 million jobs for part-time females between 1971 and 1985 is attributable to such factors. The remainder is largely due to a greater propensity to employ part-time as opposed to full-time workers.

Blanchflower and Corry (1985) argue that much part-time work reflects the need by employers for regular but less than full-time workers, such as office cleaners or school dinner ladies, who provide a service on a

daily basis but which is not required for more than a few hours. Such part-time work is just as permanent and regular as full-time work and may have the same degree of attachment to the employer. Despite this, the terms of conditions of such employment often compare unfavourably with those for full-time staff. Furthermore, the boundary between such work and other work with a strong daily weekly or seasonal pattern that is satisfied by the use of casual labour, freelances, outworkers etc. is an unclear one and will vary depending on the nature of the product or service concerned. Terms and conditions for the latter types of worker are usually even less favourable. Broad generalisations are difficult if not impossible to make, save that such developments can all be regarded as part of the drive by employers for greater control over their labour inputs and for minimisation of costs.

The increase in part-time employment can be seen as reflecting the demand by employers for greater flexibility and a desire to improve the utilisation of capital equipment, especially when introduced in conjunction with various shift-working systems. However there is considerable evidence that part-time working has also increased because of supply side pressures associated with family formation.

Although some authors such as Robinson and Wallace (1984) come down heavily in favour of demand side explanations, especially in relation to most recent developments, there is considerable evidence that certain members of the labour force in particular, such as married women returning to the labour market or men approaching the statutory retirement age, prefer to work in small parcels of time, possibly at irregular intervals. Consequently, other authors attribute at least some role to supply side factors (Blanchflower and Corry, 1985, Elias and Main, 1982 and Robinson and Wallace, 1981. In recognition of the importance of the supply-side, Disney and Szyszczak (1984) attempt to develop a complete supply/demand model for part-time work. All these authors emphasise the influence of employment legislation as well as the complexities of the tax, benefits and National Insurance system in explaining recent developments.

Robinson and Wallace (1984) stress that reductions in working hours and the increased use of part-time workers, while originally introduced in response to external factors such as the remission of selective Employment Tax or to keep earnings below the threshold for contribution to the National Insurance Scheme, had by the late 1970s/early 1980s become an essential element in employer's policies to control overall costs, especially in labour intensive industries. This was re-inforced by the implementation of the Sex Discrimination and Equal Pay Acts.

Their study of establishments revealed a considerable degree of occupational segregation by sex and the use of part-time work especially by females to provide cost savings when meeting peak demands for labour especially in the service sector, often without the payment of overtime or shiftwork premia. A survey in Industrial Relations Review and Reports (IRRR, 1984) reaches similar conclusions, noting the links between part-time work and various forms of casual and temporary work. Lower basic rates, lower fixed labour costs (e.g. national insurance payments, sick pay, pensions, employment protection, etc.) and fewer legal obligations on employers, results in such workers providing a much more flexible source of labour services than a permanent full-time male labour force. These developments can therefore be seen as a logical attempt by employers to minimise costs along standard neo-classical

lines, albeit facing a somewhat more complicated set of constraints than appear in most labour economic text books. At the same time, it is clear that they also represent an attempt to outflank the employment protection and anti-sex discrimination legislation that has been introduced in recent years and to thereby undermine the hard-won gains of the trade union movement in this area.

The converse of greater flexibility and lower costs for the firm is often greater job insecurity lower pay and poorer conditions of employment for the employee. The European Commission's Directive on voluntary part-time employment seems to be an important step to protecting individuals against exploitation by employers in the name of greater flexibility. In common with their attitudes to other EEC directives, UK employer organisations have opposed the part-time directive on the grounds that it introduces undesirable rigidities into the labour market and will reduce the overall number of job opportunities. In contrast, Blanchflower and Corry (1985) and Disney and Szyszczak (1984) present strong arguments in support of the Directive.

4.5 Hours of Work

Hours of work have a variety of dimensions, including daily, weekly, annual and lifetime hours. They are also associated with a question of timing, for example, at what times of the day, week, year, etc. are labour services utilised? One important post-war change in the UK that had major consequences for the timing of work was the early movement from a $5\frac{1}{2}$ to a 5 day week. This generally meant that the Saturday morning was freed at least for manufacturing workers. This trend away from Saturday mornings has continued as the reduction in hours has meant that weekend overtime has also been largely removed over this period. Another other major link between the length and timing of hours concerns the interaction between participation and lifetime hours. We return to this below. Other aspects of timing are dealt with in the context of shiftwork and unsocial times of work.

Contractual arrangements regarding hours of work generally specifically specify four states: normal hours, overtime hours, short-time hours and holiday entitlements. Normal hours can be taken to indicate the length of the working day or week which the employer expects to be provided at the associated hourly basic rate of pay. Overtime hours are the additional work over and above normal hours. Short-time working takes place when the firm does not require normal hours in order to meet its production targets. Finally, holiday entitlements specify the number of days of work during the year and, in conjunction with the other dimensions of hours, define annual hours of work.

While particular plant or firm level contracts may be explicit about the behaviour of the parties under all possible outcomes regarding these four states, national collective agreements tend to specify more limited aspects of them: the length of normal hours per week (and, in conjunction with the shift pattern, per day); overtime premia, which are an increasing function of the number of hours over and above normal hours; guaranteed pay (or hours) which is fixed as a percentage of weekly pay (or hours), with some conditions regarding how long such payments will remain in force; the length of holiday entitlements and asociated holiday pay rates. Precisely which employees will be

"offered" overtime or put on short time is generally not explicitly specified. Such dimensions more often form part of informal, institutional arrangements between employers and employees (see, for example, Whybrew, 1968).

The principal dimension of normal hours investigated in the literature is the normal working week. The recent position with regard to contractual arrangements is set out in the DE's Time Rates of Wages and Hours of Work (TRWHW) and these are now reported in the Gazette.[1] This source deals with national collective agreements, although some major firm level agreements (such as ICI) are included.

Simple weighted average of, for example, agreements in the chemicals industry show a very slightly different picture to the overall normal hours position reported in Table 2.8. Weekly normal hours varied both up and down with the changing composition of agreements in this industry, a feature confirmed from other sources (Bosworth, 1986). Nevertheless, the underlying trend was downwards from 1963 (41.6) to 1966 (40.3), it then remained unchanged to 1971, before falling to 1974 (40.0). Normal weekly hours remained unchanged over the period 1974 to 1979 inclusive, but have fallen in more recent years, although the averages have not currently been calculated. A further fall in the average of one or two hours is anticipated up to the present time.

The results from TRWHW hide potentially important plant and firm level differences, where more detail may be included explicitly in contractual agreements. For example, normal hours may differ by occupation, shift system and size of production unit. This heterogeneity is confirmed by other sources (i.e. "Occupational Earnings", DE Gazette, biannually to 1980II). Comparison of the two sources reveals a number of further features. First, normal hours in the OE survey are lower for almost all groups than the figures given in the national collective agreements. This may well reflect the fact that national agreements tend to act as a minimum standard in plant and firm level negotiations. Second, average observed normal weekly hours are more variable than those negotiated because of changes in the composition of activities in the industry, occupations and plant/firm sizes.

There is no clear evidence from the OE survey that average hours are consistently lower for more intensive shift systems (i.e. hours were longer on two shift than single, day shift for manual workers throughout much of the period 1960-80). On the other hand, there is clear evidence of a negative relationship between the incidence of shiftwork and average weekly hours per operative over time (Bosworth, 1986), pp. 28-9). This relationship is further substantiated by cross-industry and cross-country comparisons within Europe (op cit., pp. 28-35). On balance, therefore, hours and shiftwork appear to be negatively related. As normal hours have been reduced, this has raised the cost of maintaining current operating hours and, as a result, firms have switched increasingly to shiftwork as a means of reducing overtime working.

Hours of work differ across occupations, industries, etc. and the extent to which the overall hours figure changes depends on underlying modifications to the structure of the economy and workforce. The overall change in normal hours or average actual hours can be decomposed into various structural effects by means of shift share analysis of the NES data base. The results for average actual hours differ

significantly between manufacturing and all industries and services (and, by implication between manufacturing and non-manufacturing). The overall reduction in hours over the period 1973 to 1982 was 2.15 in all industries and services compared with 1.38 in manufacturing. The main similarity was that the 'hours effect', not attributable to other dimensions of industry and employment structure, was strongly negative in both cases and accounted for the majority of the overall change. However, while the industry and compositional effects were both negative in all industries and services, they were both positive in the case of manufacturing.

In the case of manufacturing, the changing industrial structure had an extremely small positive effect on hours worked. In this instance, the compositional effects was more strongly positive and this could be traced to roughly equal contributions of changes in the sex and part-time/full-time composition of the workforce. The impact of occupational shifts appeared insignificant even within the context of the overall compositional effect.

In the case of all industries and services, the industry and compositional effects both worked to reinforce the underlying downward movement in hours of work. The industry effect was considerably larger than the compositional effect. The latter was traced to three broadly equal, though individually quite small, contributions of the changing sex, part-time/full-time and occupational structure of the workforce.

Overtime premia and guaranteed pay are the primary determinants of the underlying structure of labour costs[2] and ensure that, in the longer term, average actual hours per week will generally track normal hours. The existence of quasi-fixed labour costs cause the equilibrium value of average actual hours to lie above normal hours.[3] Examination of the national collective agreements contained in the TRWHW indicates that, in general, overtime premia rates and guaranteed wage agreements have not altered over quite long periods. Where changes in overtime premia have occurred, they have tended to raise the first rung of the ladder (i.e. Forestry GB and Roadstone Quarrying). Thus, the evidence suggests that, at least amongst those covered by collective agreements, that 'U-shaped' average labour cost functions have persisted and, if anything, even been strengthened.[4] Thus, in the longer term, average weekly hours will tend to track normal weekly hours and, likewise, given that holidays are paid at basic rate or higher, annual hours will tend to track normal annual hours. The same is not true, however, about lifetime hours, which depend on life cycle participation behaviour and this has altered markedly, particularly for women.

Holiday entitlements have also changed significantly over the post-war period and, in combination with lower weekly normal hours, have affected annual normal hours of work. Based on weekly normal hours of 44.5 and holiday entitlements of 1.7 weeks in 1951, annual normal hours were 2238.4; based on 38.5 hours per week and 4.6 weeks holiday in 1985, annual normal hours were 1824.9.[5] Thus, the percentage reduction in annual hours was 18.5 per cent over the post-war period. If weekly normal hours had remained unchanged at 44.5 over the whole period, annual normal hours would have been reduced to 2109.3 by the increased holidays, a 5.8 per cent reduction over the period as a whole. If, on the other hand, basic holiday entitlements had remained the same at 1.7 weeks per year, then annual normal hours would have been reduced to 1936.6, a reduction of 13.5 per cent. Thus, the increase in holiday

entitlements accounted for approximately 30 per cent of the overall reduction in annual normal hours and, by implication, the reduction in weekly normal hours accounted for around 70 per cent.

Evidence from TRWHW indicates that public (or customary) holidays have also increased over the period. Data from the early 1950s indicate that the norm was about 6 public holidays per year. By the early 1980s this had certainly increased to at least 8 per year (TRWHW and DE Gazette, February 1985, p. 85). Thus, the total holiday entitlements, inclusive of public (or customary) holidays, was probably about 2.6 weeks in 1951 and over 5.7 weeks in 1985. This implies a fall from 2198.3 to 1782.6 hours per year, a reduction of 18.9 per cent, with a somewhat higher percentage accounted for by the increase in holidays.

A further aspect has been the increased importance of length of service holiday entitlements at various points in the post-war period. Examination of TRWHW suggests that the extra allowances per worker tend to be quite modest, although there were a number of exceptions such as British Telecommunications agreement regarding senior technicians, technicians and technical officers (rising from 4 weeks basic to 6 weeks after 30 years of service). Allowance for these additional entitlements as unlikely to make a significant difference to the results with regard to annual normal hours. The broad order of magnitude is perhaps one or possibly two extra days holiday over the period 1951 to 1985. Nevertheless, this still increases the relative importance of holidays in the reduction of annual normal hours if only slightly.

The retirement age has proved important in the context of lifetime hours because the majority of individuals have not worked after retirement, at least in the formal economy.[6] Legally set ages of retirement have remained fixed at 60 for women and 65 for men over the post-war period. However, the recent ruling in the European Court of Rights that the discrepancy betwen male and female retirement ages was discriminatory has resulted in the government recognising the right of women to work to age 65. Whether the ruling may lead to further changes in the longer term has yet to be determined. The average number of years worked over age 65 during the post-war period fell from 3.6 in 1951 to 1.4 in 1981 for males and from 0.8 to 0.6 for females (Armstrong, 1984). Of course, these changes may to some degree be offset by increased activity in the informal economy, for example, domestic work.

Equally, at the other margin, there have been reductions in the length of working life caused by increases in the age of entry to the workforce. One major change was the raising of the school-leaving age from 15 to 16 in 1973. A further and, possibly, more important influence has been the growth in numbers of young people continuing their education through to A level (at age 18) and on into further and higher education. While it might be argued that education is just another form of work, it is different at least in the sense that it generally occurs outside the formal economy.

These activities relate to the broader question of labour force participation. Variations in participation rates clearly affect lifetime hours and drive a potential wedge between the concepts of normal and average actual lifetime hours. For males of prime working age (25-64) over the period 1921 to 1981 there was little change. On the other hand, participation by women increased significantly over this

period (Armstrong, 1984, pp. 30-6). Thus, the long-term trends in lifetime hours of men and women are quite distinct. Male lifetime hours declined throughout, depressed not only by the reduced working week and increased annual holiday entitlements, but also by the minor decline in post-war participation rates. Female lifetime hours, on the other hand, rose immediately post-war and maintained a broadly comparable level thereafter, with the effects of increased participation counteracting the combined influence of weekly hours and holiday entitlements.

The evidence points to further declines in most dimensions of hours of work. On the demand side we must recognise the desire for increased flexibility in the workforce. However, this probably manifests itself more in the relative demands for part and full-time workers than in hours of work per se. Employers have generally resisted reductions in normal hours as this tends to increase overtime working or, indirectly, shiftworking, with associated premia penalties. The primary source of pressure for lower hours has been from the supply side, where workers have chosen to take a part of the potential increase in wages in the form of greater leisure and other activities outside of formal work. The precise type of activity is investigated further in Section 4.8 below. The extent to which the balance swings away from work depends in part on the wage rate and product prices, but also on the number and quality of goods and services linked with non-work activities, and the extent to which they are advertised (Brack and Cowling, 1980). The pressure to reduce hours further will continue as novel products (i.e. incorporating microelectronics) appear and fall in price as their market expands and matures. This may well be reinforced by the major movements towards areas such as DIY.

The reduction in hours may help to relieve some of the pressure to reduce employment in the face of growing labour productivity, even if it is unlikely to be sufficient to create new job opportunities of the type envisaged in the worksharing literature.[7] There are, however, a number of provisos to this conclusion. The first is that certain lengths of working week are more compatible with shiftwork, for example, a 40 hour week meshed well with continuous shiftwork, covering the 168 hour working week without resort to extensive overtime. The second is that not all of the evidence points to workers wanting to reduce weekly hours. Certainly there is some evidence from the recent past that productivity increases in the UK were being drawn by workers in the form of higher wages rather than lower hours. Third, even if there is pressure to reduce hours, it is not clear which dimension of hours will be most affected. Survey evidence from different countries on preferences with regard to reductions in weekly, annual and lifetime hours is mixed.[8] Finally, there is still ample scope for further increases in the female participation rate (or, perhaps less likely, for a reversal of the male rate).[9] At the current weekly and annual levels of hours of work, this would tend to raise the lifetime hours on offer. The UK has already experienced major problems in assimilating the considerable changes in the female rate during the post-war period. While tentative forecasts suggest that male lifetime hours will continue to fall to the year 2001 (Armstrong, 1984, p. 40), this is by no means so certain in the case of females.

4.6 Shiftwork and Unsocial Hours

Shiftwork is a catchword for a variety of systems which include two,

three and four shift working, as well as half shifts which generally utilise part-time workers as in the case of twilights. In each instance, there may be more than one example, e.g. a two shift system might be double days (i.e. 6.00 am to 2.00 pm and 2.00 pm to 10.00 pm) or alternating day and nights (i.e. 8.00 am to 8.00 pm and 8.00 pm to 8.00 am, Mondays to Thursdays). Given that, by definition, one shift worker takes over from another on the same task within a 24 hour period, clearly shiftworking provides a means by which the firm can extend its operation of non-automatic plant and machinery outside of the normal working day. Thus, shiftwork, by implication will involve some element of unsocial hours, where social hours are defined as 9.00 am to 5.00 pm, Monday to Friday.

Shiftwork has been seen as inherently unsocial, given the potential psychological and social consequences of working outside of the normal working period defined above.[10] Thus, it has been the subject of a number of major investigations by the European Foundation for the Improvement of Living and Working Conditions.[11] In addition, a number of countries have taken hard-line stands, including the Netherlands which bans shiftwork and France which, in the mid-1970s, brought in restrictions on the introduction of new shiftwork where none existed before.[12] As noted before, the UK has tended to take a much more liberal attitude to shiftwork. It has operated a system of exemption orders for young persons and females, on the grounds that these categories of worker are most at risk.[13] However, because this system discriminates between the sexes it has effectively been withdrawn.

The needs of employers for shiftwork and unsocial times of work come from two primary sources: first, non-storable products and services where the timing of demand lies outside the normal 9.00 am - 5.00 pm period; second, storable products and services, where there are cost savings associated with spreading production over longer periods (e.g. capital savings) or because factor prices other than labour decline outside the normal working period (e.g. electricity tariffs). A primary determinate of the extent of shiftworking in both these instances is the size of the relevant shift premia, which determines the slope of the average (and marginal) labour cost-utilisation function (Bosworth, 1982). A further potential factor is the existence of certain processes that, once started, must be completed for technical reasons (i.e. continuous processes of production, Sloane, 1983).

The primary aspect of shiftwork that is explicitly negotiated and appears in national collective agreements is the shift premia rate for each type of shift. As in the case of overtime, what is not made explicit is which workers will/will not work shifts.

The detailed investigations of premia rates in TRWHW revealed that premia rates for each shift reflect the extent to which that shift required the worker to work outside the normal working period of 9.00 am to 5.00 pm Monday to Friday (Sergean, et al., 1969, Bosworth and Dawkins, 1980). The second of these studies revealed that both overtime and shift premia incorporated both length and time of work elements. However, a later study suggested that more intensive shift systems tend to have higher non-pecuniary costs associated with noise, risk, health hazards, etc. and the premia payments reflected more than the perceived costs of unsocial times (Bosworth and Dawkins, 1984).

These studies, however, did not examine trends in shift premia over time, but they formed the basis for a more recent investigation of the level and structure of labour costs, including shift premia, which compared results for 1964 and 1978 (Bosworth, 1982). The primary finding was that the labour cost-utilisation envelope was shifted leftwards by the reduction in normal hours on each shift and by increases in shift premia on all systems (but primarily the two and three shift systems), raising the height of the curve. These two effects combined to increase labour costs at each level of operating hours. The upward movement in shift premia is almost certainly a reflection of the increased demand for workers on intermediate intensity systems, but the associated higher cost levels must have slowed the growth in shiftwork below what it would otherwise have been. This retarding factor was compounded by a relative growth in the size of non-wage labour costs at higher utilisation levels, caused by the switch from lump sum to percentage rate employer NICs.

The existence of the chemicals industry can be used as an example. The average shift premia appears to have varied over the period 1963-79 as the composition of agreements in the industry has altered. Nevertheless, the data from TRWHW appears to indicate a peak in premia in the late 1960s and early 1970s, for all systems, with some recovery again towards the end of the sample period covered. This is particularly true of four crew three shifts which peaks at 29.6 per cent in 1971 compared with 19.5 in 1963 and 23.7 in 1979. The DE biannual data[14] show that a broadly similar pattern is replicated from average actual shift premia for all systems for time rate workers, although the peak for payments by results workers is somewhat later and the end of period recovery is stronger, taking shift premia levels to new highs.

In a sense, all shift premia involve some payment for 'unsocial hours'. However, unsocial hours payments may be made independently of shiftwork. Examples can be found in a wide range of industries and services, including tanker drivers, electricity sales staff and retail stores (IDS, Study 287, March 1983, p. 3). Unsocial hours payments came to the forefront in 1973, when they were introduced during Stage III of Mr. Heath's pay policy. Since then their use has spread, even into areas such as retail sales (IDS, Study 297, Dec. 1979, P. 3).

The longer-term trends in shiftworking were outlined in Section 2.4. The NES data highlight a number of other features of shiftworking in the UK:

(i) cyclical variation in the incidence around the long-term trends;

(ii) major differences in incidence between occupations in the same industry, which manifest themselves in differences between the overall manual and non-manual incidence levels;

iii major differences between industries, which are only in part the result of the occupational distributions and which manifest themselves in the overall manufacturing, non-manufacturing and total incidence figures (Table 2.11);

(iv) distinct differences in incidence between males and females (Table 2.11) caused partly by the differences in industry and occupation by sex, which again manifest themselves in the overall incidence figures by sex.

Shift share analysis of the overall change in the incidence of shiftworking reveal both important similarities and differences in the results for manufacturing and all industries and services (and, by implication, between the manufacturing and non-manufacturing sectors). The overall changes over the period 1973 to 1982 are not particularly large: a decline of 2 percentage points in manufacturing, compared with a rise of over 3.5 in all industries and services. The industry effects in the two sectors are positive and the compositional effects are negative. The change in shiftwork independent of industry and compositional effects, however, was strongly positive for all industries and services, and negative for manufacturing. The reasons for this are not entirely clear, but probably reflect the differing demand experiences of the manufacturing and non-manufacturing sectors. Further disaggregation of the compositional effect reveals that the movement towards part-time working has depressed the incidence of shiftwork, more particularly in non-manufacturing sectors. The change in occupational structure had a negligible effect in all industries and services but was negative in manufacturing. On the other hand, the changing sex composition had a small positive effect in both sectors.

This overall picture still conceals the changes in the relative importance of the different types of shift systems. Comparison of the 1964 with both the 1978 and 1980 results[15] by type of system indicate the growth of double day working within the total. Double day is the most social of the shift systems in terms of the timing of work, measured simply against the deviation from the normal 9.00 am to 5.00 pm, Monday to Friday period. On the other hand, it does involve an early start to the day on the morning shift, as well as work during the peak social, evening period on the late shift (Bosworth and Dawkins, 1980). However, the relative decline in three shift working appeared slight and this particular system maintained its overall ranking as the most important type of shift operation. Permanent nights also maintained its comparative importance, although it was less frequent than double days or three shift working.

Shiftwork clearly has important implications for the extent of unsocial times of work. Nevertheless, shiftwork's contribution has probably been limited in the last ten or fifteen years by its comparatively slow growth and by the relative growth of double day working vis a vis three shift systems. On the other hand, shiftwork is only one aspect of unsocial times of work. We noted earlier that, for many goods and services, it is the timing of demands for non-storable products that determine the timing of labour utilisation. The rhythmical nature of human activities and consumption patterns is seen clearly from the growing volume of allocation of time data (Szalai, 1972; BBC, 1965, 1978 and 1984). To some extent the timing of these activities is 'driven' by biological rhythms, although a complex interaction of social, economic, psychological and physiological factors interact to produce the observed timing, and new patterns eventually emerge that can produce adjustments to the biological clock (Reinberg, et al., 1981, Luce, 1973).

Data on the allocation of time are not easily collected and sample sizes are often small. The problems of comparison between years are compounded by the fact that changes in timing are affected by changes in the length as well as the timing of various activities. Nevertheless, some interesting features emerge from recent surveys. The majority of full-time employees work during the most social periods of the week, between 9.00 am and 5.00 pm, Monday to Friday (BBC, 1978 and 1984). If

we take 11.00 am as a relatively social time of work, the 1983/4 survey (Winter) showed that about 9 per cent of full-time adults worked at this time on a Sunday, 18 per cent on a Saturday and between 60 and 75 per cent in weekdays. In comparison, on weekdays, only 6 or 7 per cent worked at 6.00 am, compared with 57 - 72 per cent at 9.00 am, 60 - 75 per cent at 11.00 am, 44 - 53 per cent at 4.00 pm, 9 per cent at 6.00 am, and 2 - 5 per cent at 8.00 pm. A very similar sort of pattern emerges for part-time workers (although the observed percentages at each point in time are much lower, caused in part by the shorter lengths of work period).

More interesting from the point of view of this study are the changes which have taken place over time. Thus, we have compared the ratio of percentage at work at each point during the 168 hour week in 1983/4 with the equivalent figure for 1974/5 (Winter observations in both cases). In principle, a ratio of unity would mean that the same proportion of the group in question is working at that point in time in each of the two years. In practice, the percentages in the year 1983/4 will be reduced somewhat by the reduction in the length of work week and a ratio of slightly less than unity may still signify a small growth in activity at that time of the week. A further problem is caused by the fact that the comparisons for full-time workers are for adults in employment and as male and female patterns may differ, the sex composition of the workforce will influence the final outcome. The comparison for part-timers is between adults in 1983/4 and females in 1974/5 and the results will be affected by the extent that male part-time working has become important. Given that male part-timers formed a small proportion of the total, this does not appear a major worry. Finally, some of the major differences in percentages betwen 1983/4 and 1974/5 occur where the percentages are smallest and, given the relatively small sample sizes, these changes should be interpreted with care.

Despite these reservations, a number of features stand out. First, there appears to have been a growth in Sunday working amongst both part-time and full-time workers. Second, there has been a decline in Saturday working amongst full-time workers (except perhaps the period in the early hours of Sunday morning, which may be linked with continuous shift patterns). In contrast, there appears to have been an increase in Saturday working amongst part-time workers at most points during the day, but particularly Saturday afternoon and early evening (through to about 8.30 or 9.00 pm). Third, there is tentative evidence to suggest a slight movement away from the more normal week day hours for full-time workers and, with equivalent increases at the very beginning and, more significantly, the evening periods. This change is consistent with the growth of double day working. Finally, there is a similar slight decline in activity amongst part-timer workers up to about 3.30 to 4.00 pm (although less so around mid-day), and a rise in activity during the early evening of 4.00 to 10.30 pm, particularly during the earlier part of this period (i.e. 4.00 to 8.00 pm). This change in part-time working is probably a reflection of peak load demands, mainly in the service sector, but it is also potentially consistent with twilight shifts.

Several factors have conspired to mitigate the potentially more radical changes in the timing of product demands and work patterns that might have been anticipated. Not least of these has been the rising cost of non-standard hours. The rise in shift premia at each level of operating hours has been augmented by the movement to a normal work week of less than 40 hours and the growth of part-time working. These trends have

sometimes made it necessary for employers to recruit additional workers or pay more overtime in order to maintain operating hours (IDS, Study 207, Dec. 1979, p. 1). At the same time, lower hours of work have meant that, in certain instances, demands which would have occurred at unsocial times now occur during the previously normal working period. Examples include the demand for transport services to take people to and from work, or shopping facilities that may be used on the way from work. The stagnation in demand for manufacturing output and the growth in unemployment may also have helped to focus demands at the traditionally more social times. Even the increase in shiftworking that has taken place, and which may *a priori* have been expected to shift demands to more unsocial times, has probably largely been offset by the relative movement towards double day working. Workers on the morning shift may have demands that are met during the 2.00 to 5.00 pm period and those on the late shift have demands satisfied between 9.00 am and 2.00 pm.

A number of other factors have also influenced the timing of work including the introduction in 1973 (under the, then, Heath Government) and subsequent growth of "unsocial hours" payments. These payments have often been introduced even where such hours have traditionally been worked, as in retail trades on Saturdays (*op cit.*, p. 1 and 3). However, this has partly been offset by the use of casual labour and other non-core workers. In addition it has been argued (*op cit.*, p. 1), that labour costs have been rising disproportionately on shiftwork *vis a vis* day work for a variety of reasons, including the rising professionalisation of the workforce, absenteeism and improvements in conditions of work on shift systems. Finally, the costs of shiftwork, coupled, very often, with other savings associated with nightwork (e.g. reduction in electricity charges), may well have further stimulated the introduction of new technologies, particularly automatic machines that do not require attending on a continuous basis. On the other hand, other new technologies such as CAD appear to require the introduction of shift systems (IDS, Study 276, 1982, p. 1).

The way in which the results have been presented and the emphasis on the period from the mid-1960s to the early 1980s may both have tended to underemphasize the potential for future change in work patterns within the economy. While, for example, the time patterns for full-time adult workers and for part-time adults/females may not have altered radically over this period, there are important differences between the two and the overall pattern of working time will clearly be modified as the balance between part and full-time work alters (see Section 4.4). Similarly, there are differences between the work patterns of male and female adult workers and, again, the changing sex mix of the workforce will induce overall changes in the extent and composition of shiftwork, as well as the overall time pattern of work. Finally, similar differences in work patterns between occupations, education levels and industries will imply that other structural changes will also alter work patterns. It should be recognised, however, that, to a lesser extent, causation may run the other way, with the shift patterns offered by employers determining the sex, occupational, etc. distribution of the workforce.

It is not clear whether a further change in the balance of activity towards services will increase or decrease shiftworking. Certainly, the "top ten" shiftwork occupations in the period since 1973 have tended to be associated primarily with non-manufacturing activities (i.e. various

transport services and electricity provision). On the other hand, the service sectors exhibit incidence levels both above and below the average for manufacturing. The precise outcome will therefore depend crucially on the manner in which the distribution of service activities changes as the sector as a whole expands. There will be a tendency for shiftwork to understate the implications of this trend insofar as a number of the key service occupations are closely linked with part time and, increasingly, with casual labour, which may not attract either shift or unsocial hours premia.

Despite these provisos, the general overview of developments in work patterns that emerges is that they are by no means as radical as may have been expected twenty years ago when shiftwork was growing more rapidly and the systems were less social.

4.7 Self-employment

In recent years, self-employment has grown to around 11 or 12 per cent of the workforce (Creigh, et al., 1986). The majority of these were self-employed in their main job (2.6 million people), although a further 200 thousand (about 8 per cent of the self-employed were self-employed in their second job. around 75 thousand of those self-employed in their main job also held a distinct, second, self-employed job. Thus, the incidence of multiple job holding is considerably higher amongst the self-employed than the employed (i.e. around 27 per cent, compared with less than 7 per cent). Even then, the link with multiple job holding is probably understated because of the under-reporting of work in the black economy, (although self-employment in the main job may be understated for similar reasons).

While self-employment, casual, temporary, freelance, outwork and part-time work are all aspects of the greater flexibility of work; on average, the self-employed tend to work considerably longer hours than their employed counterparts. This is particularly true of males and the self-employed with employees (although the latter are, in the main, males). In the case of females, there is a much more even distribution of self-employed across the hours bands than in the case of employed. This may, in part, reflect the greater flexibility of working times that self-employment offers to females. However, it may also indicate the possibly more casual, part-time and temporary nature of female self-employment, as well as their involvement in self-employment as a second job.

On average, the self-employed tend to be older than the employed, more so in the case of self-employed with employees. It seems likely that the individuals involved have often developed sufficient human and financial capital to set up their own businesses. Part of this human capital is technical expertise and knowledge of market opportunities that have been gained during previous employment. One particular aspect of this is the development of linked subcontracting, where companies shed employees and then rehire them as independent contractors (Clutterbuck, 1985). This is not inconsistent with the occupational changes which accompany self-employment because many such workers reclassify themselves as managerial. The revised arrangements can bring cost savings for firms in terms of loner capital costs and, because of increased labour productivity, a lower total wage bill. For the workers it brings the non-pecuniary benefits of self-determination, plus the

potential for a higher income from a higher wage and lower tax bill. It may, however, also bring greater risk for the employee (op cit. pp. 56-7). Such changes in working arrangements are clearly consistent with the core/periphery model outlined by Atkinson (1985) and the changing nature of the services functions outlined by Gershuny (1984).

One further aspect of the age structure of self-employed of interest is the high ratio of self-employed to employed in the highest age groups (i.e. over 60 and over 65). For those already in self-employment, this probably reflects both their ability and willingness to work after the official age of retirement. For those previously in employment, self-employment offers a means of avoiding the necessity of giving up work at the official retirement age.

We have already noted the concentration of self-employment in certain sectors (Section 2.7). The ratio of self-employed to employed is highest in agriculture, construction and distribution. Self employment has therefore benefitted from the changing industrial structure in favour of non-manufacturing industries. On the other hand, it might also be argued that the underlying movement towards self-employment has been a major force in determining the changing industrial structure. The ratio of self-employed to employed is particularly low in energy supply, mineral extraction and manufacturing (especially metal goods, engineering and vehicles). Part of the explanation for this appears to lie in the relative capital intensity of the productive processes of these industries (Creigh, et al. 1986, p. 186). In addition, there is the crucial question of economies of scale, which may be present to a greater extent in process functions. We return to the causes of economies of scale and their implications for the long-run proportion of self-employed below.

Self-employed without employees formed 64 per cent of the total of self-employed in 1984. Of the remaining 35.8 per cent with employees, 33.4 per cent were associated with enterprises employing less than 25 workers and 2.4 per cent had 25 or more. These averages, however, conceal the fact that, at the present time, male self-employed are much more likely to employ other workers than female self-employed (i.e. whereas 2.8 per cent of male self-employed had 25 employees or more, only 1.1 per cent of females did so). This may partly be a transitional phenomenon reflecting the relatively strong growth in self-employment amongst women in recent years. On the other hand, it may reflect other differences between the sexes, including thir occupational and industrial distributions, as well as the marked differences in their hours of work in self-employment.

The state of local or regional markets may be a crucial factor in the development of small businesses (Creigh, 1986, p. 188). Two opposing sets of forces appear to be at work. First, the lack of job opportunities in high unemployment areas, coupled with redundancy pay and government support and enterprise schemes, would appear to stimulate self-employment. On the other hand, the depressed state of demand in such areas seems likely to reduce the incentive to become self-employed. The same study reports no obvious relationship between unemployment and self-employment across the ten regions distinguished in the UK. However, further examination shows that the two variables are negatively correlated (with a rank correlation coefficient of around -0.4). While this is too crude a calculation to draw any definite conclusions, it is consistent with the hypothesis that depressed local

markets are a disincentive to self-employment and that the unemployed are more disadvantaged than the employed because of their lack of various types of capital. While it is clear that the Enterprise Allowance Scheme enabled a large number of unemployed to enter self-employment (25 thousand during the financial year 1983-4), it is also true that, at present, the effect of the scheme on both unemployment and self-employment is small as a proportion of the overall stocks in both groups (op cit., p. 193).

The growth of self-employment appears to be caused by a fundamental change in the attitudes of individuals towards work and by firms in their search for lower cost sources of the services they require. We do not appear to have reached the end of this path of development and there are grounds for believing that self-employment will continue to grow. There are, however, other forces at work which raise some questions about this view. The key to this appears to be the optimal scale of enterprise in the provision of the products and services supplied by the self-employed. If this optimal scale is small, self-employment will tend to remain a statistically significant phenomenon (i.e. as measured by the ratio of self-employed to total employed). On the other hand, what we may be witnessing is the transitional emergence of small businesses, of which some will fail, and others will grow (Boswell, 1973). The rate of growth and eventual scale of operation will clearly depend on underlying economies of scale. In the new service industries we can anticipate some growth of this type. As an increasing proportion of self-employed take employees onto their books, the ratio of self-employed to total may then begin to fall again.

4.8 The Informal Economy

Different authors use somewhat different terminology and definitions of the informal economy (i.e. Bawly, 1982, Handy, 1984). The formal economy comprises the market and state economies, and the associated activities appear directly in the national accounts and official measures. The counterpart to the formal economy is the informal or hidden economy and, most obviously, this comprises the so called black, mauve and grey economies as defined in Chapter 2 (Handy, 1984, pp. 42-52). While most elements of these are omitted or mismeasured in the national accounts, certain aspects of them are, in principle, encompassed in measures of economic welfare (Beckerman, 1978). In this section we deal with a member of aspects of the informal economy including the black economy, hoarded labour and the hidden unemployed, double job holding, self-employment and domestic work.

The Black Economy

The black economy is rather poorly defined. It forms a part of the "hidden" production and employment which is not an explicit part of the national accounts, along with the "mauve" and "grey" economies. In essence, it lies at the other extreme of the spectrum to the "white" or formal, economy. It is generally associated with the undeclared production of goods and satisfaction of demands. These activities remain undeclared either because they are inherently illegal or because their production or consumption is made illegal by the act of tax avoidance.

The general view outlined in Section 2.10 is that the black market has been a growing post-war phenomenon, reaching significant proportions even in the UK, which has traditionally been less associated with the black economy than some of its European counterparts. One reason offered for the growth was the rapidly rising tax burden in an inflationary economy characterised by a complex tax system which was difficult to administer effectively (Smithies, 1984, pp. 129-46).

Equally, however, we might point to the reduction in job opportunities in the formal sector of the economy and the growing recorded and hidden unemployment. For example, it is uncertain how many individuals are claiming unemployment benefits whilst employed in the informal economy or are on one of the plethora of schemes, with income support and other forms of funding, aimed at reintroducing individuals into the formal sector of the economy (Burton, 1979). However, while unemployment may provide an incentive, it has been argued that large-scale participation by the unemployed in the black economy, beyond a few days of casual labour, is unlikely because they are ill-equipped both in terms of human and physical capital, see Table 4.1 (Miles, 1983; Jahoda, 1984, p. 24, Shankland and Turner, 1984, pp. 76-9). Clearly there will be exceptions to this where more qualified people are made redundant and receive substantial redundancy pay. A similar argument applies to the hypothesis that higher rates of unemployment result in increases in crime. While there is growing evidence of a link with certain types of crime, it would be difficult to argue that unemployment is the prime cause of major organised crime for much the same reasons given above (Jahoda, 1984, p. 24).

One interesting and less well explored area concerns the way in which the black economy interacts with the rest of productive activity. For example, the supply of goods and services within the black economy must be matched by an equivalent demand. This demand may come partly from the black economy and partly from the remainder, including the formal. Similarly, an individual working in the black economy will purchase some proportion of goods from the formal sectors. Insofar as the black economy is illegal, its existence may produce a social response in terms of employing police, tax experts, accountants, lawyers, etc., in the formal economy.[16] By implication, the growth of one sector produces a growth in the other, the precise outcome of which will depend on the sizes of the multiplier-accelerator effects involved.

Hoarded Labour, Hidden Unemployment and the Informal Economy

Hoarded labour refers to those in employment who are not required at current output levels. The hidden unemployed are the "discouraged workers" minus the "added workers". The discouraged workers are the unemployed who would accept employment in the formal economy but do not register (or record) their unemployed status, because they are not eligible for benefit or because they do not directly seek employment for a variety of reasons which are associated with the fact that they do not think their search will be successful at current economy activity levels. Added workers are those induced into the labour market (who would not normally be there at current activity levels) by the unemployment of a spouse.

Hoarding and net discouraged workers may be extremely important both numerically and as a percentage of the relevant parts of the labour force (Bosworth and Westaway, 1986). More important from the point of

Table 4.1 Access to Capital Equipment by the Employed and Unemployed, Brighton, 1982 (males)

per cent

Item	Unemployed sample		Employed sample
	Unemployed over 6 months	Unemployed less than 6 months	
Fridge	90	80	100
Telephone	80	70	100
Washing machine	10	30	70
Workroom	20	20	30
Workbench	10	20	30
Electric drill	10	40	60
Sewing machine	30	20	60
Typewriter	10	20	40
Home brewing/ winemaking gear	0	20	30
Garden tools	10	30	70
Garden where could grow vegetables	50	40	60
Car/van	10	20	80
Bicycle	10	20	30
Moped/motor bike	0	10	20

Source: Miles(1983)

Note: Figures refer to percentages (to the nearest ten) of respondents answering affirmatively. The figures are not controlled for social status or other background characteristics.

view of this study is how they fit into the overall picture of employment, both formal and informal. They are included for discussion in this section essentially because they are not accounted for in the official statistics. In addition, they are key transitional groups between the formal and informal economies. Hoarded workers at time t may be in one of three alternative states by time t + 1: fully employed; hoarded; unemployed (registered or unregistered). The slower is output growth and the faster productivity growth, the more likely the individual is to change to unemployed status. In the UK, many of these individuals receive redundancy payments that form a fund which can be used to establish a new enterprise. The unregistered unemployed who are discouraged from applying to the formal sector for various reasons, such as feeling disadvantaged because of their race or sex, may find a natural outlet in the informal economy or self employment, perhaps even servicing some minority group.

The existence of unregistered unemployed suggests that the true rate of unemployment is higher than the rate based on registration statistics. In practice, however, there may be a number of people who are registered unemployed and yet, because they work in the informal economy, do not consider themselves to be unemployed. Thus, a sample survey of labour market activity may indicate unemployment rates: (i) which are higher than registration statistics where the net discouraged workers exceed those in informal employment; (ii) which are lower than registration statistics which would suggest where informal employment exceeds net discouraged workers. In practice, comparison of registered and survey estimates of the unemployment rate, at least for a number of European countries, do not differ markedly from one another, although there are some differences between the two measures across countries and over time (Sorrentino, 1978, Moy and Sorrentino, 1982, Neubourg, 1984). According to Neubourg (op cit., pp. 16-17, the survey figures tend to be greater than the registration figures for the Netherlands and the UK, but smaller in France and West Germany. This suggests that the informal economy in the UK is larger than the number of net discouraged workers. However, such statistics are still likely to underestimate the informal economy insofar as the activities of the employed workers operating partly in the black economy are omitted and the activities of the unemployed are underrecorded.

Multiple Job Holding

The traditional income-leisure tradeoff in the labour economics literature was modified at an early stage to allow for the fact that hours are normally hired by employers in 'packages' of fixed size (i.e. a 40 hour week). If, for any given worker, the optimal supply of hours was less than the traded amount, then the employee might seek a closer to optimal solution by searching for alternative employment or by means of absenteeism. Similarly, where the workers' optimum was greater than the traded amount, employees would search for methods of increasing hours, including alternative employment, overtime and multiple job holding (Perlman, 1966).

This is an important aspect of activity in the black economy. Often where an individual holds down paid employment in the formal economy as well as undeclared (for tax purposes) paid employment in the black economy. While this is still widely known as "moonlighting", this is a largely inappropriate title with regard to the timing of the second job (Alden, 1977, p. 25). However, although considerable information exists

about multiple paid job holding in the UK, little is known about the extent to which these second (and subsequent) jobs are in the black economy. On the other hand, there is fairly clear evidence that, where multiple job holding occurs, first jobs in the formal economy will be accompanied by second jobs in self-employment, often in service activities, which are directly linked to the informal economy (Alden, 1977, p. 22).

Based on a fairly strict definition, the General Household Survey (GHS) suggests an overall incidence of multiple job holding of 3.1 per cent in 1971 and 3.5 per cent in 1981 (Alden, 1977, p. 16, MSC, 1985, p. 6). The Labour Force Survey (LFS) puts the figure somewhat lower, at 2.1 per cent in 1981. The Family Expenditure Survey (FES), however, adopts a slightly more relaxed definition, which is likely to pick up a greater amount of casual work. This source suggests a figure of 6.9 per cent in 1971, over twice the GHS estimate. The higher component of casual work is more likely to be linked with the black economy. In addition, the FES estimates track upwards over the period 1967 to 1975, although there is a small fall from 1974 to 1975 (consistent with the data on the black economy, Alden, 1977, p.18). It is worth adding that multiple job holding may be under-reported in these surveys because of the respondents' involvement in the black economy.

Under the more restrictive definitions, the incidence of multiple working is broadly similar for males and females. The GHS suggests figures of 3.3 and 3.7 per cent in 1981 for males and females, compared with 2.0 and 2.2 in the LFS for the same year. Under the more relaxed definition of the FES, however, females appear to have a higher incidence, 8.7 per cent, than males, 5.7 per cent, which presumably reflects their greater involvement in casual work (and possibly with the black economy).

Reductions in the hours demanded by the employer or set under collective bargaining will, other things being equal, result in an increased propensity to hold more than one job (Deiter, 1966, Alden, 1977, pp. 29-30). Increased flexibility in working times and lengths of shift appear to have a similar effect (Alden, 1977, p. 30). A rise in wage rates in secondary types of jobs will tend to increase multiple job holding in much the same way that a rise in overtime premia increases the supply of working hours. Many secondary jobs occur in the services sector and the growth of services may have itself encouraged multiple job holding (op cit. p. 29). However, the growth in multiple job holding may also be interpreted as an attempt by individuals to protect themselves from unemployment in the declining sector, by establishing a foothold in the relatively favourable sector. Most secondary jobs are of a part-time variety and part-time work is often used as a means of entry to an area of employment.

While all of these factors may be important in understanding the extent and growth of multiple job holding, they take the individuals' preferences with regard to income and leisure as given, rather than attempting to explain the underlying tastes and motives involved. It has been argued, for example, that the pressure for multiple job holding might be traced to a variety of factors such as low hourly wages,[17] career and lifestyle aspirations, etc. (Wilensky, 1963). Certainly economic reasons[18] appear to dominate in the decision to hold more than one job (Alden, 1977, pp. 25-6), although it should be recognised that

the perceived economic reasons may be the result of more broadly based social and psychological forces, as outlined by Wilensky (1963).

Clearly, multiple job holding is linked with many of the other dimensions of employment discussed in other parts of this study. We have already noted that secondary jobs are often part-time. Insofar as most primary jobs take place during the normal working day, secondary jobs may be more generally associated with unsocial times of work. However, historically, shiftworking has often been thought to give rise to more opportunity for multiple job holding (Sergean, 1971, pp. 58-61), although the stimulus for this may have declined with the growth of demand for services at more unsocial times (i.e. weekends).

Self-employment, Casual Work and Outwork

Self-employment is dealt with in greater detail in Section 4.7. In this section we consider it primarily in the context of the informal economy, alongside casual work and outwork which were discussed in Section 4.2 and 4.3. The trends in all three of these may be argued to reflect the need for greater flexibility both by employers, in terms of a non-core component of the workforce that can be adjusted rapidly and cheaply, and by individuals, who want greater choice over when they work, where they work from (i.e. home or factory) and who they work for. A major stimulus for employers to consider adopting a core/non-core workforce was the introduction and development of the Redundancy Payments Scheme.[19] This gave an incentive to build up a group of non-core employees with less than two years continuous service to avoid redundancy payments under the terms of the act.

A study of temporary, freelance, short-term contract and outworkers showed that over 70 per cent of workers in all four of these groups were in the non-manufacturing sector. In the case of short-term contract workers, around 93 per cent were located in that sector (Blanchflower and Corry, 1985, p. 92). Clearly, the growth of the services sector has influenced the emergence of these non-core categories of employment. Many of the other arguments that were relevant in the case of multiple job holding are equally applicable here.

There are some interesting relationships between the four groups and establishment size, particularly when expressed as a percentage of the part-time workforce (op cit., pp. 94-6). The relative importance of freelances and outworkers declined with establishment size. Temporary workers, as a ratio of part time, peak at 200 - 499 employee establishments. There was no immediately evident pattern for short-term contract workers. Clearly, the growth of irregular (or non-core) employment seems likely to be closely linked with the increasing number of small firms, documented in Section 4.7. This result will be reinforced if, as Hakim (1984a, 1985) suggests, establishments using outworkers and/or freelances are more successful than those not using these types of labour. Blanchflower and Corry (1985, p. 101), however, point out that it is very difficult to disentangle the impact of such groups from that of part-time workers, whose employment is closely correlated. On the other hand, it can be argued that all of these groups reflect the same broad phenomenon of increased flexibility, and it would be wrong to try to disentangle their effects.

Domestic Work

Domestic work is taken to mean those production activities relating to the operation of the household in particular, those outputs that are produced within the household for consumption by members of the same household. This is what some authors have termed the "grey" economy (Handy, 1984, pp. 48-52). In principle, it is quite distinct from the "mauve" and "black" economies because of the joint production and consumption that takes place. In practice the distinction between the "grey" and "mauve" economies may prove quite blurred for a number of reasons - in part because of problems in defining the family unit, more fundamentally because of the problems of defining what is (and is not) work.[20] The distinction may prove increasingly unclear with the growth of outwork, freelancing and consultancy undertaken from the home (Toffler, 1980, pp. 204-14, Gershuny, 1984, p. 243).

It is clear from the allocation of time data reported in Section 2.11 that domestic work forms an important component of all activities. In the UK it averaged over 18 hours per week (and, for some subgroups, such as housewives, over 44 hours per week), compared with average hours in the formal economy of around 42.[21] Thus, measured in terms of inputs, one might expect the increased participation in the formal economy by females to have significantly reduced the amount of domestic work. In practice, this is unlikely to have been the case. First, because women in part and full-time formal employment still undertake significant amounts of domestic work and, even though the move into the formal sector may reduce this somewhat, it may be offset by an increase amongst other members of the family. This may particularly be the case where the female entry to the formal labour market was induced by an unemployed spouse, the added worker effect (Ashenfelter, 1980). In addition, reduced weekly, annual and lifetime hours have left an increasing gap to be filled by either work or leisure.

The allocation of time is linked directly with the composition of household expenditure on goods and services that may be purchased from the formal and informal sectors. The growth in leisure and real disposable income over time gives rise to a changing pattern of expenditure, with particular emphasis on certain categories of goods and services, such as sport and travel. However, we should not lose sight of the fact that the allocation of time itself is influenced by the relative quality and price of the goods associated with leisure, domestic work and non-domestic work. For example, the major decreases in the long term of the real costs of foreign travel have been a major factor in stimulating the demand for longer holidays and leisure.

Whether the input of time to domestic work has increased or not, the quality adjusted ouput has risen as the capital intensity of domestic production and the productivity of labour has gone up. A major contribution to this increase in productivity has been the changing technology within the home. The majority of homes today look very different to thirty or forty years ago, with televisions refrigerators, electric drills and sewing machines, etc. On the other hand, we refer back to the earlier information about domestic fixed capital and note that the ownership of such items is concentrated more heavily in the higher income families and more amongst those in paid, formal employment than amongst the unemployed (Miles, 1983). There are time-shifting devices, such as timers and video recorders, etc., which are particularly important for those employed in the formal economy, with

its rigid start and stop times. Again, if the unemployed have more time, they have less capital and less incentive.

The evolution of domestic activities over the post-war period is perhaps best viewed in the broader context of the "five processes of change" outlined by Gershuny (1984).[22] In essence, the last three of these are particularly important in the context of domestic activities. The first of these is concerned with the redirection of service industries away from supply to the household sector and towards the production of intermediate (service) outputs. The second is related to the shift in household expenditure away from basic functions (goods and services) towards luxury functions. Finally, the last is related to the change in the mode of provision of the functions to households, in particular, the purchase and use of "luxury" consumer durables to produce services which were formerly produced outside of the household and purchased by the household prior to consumption. Examples include the use of microwave cookers, linked to eating in the home, and automatic washing machines, replacing launderettes.

The Future of the Informal Economy

Our discussions have helped to highlight the extent to which the formal and informal economies intermesh. In terms of labour input, the expansion of one implies a contraction of the other in an economy where leisure and personal activities are constant or increasing, because, in total, they fill the remainder of the available time. However, they can both grow simultaneously in terms of output insofar as productivity growth can occur in both sectors. There can be little doubt that the informal economy has grown significantly in recent years and, today, according to some commentators, unrecorded production is likely to be worth somewhere in the region of one-half of the output that appears on the national accounts.

There may be some upper limit to the hidden economy well below 100 per cent of all activity. For one thing, there are certain demands which can virtually only be met from the formal economy (Rose, 1983). This constraint appears even more important if we recognise that some of these demands will be met from imports which will require funding from the exports of the formal economy. However, the scene is currently set for continued growth in the informal economy as a whole, both in absolute terms and relatively in terms of employment, although relative growth in terms of output will depend crucially on the productivity potential of both sectors. There is scope for a reversal, if, for example, the formal economy could be stimulated to a rate of growth faster than productivity growth. The main short and medium-term macroeconomic models of the UK economy place little if any credence on this. In addition, the long-term trends in weekly and, more particularly, annual and lifetime hours of work in the formal economy are still downward. More fundamentally, however, there seems a growing wish to work outside the formal economy, with its rules, regulations and rigidities, and a greater wish to work in the freer and more flexible informal economy.

The relative growth of the various components of the informal economy is a different matter. Our view would be that it is the mauve economy which has most potential for growth, but, only given sufficient government help. Those unemployed by the formal economy are unlikely to make much impact on the black or the grey economies because they will

not, under current law and redistributive schemes, receive government support. However, the current government is willing to support new enterprises, at least in their formative stages.

4.9 Government Special Employment and Training Schemes

Since 1975 successive governments in the UK have used special employment and training measures (SETMs) as a means of alleviating the effects of unemployment on those worst affected, most notable young people and the long-term unemployed. Originally these were conceived of as short-term measures but with unemployment showing no signs of declining they have come to represent a permanent feature of the labour market. The nature of the schemes has gradually altered to reflect this. Table 4.2 provides a summary of the numbers involved on the various schemes over the last few years. More detailed descriptions of the individual measures may be found in Faundez (1985).

The Youth training Scheme (YTS) is currently the most important in terms of numbers covered. This took over from the Youth Opportunities Programme (YOP). The latter was introduced in great haste and was seen by most youngsters as a palliative measure designed to get them off the unemployment register and providing cheap labour for firms, (see Dutton (1984) and Raffe (1984) for further discussion). The government has been careful to emphasise that YTS is a genuine training measure. However, young people have been much more sceptical and take-up has not been as high as the government had hoped. Nevertheless, Raffe (1984) reports that the experience of those who have actually experienced the scheme was rather more favourable. By 1987 it is planned that the scheme will cover ½ a million people.

The next most important scheme has been the Community Programme (CP). This is aimed at long-term unemployed. By 1987 this is expected to cover a quarter of a million people. Most other schemes have been in decline, but the Wider Opportunities Programme which grew out of the Training Opportunities Programme and the Enterprise Allowance Scheme, aimed at encouraging the unemployed to begin their own businesses, are also planned to expand.

The direct impact of these various measures on registered unemployment is less than the total coverage of the schemes because of the fact that they cover some people not entitled to unemployment benefit. However, the estimate of the impact on unemployment given in the table is probably still too large because it does not take into account "deadweight", "substitution" or "displacement" effects, (see Wilson, 1985 for discussion).

Despite this, such measures have been strongly supported by many commentators, who recommend even wider coverage (Layard, 1984, Davies and Metcalf, 1985). This is based on estimates of the net cost to the PSBR of persons removed from the unemployment register, which appear to be significantly less than alternative policy responses, such as increasing government current or capital expenditure or reducing taxes. However, Wilson (1985) has argued that these estimates all remain highly suspect and that further research on these issues is urgently required.

SETMs have been criticised for not creating "real" jobs. However if useful work is being done, even if its value is less than the "wage"

Table 4.2 Special Employment and Training Measures, 1981-87

Thousands

Scheme or programme	December 1981	1982	1983	1984	Planned totals 1987
Youth Training (YTS)	0	0	290	340	520(a)
Youth Opportunity	240	260	25	0	0
Temporary Short-time Working Compensation	191	120	10	0	0
Young Workers (YWS)	0	130	105	63	0(b)
Community Programmes (CP)(c)	24	32	115	130	230(a)
Community Industry (CI)	7	7	8	8	..
Job Release	54	77	88	79	54(d)
Job Splitting Scheme	0	0	1	1	6(d)
Enterprise Allowance	0	2	20	39	63(e)
Training for skills	34	15	2	2	..
Total	550	643	663	662	873
Direct effect on required unemployment	315	360	470	475	..
Memorandum item:					
Training Opportunities Scheme(f)	51	50	55	61	250(g)

Source: Department of Employment Press Notices.

Notes:
(a) As announced in the Chancellor's Budget Statement.
(b) Given as 40 000 in March 1985, in the white paper but now planned to be phased out following the expansion of YTS as announced in the budget.
(c) Community Enterprise Programme in 1981.
(d) March 1986.
(e) New entrants per year after 1984-85.
(f) Number of cumulative starts in each financial year by December.
(g) Wider opportunities programme as outlined in Cmnd 9428-II, p.85.
.. indicates not available

paid to the participant it will, in principal, be worth expanding such schemes to the point at which the net real contribution to national welfare equals the marginal cost of the scheme compared with the alternative (which is simply paying unemployment or social security benefit for nothing). The case for doing something of this kind to assist the unemployed seems very strong. There is an obvious need for providing people with useful activities to do and to encourage training. Furthermore, with unemployment now at such high levels it seems inconceivable that it can be regarded as having any useful impact on labour market adjustment processes. Proposals have been made by various authors for expansion of the SETMs on these grounds, targetting them on those groups most in need and where such measures are likely to have least inflationary impact, (for a summary see Wilson, 1985).

The main problems with this as a strategy, apart from the obvious ones of the cost to the exchequer and the possible deleterious effects that such measures may have on the labour market adjustment process and hence the prospects for long-term growth, are twofold. The first problem is the reliance on bureaucratic decision making in deciding the allocation of places and resources within the schemes. Given the theoretical advantages of the market mechanism in allocating resources to where they are most needed, it would be desirable to make this process much more the result of many individual decisions rather than a few bureaucratic ones.

The second problem is that of convincing both the public at large and the participants of the value of the scheme and the work or training activities that are being done. This, in part at least, results from the fact that such activities have no market value. It is clear from the discussion in the introduction to this chapter that for many people it is necessary for them to "earn" their income rather than receiving a benefit payment for doing some makeshift work. Furthermore, for many people the value of work done depends upon it having payment directly attributable to it. If the decisions regarding what is to be done are taken in disregard of market forces then there seems no guarantee that the most necessary and socially valuable activities will be those that are actually carried out. Obviously there are activities, for example those connected with the environment, that will not, and possibly cannot, be provided through the market sector directly. Nevertheless, a process of sub-contracting and tendering could instill a competitive element even here, that would encourage the best allocation of resources.

There is undoubtedly a very strong case on the grounds of equity for both work and income to be shared more evenly, with most particularly the unemployed receiving a better deal. The essential problem is how to redistribute work and income without removing the incentives for wealth creation and interfering in the process of allocation of limited resources which operates through the price/market mechanism. While the SETMs appear to offer some means of achieving the objective of redistribution of work and income, they appear to fail to deal with the second problem. As noted in the introduction to this chapter, various authors have argued that far more radical solutions are necessary, which break the traditional link between employment and income which has in modern economies become the key method of distributing the fruits of technological progress and growth. Essentially, these proposals involve the complete reform of the tax/benefit system in order to provide a social dividend to all adults. Having provided a basic income floor,

the market mechanism can then be used to match individuals to paid work without resort to such measures as minimum wage legislation or SETMs. The decisions as to whether or not it is worth doing work or training for the individual or offering a job by an employer would be left to those concerned without bureaucratic interference. These questions are discussed in greater detail in Chapter 6.

Notes

(1) "Recent Changes in Hours and Holiday Entitlements", DE Employment Gazette, April 1985, pp. 154-6.

(2) Garbarino (1964) and Bosworth (1982, 1986).

(3) Hart and Sharot (1978, Bosworth (1982, 1986), Hart (1983).

(4) Bosworth (1982).

(5) These calculations assume that the weeks refer to a seven day period rather than the (normal) five day, working week.

(6) See, However, the discussion of older self-employed workers in Section 4.7.

(7) For a review see Bosworth and Dawkins (1981), pp. 224-38).

(8) Survey evidence in the US suggested that workers were not particularly interested in a shorter working week (US Department of Labour, 1980, Armstrong, 1983, p. 43). Survey of evidence in Australia indicated that a majority of people wanted an increase in the work week, particularly males (ABS, 6341.0, Bosworth, 1985, pp. 160-5). However, some European surveys indicate a greater interest in lower hours (OECD, 1982).

(9) Tentative evidence for the UK suggested a considerable number of male discouraged workers who might re-enter the formal labour market as economic activity picks up (Bosworth and Westaway, 1986).

(10) See, for example, Bosworth and Dawkins (1981b).

(11) See Carter and Corlet (1982) and European Foundation (1983).

(12) Bosworth and Dawkins (1978, 1981, pp. 41-5).

(13) "Special Exeption Orders", DE Gazette (monthly).

(14) "Shipbuilding, Engineering and Chemicals : Earnings", DE Gazette (Biannually).

(15) Ministry of Labour (1965), IFF (1978) and Workplace Industrial Relations Survey, 1980.

(16) It might be possible to use this sort of information as an alternative way of estimating the magnitude of the black economy. However, this seems fraught with difficulties as the existence of such activities are partly a deterrant as well as a response. The size of the response would also depend on society's attitudes towards the black economy and other priorities with regard to public expenditure.

(17) Which, in a similar way, are argued to be a cause of long overtime working.

(18) Non-economic factors include interest, social reasons, as a favour to others, etc.

(19) The employers' contributions are set out in DE, The Redundancy Payments Scheme and the history of the scheme is traced back through the Employment Protection (Consolidation) Act, 1978, to the Redundancy Payment Act 1965 and the Cotton Industry ACt 1958 (Whitehead and Baruch, 1981, pp. 213-4).

(20) For example, more individuals regard cooking and looking after children as pleasure than work (Shankland and Turner, 1984, p. 19). Again, physical exercise, which is known to have shown a remarkable increase in recent years, may not constitute traditional work. Nevertheless, it is both "hard work" and, insofar as it is an aspect of preventative medicine, it substitutes for certain types of health care provided in the formal economy. See also Section 4.1 above.

(21) See Chapter 2 above.

(22) In particular: (i) occupational tertiarisation; (ii) evolution of intermediate producer services; (iii) reconcentration of producer services; (iv) shift of household expenditure from basic service towards luxury functions; (v) change in the mode of provision of final service functions (op cit., pp. 236-46).

5. NEW AREAS OF EMPLOYMENT GROWTH

5.1 Recent Developments in Industrial Employment

Chapter 2 provided a broad summary of the way in which the industrial structure of employment has developed in recent years. The proximate causes of the major developments in employment highlighted in Table 2.1 can be seen in terms of changes in output and productivity. This is illustrated using a slightly different classification of sectors in Tables 5.1 and 5.2. During the 1950s and 1960s the manufacturing sector was regarded by many as the engine of growth (Kaldor, 1966). One of the problems of the UK economy at this time was held to be the slow rate of growth of its manufacturing sector. Nevertheless as Table 5.1 shows output grew at over 2 per cent per annum up until 1975, slightly slower than in the service sector, but equal to the average for the economy as a whole. Productivity grew considerably faster however, with the consequence that employment fell by half a million between 1954 and 1975, (Table 5.2). In addition, over a million jobs disappeared in the primary sector, for which output growth was much slower, while productivity growth was significantly faster. The loss of jobs in these two areas was however more than offset by growth in employment in the service sector. A large part of the increase arose in marketed services to both producers and consumers. The output of professional and miscellaneous services increased at a faster rate than any other sector between 1954 and 1975 (by just under 3 per cent per annum). In contrast productivity growth was sluggish (1 per cent per annum) with the result that employment expanded by 1.3 million jobs. An even larger increase in employment occurred outside the market economy however. This was primarily the result of the expansion of health and education services provided by the state. There are no generally agreed measures of output or productivity for such services since they are not marketed. However, governments in response to demographic factors and political pressures for improvements in these areas devoted a substantial part of revenues to the expansion of these services. This resulted in more than $1\frac{1}{2}$ million extra jobs in social services and public administration between 1954 and 1975.

Over the subsequent decade the sectors performed very differently. All other than the primary sector, (buoyed up by the effects of the exploitation of the North Sea), experienced significantly slower output growth. In manufacturing there was in fact a substantial decline, concentrated in the late 1970s and early 1980s. Productivity growth in this sector also slowed at the beginning of this period but then rose exceptionally quickly at the start of the present decade. In conjunction these factors resulted in the loss of 2 million jobs in this sector between 1975 and 1984. The IMS/OSG study suggests that a large part of this decline reflects the reorganisation of the division of labour between sectors. Their interviews with companies suggest that as much as half of the decline in employment in recent years may be the consequence of subcontracting of various activities to the service sector. Large firms have been shedding jobs to reduce uneconomic capacity and also as a direct result of introducing labour saving technology. In addition out-sourcing of the production of many standard

Table 5.1 Output and Output per Person by Broad Industrial Sector

% p.a.

	OUTPUT						
	1954-75	1975-80	1980-84	1984-90	1984-86	1986-88	1988-90
Primary	0.1	7.8	3.0	1.4	4.3	0.2	-0.4
Manufacturing	2.2	-0.8	0.2	2.0	1.8	1.8	2.3
Construction and public utilities	2.2	0.7	-0.7	1.7	2.1	1.3	1.6
Transport, communication and distribution	2.5	1.2	1.9	3.0	3.4	2.6	2.9
Professional and miscellaneous services	2.8	1.9	1.7	3.1	3.4	2.9	3.1
Total	2.2	0.8	0.9	2.3	2.7	2.0	2.3

% p.a.

	OUTPUT PER PERSON						
	1954-75	1975-80	1980-84	1984-90	1984-86	1986-88	1988-90
Primary	3.7	8.2	5.4	3.6	6.1	2.2	2.7
Manufacturing	2.5	1.0	5.6	3.7	3.4	3.7	4.0
Construction and public utilities	1.8	1.1	1.4	1.6	1.7	1.4	1.8
Transport, communication and distribution	2.4	0.8	1.9	2.9	3.0	2.7	3.0
Professional and miscellaneous services	1.1	-1.0	-0.5	0.8	0.7	0.9	0.7
Total	2.2	0.7	2.4	2.2	2.3	2.1	2.2

Note: Output is measured in terms of gross output. Output per person employed allows for self-employment as well as employees in employment.

Source: IER(1985)

Table 5.2 Employment by Broad Industrial Sector

Thousands

	Share of total employment (%)					Levels				
	1954	1975	1980	1984	1990	1954	1975	1980	1984	1990
Primary	8.9	4.0	3.9	3.8	3.3	2094	1007	987	901	789
Manufacturing	34.6	30.5	27.7	23.6	21.3	8126	7629	6974	5661	5131
Construction and public utilities	8.0	8.1	7.9	7.7	7.7	1879	2038	2002	1843	1846
Transport, communication and distribution	20.1	19.4	19.7	20.7	20.6	4716	4851	4968	4964	4972
Professional and miscellaneous services	12.7	17.2	19.7	22.6	25.8	2974	4296	4962	5421	6223
Total	84.3	79.2	79.0	78.4	78.6	19790	19823	19892	18789	18961
Social services and public administration	15.7	20.8	21.0	21.6	21.4	3679	5216	5296	5189	5162
Whole economy	100.0	100.0	100.0	100.0	100.0	23468	25039	25188	23978	24123

Thousands

	Net changes							Average growth % p.a.			
	1954-75	1975-80	1980-84	1984-90	1984 -86	1986 -88	1988 -90	1954 -75	1975 -80	1980 -84	1984 -90
Primary	-1087	-20	-86	-112	-29	-34	-48	-3.4	-0.4	-2.3	-2.2
Manufacturing	-497	-656	-1313	-529	-167	-196	-166	-0.3	-1.8	-5.1	-1.6
Construction and public utilities	160	-36	-159	3	14	-3	-8	0.4	-0.4	-2.1	0.0
Transport, communication and distribution	135	116	-4	9	31	-8	-14	0.1	0.5	-0.0	0.0
Professional and miscellaneous services	1323	665	459	802	291	228	282	1.8	2.9	2.2	2.3
Total	33	70	-1103	172	139	-14	46	0.0	0.1	-1.4	0.2
Social services and public administration	1538	80	-107	-27	-25	-3	1	1.7	0.3	-0.5	-0.1
Whole economy	1571	149	-1210	145	114	-17	48	0.3	0.1	-1.2	0.1

Source: IER(1985)

components to smaller enterprises has probably led to a reduction in the average size of firms (measured by employment).

Productivity growth slowed dramatically in the service sectors, especially for professional and miscellaneous services, where it in fact declined. This result appears somewhat surprising in the light of the anticipated impact of new technology in certain parts of this sector. One significant element in the explanation was that compositional changes favoured those industries with lowest productivity levels. In conjunction with the slower output growth over this period these developments in productivity resulted in significant job gains especially for professional and miscellaneous services where employment grew by over a million.

In marked contrast with previous experience however, this growth was not parallelled by additional jobs in the public sector. Cut backs in government expenditure as a result of the Thatcher government's attempts to reduce inflation by strict control of the money supply led to a very sharp break with trend in employment public administration, health and more especially education services.

Table 5.3 provides a rather more detailed analysis of developments in the service sector. This illustrates that there have been some very different experiences for individual industries within this broad area. Employment in the transport and communications industries was either static or in decline for most of the last 10 years. In the case of the transport industries (especially rail and other transport) this was primarily a reflection of slow growth in demand for the service. Over capacity in rail and other transport (notably shipping) has led to rationalisation while there has been considerable competition from the mainly private road transport sector. For communications, in contrast, output growth has been very substantial in recent years, with the expansion of tele-communications. This has not greatly benefitted employment however because productivity growth has been equally rapid.

Employment in distribution has increased fairly steadily, especially for part-time females. This followed a period of sharp decline in the early 1970s due to the reorganisation of the industry around large supermarkets and the decline of smaller establishments. The IMS/OSG study suggests that this industry (especially wholesale distribution) has been one of the greatest beneficiaries of the subcontracting of activities from the production industries. (Others that have gained as result of this process have been business services of various kinds, the renting of movables and real estate.)

Growth in employment has been especially rapid in professional and business services. This covers insurance, banking and finance, and legal, accounting, scientific and other professional services, for both consumers and producers. Strong output growth in these areas coupled with relatively modest increases in productivity have resulted in substantial increases in employment over the last 10 years. This sector, especially the insurance banking and finance industries, seems ripe for benefitting from large productivity increases as a result of the application new technologies. However it also offers one of the most fruitful areas for development of new services, so the likely balance of output and productivity growth (and consequent implications for employment) over the next decade is not clear.

Table 5.3 Employment Growth in Services, 1950-85

Thousands

	Share of Total Employment (%)				Levels			
	1950	1970	1980	1985	1950	1970	1980	1985
Distribution, etc.	14.1	14.7	15.6	17.0	3110	3611	3895	4069
Hotels and catering	3.6	3.5	4.5	5.1	789	850	1117	1231
Rail transport	2.2	0.9	0.7	0.6	491	212	183	146
Other land transport	2.8	2.4	2.2	2.1	620	593	553	499
Sea, air and other transport	1.6	1.5	1.6	1.4	349	372	410	335
Communications	1.5	1.8	1.8	1.8	324	436	439	431
Business services	3.9	6.0	7.5	9.2	872	1479	1880	2200.
Miscellaneous services	5.3	5.6	7.4	8.6	1181	1384	1838	2065
Public administration (central)	2.2	2.1	2.3	2.4	477	523	584	564
National Health Service	2.6	3.8	5.0	5.7	566	937	1248	1360
Defence (excl.HMF)	1.1	0.6	0.6	0.5	247	151	152	127
Education	2.6	5.1	6.5	6.6	580	1239	1623	1587
Other local government services	3.1	4.0	4.1	4.0	687	968	1034	962
All services	46.5	52.1	59.9	65.1	10291	12755	14955	15577
All industries	100.0	100.0	100.0	100.0	22120.	24493.	24983.	23911.

Thousands

	Net Change			Average Growth % p.a.		
	1950-70	1970-80	1980-85	1950-70	1970-80	1980-85
Distribution, etc.	502	284	174	0.8	0.8	0.9
Hotels and catering	60	267	115	0.4	2.8	2.0
Rail transport	-278	-29	-37	-4.1	-1.5	-4.4
Other land transport	-27	-40	-54	-0.2	-0.7	-2.0
Sea, air and other transport	23	38	-75	0.3	1.0	-4.0
Communications	112	3	-8	1.5	0.1	-0.3
Business services	607	401	321	2.7	2.4	3.2
Miscellaneous services	203	455	227	0.8	2.9	2.4
Public administration (central)	46	60	-20	0.5	1.1	-0.7
National Health Service	371	311	112	2.6	2.9	1.7
Defence (excl.HMF)	-96	1	-25	-2.4	0.0	-3.5
Education	660	384	-36	3.9	2.7	-0.4
Other local government services	281	66	-72	1.7	0.7	-1.4
All services	2464	2199	622	1.1	1.6	0.8
All industries	2373	490	-1071	0.5	0.2	-0.9

Source: Wilson (1986).

In miscellaneous services the overall picture in recent years has been of substantial output growth reflecting demands by both consumers and producers for services such as hotels, restaurants, garages and the like. Productivity growth has in contrast been much more modest so that employment has grown substantially (many of the jobs being for part-timers).

In the public sector we have already noted the sharp break with trend in health and education services in the mid 1970s. It is apparent that similar traumatic events affected employment in local government and defence, although central government was less significantly affected. To some extent these trends also reflect sub-contracting of certain activities to the private sector and also increased efficiency.

An even more detailed analysis of changes in industrial employment since 1971 throws some further light on recent trends. Using unpublished data obtained from the DE we have been able to examine developments in much greater detail than is normally possible. These data comprise estimates of employment at the 3/4 digit level of the 1980 SIC. In order to examine those areas of greatest employment change, industries were ranked according to how fast employment increased over two periods : 1971-1981 and 1981-1985. This ranking was done using both percentage growth and absolute growth in each period. Some results of this exercise, ordered according to the ranking by percentage annual growth rates over the period 1981-85 are shown in Table 5.4.

With exception of the extraction of oil and gas <u>all</u> the 20 fastest growing industries were in the service sector. Indeed apart from the manufacture of certain precision instruments (AH 371) and certain electronic components (AH 3444, 3442 and 345), the 60 fastest growing industries were services of one kind or another. This was not all that different from the experience over 1971-1981 although there was considerable variation in the precise ordering of the industries. The rank order correlation coefficient between rankings of annual percentage growth in the two periods was 0.89. Sorting by reference to the absolute change between 1981 and 1985 gives a very similar picture. The rank order correlation coefficient between the rankings of annual percentage growth and absolute net change over the period 1981-85 was 0.86. The rank correlation coefficient between net changes in the two periods is rather smaller (0.68). This, in part at least, reflects some quite significant changes in trend for certain sectors such as education, public health and welfare due to cuts in public expenditure.

Examining the growing industries in more detail it is clear that they form a number of distinct groups. First, there are various services, primarily to consumers, concerned with entertainment and tourism. Second, there are numerous services, again primarily for consumers, connected with health and social welfare. Third, are a range of services for both consumers and producers such as banking services, estate agents, communications services, garages etc. Fourth, are the group of services mainly provided for business, including cleaning services, canteen services, advertising, and computing as well as business and financial services. Finally, there are a large range of services concerned with wholesale and retail distribution.

One possibly surprising entrant into the "top 60" for 1981-85 is launderies, dyers and dry cleaners (in 45th place). This is one of the industries indentified by Gershuny (1983) as suffering from the effects

Table 5.4 Ranking of Industries by Percentage Growth in Employment, 1971-85

Thousands

Industry	1980 SIC	No. of employees 1971	1981	1985	Annual growth rates(%) 1971-1981	1981-1985	Net change (000's) 1971-1981	1981-1985
Other tourist etc accommodation	667	31	37	53	1.9 (37)	9.5 (1)	6 (52)	16 (15)
Medical practices	953	30	46	63	4.3 (14)	7.9 (2)	16 (35)	16 (14)
Extraction of mineral oil, natural gas	130	2	24	33	27.4 (1)	7.5 (3)	22 (25)	8 (26)
Footwear and leather goods (retail)	646	53	59	75	1.1 (54)	6.3 (4)	6 (53)	16 (16)
Business services to banking and finance	831	14	18	23	2.6 (26)	6.3 (5)	4 (59)	5 (35)
Business services (nes)	8395	92	150	191	5.0 (9)	6.2 (6)	58 (8)	40 (3)
House and estate agents	834	38	67	83	5.8 (5)	5.5 (7)	29 (19)	16 (17)
Financial institutions other than banks	815	73	104	128	3.6 (18)	5.4 (8)	31 (18)	24 (10)
Dental practices	954	24	31	38	2.8 (23)	4.8 (9)	7 (46)	6 (30)
Rental of transport and movables (nes)	841/3/8/9	22	21	26	-0.4 (88)	4.7 (10)	-1 (76)	4 (37)
Professional services (nes)	837	104	163	193	4.6 (10)	4.3 (11)	59 (7)	29 (7)
Other medical care institutions	952	87	115	133	2.7 (25)	3.8 (12)	27 (20)	18 (11)
Social welfare etc	961	251	460	534	6.2 (4)	3.8 (13)	208 (3)	73 (1)
Cleaning services	923	97	184	213	6.6 (3)	3.7 (14)	87 (5)	29 (9)
Advertising	838	28	35	41	2.4 (29)	3.7 (15)	7 (47)	5 (33)
Public houses and bars	662	166	223	257	3.0 (22)	3.6 (16)	57 (9)	33 (4)
Machinery,industrial equipment,vehicles (w.dist)	6149	75	92	105	2.0 (36)	3.3 (17)	16 (33)	12 (20)
Libraries, museums, art galleries etc	977	52	57	65	1.1 (55)	3.3 (18)	5 (54)	8 (28)
Other wholesale distribution	619	97	106	120	0.9 (56)	3.1 (19)	9 (41)	13 (19)
Night clubs and licensed clubs	663	80	137	155	5.5 (8)	3.1 (20)	57 (10)	17 (12)
Hotel trade	665	188	232	262	2.1 (34)	3.0 (21)	44 (13)	29 (8)
Business services to insurance	832	59	66	75	1.1 (51)	2.9 (22)	7 (50)	8 (27)
Personal services (nes)	989	14	22	24	4.5 (11)	2.9 (23)	7 (44)	2 (48)
Computer services	8394	31	54	61	5.8 (6)	2.9 (24)	23 (24)	6 (29)
OWNING AND DEALING IN REAL ESTATE	85	70	96	107	3.2 (19)	2.8 (25)	25 (22)	11 (23)
Textiles, clothing, footwear etc (w.sale dist)	616	37	40	44	0.8 (59)	2.6 (26)	3 (65)	4 (38)
Motor vehicles and parts (w.sale dist)	6148	34	39	43	1.4 (47)	2.6 (27)	5 (55)	4 (39)
Measuring, precision instruments etc	371	68	57	64	-1.7 (122)	2.6 (28)	-10 (128)	6 (31)
DEALING IN SCRAP AND WASTE MATERIALS	62	14	17	19	2.3 (31)	2.4 (29)	3 (64)	1 (54)
Non active components (electronic)	3444	35	29	32	-1.8 (125)	2.4 (30)	-5 (108)	3 (45)
Household goods, hardware, ironmongery (retail)	648	166	173	190	0.4 (66)	2.4 (31)	6 (51)	17 (13)
Food (retail)	641	571	561	616	-0.2 (78)	2.4 (32)	-10 (127)	54 (2)
Timber and building materials (w.sale dist)	613	101	118	129	1.6 (43)	2.4 (33)	17 (30)	11 (22)
Household goods, hardware, ironmongery (w.dist)	615	50	54	59	0.7 (60)	2.3 (34)	3 (63)	5 (34)
Banking and bill discounting	814	266	361	391	3.1 (21)	2.0 (35)	94 (4)	30 (6)
RESEARCH AND DEVELOPMENT	94	94	121	131	2.5 (27)	2.0 (36)	26 (21)	10 (25)
Clothing (retail)	645	139	148	160	0.6 (62)	2.0 (37)	9 (42)	12 (21)
Footwear/leather/other consumer goods (repair)	672/3	28	27	29	-0.4 (84)	1.9 (38)	-1 (77)	2 (50)
Consumer goods (rentals)	846	27	27	29	0.0 (72)	1.9 (39)	0 (72)	2 (53)
Pharmaceutical and medical goods (w.sale dist)	618	27	29	31	0.6 (61)	1.8 (40)	1 (67)	2 (51)
Furnishing fabrics etc (retail)	647	21	21	23	0.1 (70)	1.8 (41)	0 (70)	1 (56)
INSURANCE, EXCEPT SOCIAL SECURITY	82	206	225	240	0.9 (57)	1.6 (42)	19 (28)	15 (18)
Radio and electronic capital goods (manf)	3443	71	88	93	2.1 (33)	1.4 (43)	16 (32)	4 (36)
Canteens and messes	664	73	114	120	4.5 (12)	1.3 (44)	40 (14)	6 (32)
Laundries, dyers and dry cleaners	981	100	61	64	-4.8 (188)	1.3 (45)	-38 (185)	3 (44)
Radio, television, theatres etc	974	72	68	72	-0.5 (91)	1.3 (46)	-3 (93)	3 (43)
Food, drink and tobacco (w.sale dist)	617	209	248	258	1.7 (41)	1.1 (47)	38 (16)	10 (24)
Fire services	914	66	58	61	-1.2 (110)	1.0 (48)	-7 (114)	2 (49)
COMMISSION AGENTS	63	15	17	18	1.3 (49)	0.8 (49)	2 (66)	0 (61)
Dispensing and other chemists (retail)	643	120	124	128	0.3 (67)	0.8 (50)	3 (60)	4 (40)

Table 5.4 (continued)

Thousands

Industry	1980 SIC	No. of employees 1971	1981	1985	Annual growth rates(%) 1971-1981	1981-1985	Net change (000's) 1971-1981	1981-1985
Books, stationery, office supplies (retail)	653	59	67	69	1.3 (48)	0.8 (51)	8 (43)	2 (52)
Hospitals, nursing homes etc	951	782	1027	1060	2.8 (24)	0.8 (52)	245 (2)	32 (5)
Other health services	955/6	14	21	21	4.2 (15)	0.7 (53)	7 (49)	0 (62)
Photo/cinematographic processing	493	9	14	14	3.7 (17)	0.7 (54)	4 (57)	0 (64)
Other specialised distribution (retail)	654	100	104	107	0.4 (65)	0.7 (55)	4 (58)	2 (46)
Repair of motor vehicles	671	150	172	176	1.4 (46)	0.6 (56)	22 (26)	3 (41)
Other electronic equipment (manf)	345	150	129	131	-1.5 (117)	0.5 (57)	-21 (161)	2 (47)
Postal services	7901	199	195	199	-0.2 (79)	0.5 (58)	-4 (100)	3 (42)
Filling stations	652	65	78	79	1.8 (40)	0.5 (59)	12 (37)	1 (57)
Printing and publishing of newspapers	4751	42	97	98	8.7 (2)	0.4 (60)	54 (11)	1 (55)
Builders carpentry and joinery (manf)	463	53	39	40	-2.8 (155)	0.3 (61)	-13 (135)	0 (63)
Nuclear fuel production	152	19	16	16	-2.0 (136)	0.3 (62)	-3 (94)	0 (66)
Other inland transport (nes)	722/6	18	16	16	-1.0 (102)	0.3 (63)	-1 (82)	0 (67)
Film production, authors etc	971/6	26	26	26	0.0 (73)	0.3 (64)	0 (73)	0 (65)
Confectioners, tobacconists etc (retail)	642	141	158	159	1.1 (52)	0.2 (65)	16 (31)	1 (58)
Fuels, ores, metals etc (w.sale dist)	612	96	107	108	1.1 (53)	0.1 (66)	11 (39)	0 (60)
Restaurants, snack bars, cafes etc	661	150	191	191	2.4 (30)	0.1 (67)	40 (15)	0 (59)
Pharmaceutical products (manf)	257	83	81	81	-0.3 (80)	0.1 (68)	-2 (85)	0 (68)
EXTRACTION OF METAL.ORES & MINERALS (nes)	21/3	44	41	41	-0.8 (98)	0.0 (69)	-3 (92)	0 (69)
OFFICE MACHINERY, DATA PROCESSING EQUIPMENT	33	87	74	74	-1.6 (118)	0.0 (70)	-12 (130)	0 (72)
Police	913	210	191	191	-0.9 (101)	-0.1 (71)	-19 (157)	0 (78)
Medical and surgical equipment	372	23	20	20	-1.2 (109)	-0.1 (72)	-2 (88)	0 (70)
Inland transport (support services)	761	13	17	17	2.5 (28)	-0.1 (73)	3 (62)	0 (71)
EDUCATION	93	1260	1546	1536	2.1 (35)	-0.2 (74)	285 (1)	-9 (152)
Justice	912	51	50	50	-0.1 (74)	-0.2 (75)	0 (75)	0 (73)
Tourist and other services	969	20	35	34	5.7 (7)	-0.3 (76)	14 (36)	0 (74)
Insulated wires and cables	341	46	38	38	-1.8 (128)	-0.4 (77)	-7 (115)	0 (76)
Printing and publishing	475	366	349	343	-0.5 (90)	-0.4 (78)	-17 (149)	-6 (128)
Motor vehicles and parts (retail)	651	168	193	190	1.4 (45)	-0.4 (79)	25 (23)	-3 (104)
Paints, varnishes and printing ink (manf)	255	38	32	31	-1.7 (124)	-0.5 (80)	-6 (109)	0 (77)
Non-ferrous metal foundries	3112	27	18	18	-3.6 (171)	-0.5 (81)	-8 (117)	0 (75)
Local government services (nes)	9112	598	614	600	0.3 (66)	-0.6 (82)	16 (34)	-14 (179)
Mixed retail business	656	342	359	350	0.5 (64)	-0.7 (83)	17 (29)	-9 (151)
Telecommunication equipment	344	222	204	199	-0.8 (99)	-0.7 (84)	-18 (154)	-5 (121)
Refrigerating machinery, space heating, vent	3284	56	43	42	-2.7 (152)	-0.7 (85)	-13 (140)	-1 (82)
Hand tools and finished metal goods (manf)	316	287	225	219	-2.4 (143)	-0.7 (86)	-62 (192)	-6 (136)
Water supply	170	44	65	63	4.0 (16)	-0.8 (87)	21 (27)	-2 (92)
National government (nes)	9111	374	408	395	0.9 (58)	-0.8 (88)	34 (17)	-13 (175)
Sport and other recreational services	979	198	270	261	3.1 (20)	-0.9 (89)	71 (6)	-9 (150)
Construction machinery etc (rent of movables)	842	42	40	39	-0.4 (87)	-0.9 (90)	-1 (83)	-1 (84)
Electric lamps/electrical equipmt installation	347/8	35	25	24	-3.3 (166)	-0.9 (91)	-10 (126)	0 (79)
Installation of fixtures/fittings (construction)	503	171	164	158	-0.4 (85)	-1.0 (92)	-6 (110)	-6 (134)
Soft drinks (manf)	428	29	25	24	-1.3 (115)	-1.0 (93)	-3 (91)	-1 (81)
Meat/meat products,organic oils and fats (manf)	411/2	108	105	100	-0.4 (83)	-1.0 (94)	-3 (96)	-4 (113)
Social security	919	92	104	100	1.2 (50)	-1.1 (95)	12 (38)	-4 (117)
AGRICULTURE, FORESTRY AND FISHING	0	420	343	328	-2.0 (135)	-1.1 (96)	-77 (198)	-14 (180)
Agricultural and textile raw materials (w.dist)	611	26	31	30	1.8 (39)	-1.1 (97)	5 (56)	-1 (85)
Soap and toilet preparations (manf)	258	38	38	36	0.0 (71)	-1.1 (98)	0 (71)	-1 (87)
Road haulage	723	252	193	185	-2.6 (146)	-1.2 (99)	-58 (190)	-8 (148)
Fruit and vegetable processing	414	39	35	34	-1.0 (104)	-1.2 (100)	-3 (97)	-1 (88)

Table 5.4 (continued)

Thousands

Industry	1980 SIC	No. of employees 1971	1981	1985	Annual growth rates(%) 1971-1981	1981-1985	Net change (000's) 1971-1981	1981-1985
Structural clay	241	27	18	17	-4.0 (177)	-1.2 (101)	-9 (122)	0 (80)
Compressors and fluid power equipment	3283	68	55	52	-2.1 (138)	-1.4 (102)	-12 (131)	-3 (99)
Printing and publishing of books etc	4752/3	121	41	39	-10.2 (201)	-1.4 (103)	-80 (199)	-2 (96)
MISCELLANEOUS TRANSPORT AND STORAGE	77	103	157	148	4.3 (13)	-1.5 (104)	54 (12)	-9 (149)
Telecommunications	7902	235	233	219	-0.1 (76)	-1.5 (105)	-2 (86)	-13 (178)
Building products of concrete, cement etc (manf)	243	71	41	39	-5.2 (192)	-1.5 (106)	-29 (174)	-2 (97)
Building completion	504	100	96	91	-0.4 (86)	-1.5 (107)	-4 (99)	-5 (125)
Saw-milling,planing,semi-finished wood products	461/2	42	31	29	-2.9 (156)	-1.6 (108)	-10 (129)	-1 (90)
Industrial equipment, batteries etc	343	128	100	94	-2.3 (141)	-1.8 (109)	-26 (169)	-6 (132)
Bread, biscuits and flour confectionery (manf)	419	196	145	135	-3.0 (157)	-1.7 (110)	-51 (188)	-9 (153)
Articles of wood, cork etc (manf)	464/5/6	48	30	28	-4.1 (178)	-1.7 (111)	-15 (146)	-2 (95)
Milk and milk products (manf)	413	54	45	42	-1.8 (126)	-1.8 (112)	-8 (120)	-3 (101)
Shop and office fittings (manf)	4672	27	25	23	-0.6 (94)	-1.9 (113)	-1 (81)	-1 (91)
Domestic-type electric appliances (manf)	346	62	48	44	-2.6 (148)	-1.9 (114)	-14 (143)	-3 (107)
Scheduled road passenger transport	721	237	199	184	-1.7 (123)	-2.0 (115)	-37 (183)	-15 (181)
Hairdressing and beauty parlours	982	91	93	86	0.2 (69)	-2.0 (116)	1 (68)	-7 (139)
Animal feeding stuffs and misc. food (manf)	416/8/22/3	102	93	86	-0.9 (100)	-2.0 (117)	-8 (118)	-7 (143)
Machinery for food etc industries	324	65	47	43	-3.2 (165)	-2.1 (118)	-18 (155)	-3 (111)
Coco, chocolate, sugar confectionery etc (manf)	421	81	67	62	-1.8 (127)	-2.1 (119)	-13 (139)	-5 (122)
Optical precision instruments etc	373	29	24	22	-1.9 (130)	-2.1 (120)	-5 (102)	-2 (93)
Conversion of paper and board	472	152	116	105	-2.7 (153)	-2.3 (121)	-36 (181)	-10 (156)
Packaging products of board (manf)	4725	64	48	44	-2.7 (151)	-2.3 (122)	-15 (144)	-4 (118)
Specialised household products (manf)	259	19	14	12	-3.0 (159)	-2.4 (123)	-5 (103)	-1 (83)
Other machinery and mechanical equipment	328	475	406	368	-1.6 (119)	-2.4 (124)	-69 (194)	-37 (196)
Basic electrical equipment (manf)	342	150	125	113	-1.9 (129)	-2.4 (125)	-25 (168)	-11 (169)
Metal doors, windows etc (manf)	314	24	18	17	-2.5 (144)	-2.5 (126)	-5 (105)	-1 (89)
Air transport (support services)	764	29	36	33	2.2 (32)	-2.5 (127)	7 (48)	-3 (106)
Engineers small tools	3222	72	55	49	-2.7 (149)	-2.6 (128)	-17 (147)	-5 (123)
Electricity	161	205	168	150	-2.0 (133)	-2.7 (129)	-36 (182)	-17 (183)
Processing of plastics	483	135	121	109	-1.0 (103)	-2.8 (130)	-13 (133)	-12 (172)
Bolts, nuts, springs etc (manf)	313	81	52	46	-4.3 (181)	-2.8 (131)	-28 (172)	-5 (124)
Machinery for printing etc industries	327	41	31	28	-2.6 (145)	-2.8 (132)	-9 (124)	-3 (102)
Gas	162	118	104	93	-1.3 (114)	-2.8 (133)	-14 (141)	-11 (165)
Hosiery and other knitted goods (manf)	436	127	91	80	-3.3 (167)	-2.9 (134)	-36 (180)	-10 (155)
Refuse disposal etc	921	94	89	78	-0.6 (93)	-3.0 (135)	-5 (104)	-10 (157)
Wooden and upholstered furniture (manf)	4671	91	88	77	-0.4 (82)	-3.2 (136)	-3 (89)	-10 (161)
Specialised industrial products	256	58	51	45	-1.2 (112)	-3.2 (137)	-6 (113)	-6 (135)
Industrial plant and steelwork	320	130	83	73	-4.3 (183)	-3.3 (138)	-46 (187)	-10 (158)
Mechanical lifting and handling equipment (manf)	3255	63	56	49	-1.1 (106)	-3.4 (139)	-6 (112)	-7 (140)
Central offices not allocable	8396	64	46	40	-3.1 (162)	-3.5 (140)	-17 (150)	-6 (131)
Ordnance, small arms and ammunition	329	24	28	24	1.4 (44)	-3.7 (141)	3 (61)	-4 (112)
Fish processing	415	14	14	12	-0.1 (75)	-3.8 (142)	0 (74)	-2 (94)
Clothing, hats, gloves and fur goods (manf)	453/6	343	224	191	-4.2 (180)	-3.9 (143)	-119 (201)	-32 (193)
LEATHER AND LEATHER GOODS (MANF)	44	40	27	23	-3.8 (175)	-4.1 (144)	-13 (134)	-4 (114)
Sugar and by-products (manf)	420	12	9	7	-3.4 (169)	-4.1 (145)	-3 (95)	-1 (86)
National defence	915	147	145	122	-0.1 (77)	-4.1 (146)	-1 (84)	-22 (187)
Inorganic chemicals except inds gases	2511	77	68	57	-1.3 (113)	-4.3 (147)	-9 (121)	-11 (162)
Other manufacturing (nes)	492/5	34	25	21	-3.1 (160)	-4.4 (148)	-9 (123)	-4 (115)
Steel drawing, cold rolling, cold forming	223	50	31	26	-4.7 (187)	-4.4 (149)	-19 (158)	-5 (119)
Cotton and silk (manf)	432	121	46	38	-9.2 (200)	-4.5 (150)	-75 (197)	-7 (144)
Other textiles (manf)	433/4/5/9	48	30	25	-4.5 (185)	-4.5 (151)	-17 (153)	-5 (120)

Table 5.4 (continued)

Thousands

Industry	1980 SIC	No. of employees 1971	1981	1985	Annual growth rates(%) 1971-1981	1981-1985	Net change (000's) 1971-1981	1981-1985
Ferrous metal foundries	3111	108	62	52	-5.3 (193)	-4.6 (152)	-45 (186)	-10 (160)
RAILWAYS	71	214	175	145	-2.0 (134)	-4.7 (163)	-38 (184)	-30 (192)
Basic industrial chemicals (manf)	251	159	142	117	-1.1 (107)	-4.7 (154)	-17 (148)	-24 (188)
Aerospace equipment	364	212	185	152	-1.3 (116)	-4.8 (155)	-26 (170)	-33 (194)
Mining machinery etc	325	122	99	81	-2.1 (137)	-4.8 (156)	-22 (164)	-17 (184)
Construction/repair or demolition of buildings	500/1	651	621	510	-0.5 (89)	-4.8 (157)	-30 (175)	-111 (201)
Brewing and malting, cider and perry	426/7	75	67	55	-1.2 (108)	-4.8 (158)	-8 (119)	-12 (170)
Refractory and ceramic goods	248	75	61	50	-1.9 (132)	-4.9 (159)	-13 (137)	-11 (166)
Pulp paper and board	471	73	46	38	-4.5 (184)	-4.9 (160)	-26 (171)	-8 (146)
Household textiles etc (manf)	455	38	31	25	-1.9 (131)	-5.1 (161)	-6 (111)	-5 (127)
Footwear (manf)	451	91	58	47	-4.3 (182)	-5.1 (162)	-32 (176)	-11 (163)
Glass and glassware (manf)	247	75	58	46	-2.6 (147)	-5.3 (163)	-17 (152)	-11 (167)
Forging, pressing and stamping	312	47	34	28	-3.1 (161)	-5.4 (164)	-12 (132)	-6 (138)
Jewellery and coins (manf)	491	18	17	13	-0.7 (96)	-5.5 (165)	-1 (79)	-3 (105)
Steel tubes	222	63	32	25	-4.9 (190)	-5.5 (166)	-21 (162)	-6 (137)
Motor vehicles and engines (manf)	351	187	131	104	-3.5 (170)	-5.6 (167)	-56 (189)	-26 (189)
MAN MADE FIBRES	26	38	18	14	-7.0 (197)	-5.6 (168)	-19 (159)	-3 (110)
AIR TRANSPORT	75	45	55	43	1.9 (38)	-5.7 (169)	9 (40)	-11 (168)
Abrasive products and working of stone etc	245/6	33	19	15	-5.0 (191)	-5.8 (170)	-13 (136)	-4 (116)
Copper, brass and other copper alloys	2246	42	28	22	-3.9 (176)	-5.8 (171)	-14 (142)	-6 (130)
Bodies, trailers and caravans (manf)	352	86	62	48	-3.2 (164)	-5.9 (172)	-23 (166)	-13 (176)
Telegraph and telephone app and equipment	3441	84	59	46	-3.4 (168)	-5.9 (173)	-24 (167)	-12 (173)
Toys and sports goods (manf)	494	42	29	22	-3.7 (174)	-6.0 (174)	-13 (138)	-6 (133)
Textile finishing	437	50	33	26	-4.2 (179)	-6.0 (175)	-17 (151)	-7 (141)
Spirit distilling and compounding	424	25	26	20	0.6 (63)	-6.1 (176)	1 (69)	-5 (126)
Agricultural machinery and tractors (manf)	321	52	45	35	-1.6 (120)	-6.1 (177)	-7 (116)	-10 (154)
Cement, lime and plaster	242	17	16	12	-0.8 (97)	-6.3 (178)	-1 (80)	-3 (108)
Woollen and worsted (manf)	431	112	53	41	-7.1 (198)	-6.3 (179)	-58 (191)	-12 (171)
Mechanical power transmission equipment (manf)	326	42	37	29	-1.1 (105)	-6.3 (180)	-4 (101)	-8 (147)
Textile machinery	323	38	14	11	-9.0 (199)	-6.3 (181)	-23 (165)	-3 (103)
Asbestos	244	15	12	9	-2.3 (142)	-6.4 (182)	-3 (90)	-2 (98)
Parts (motor vehicles-manf)	353	229	166	127	-3.1 (163)	-6.5 (183)	-62 (193)	-39 (197)
Shipbuilding and repair	361	152	116	88	-2.7 (150)	-6.7 (184)	-36 (179)	-28 (190)
Non-ferrous metals	224	109	80	61	-3.0 (158)	-6.7 (185)	-29 (173)	-19 (185)
Aluminium alloys	2245	38	32	24	-1.6 (121)	-6.8 (186)	-5 (106)	-8 (145)
Mineral oil processing	140	30	29	22	-0.3 (81)	-6.9 (187)	-1 (78)	-7 (142)
Internal combustion eng excl road veh etc (manf)	3281	45	53	39	1.6 (42)	-7.0 (188)	7 (45)	-13 (174)
Rubber products, tyre repair etc (manf)	481/2	112	77	57	-3.7 (173)	-7.1 (189)	-34 (178)	-19 (186)
Coal,extraction and solid fuels	111	359	284	211	-2.3 (140)	-7.2 (190)	-74 (196)	-73 (200)
Deep coal mines	1113	346	275	203	-2.2 (139)	-7.3 (191)	-70 (195)	-72 (199)
Cycles, motor cycles and other vehicles (manf)	363/5	21	11	8	-6.0 (194)	-7.4 (192)	-9 (125)	-3 (100)
Metal-working machine tools	3221	60	41	30	-3.6 (172)	-7.5 (193)	-18 (156)	-11 (164)
Civil engineering	502	243	228	166	-0.7 (95)	-7.6 (194)	-15 (145)	-62 (198)
Carpets etc (manf)	438	42	21	15	-6.6 (196)	-7.8 (195)	-21 (160)	-6 (129)
Iron and steel	221	246	129	93	-6.3 (195)	-7.8 (196)	-117 (200)	-36 (195)
Sea transport (support services)	763	90	56	39	-4.7 (186)	-8.5 (197)	-34 (177)	-16 (182)
Railway and tramway vehicles (manf)	362	46	44	30	-0.5 (92)	-8.7 (198)	-2 (87)	-13 (177)
Tobacco (manf)	429	34	30	19	-1.2 (111)	-10.2 (199)	-4 (98)	-10 (159)
Clocks watches etc (manf)	374	14	8	5	-4.9 (189)	-12.7 (200)	-5 (107)	-3 (109)
SEA TRANSPORT	74	87	65	35	-2.8 (154)	-14.3 (201)	-21 (163)	-30 (191)

Source: Unpublished data supplied by Department of Employment.

Notes: Numbers in brackets are the rankings of the industries according to the measures of growth in each column.

of "social innovation", with households increasingly providing the service for themselves using domestic capital equipment. Indeed between 1971 and 1981 this sector was ranked at 181st by percentage growth and 185th by net absolute change. One suspects that technological change in the form of equipment for dry cleaning may be the reason for this recovery which might continue until households are in the position to do their own dry cleaning in the same way as they currently deal with conventional laundry. While this is merely an isolated example, it does suggest that technological progress may operate in such a way as to reverse the trend towards self-provision of services, at least for a short period of time.

Turning our attention to those industries in decline we discover that of the bottom 100 industries in terms of annual percentage growth, between 1981 and 1985, all bar 16 are in the manufacturing sector. The main exceptions are coal mining, (AH 111) mineral oil processing (AH 140), parts of construction (AH 500, 501, 502, 504), the transport sector (AH 719, 721, 740, 763, 764, 750) and national defence (AH 915). The most rapid declines are in the more traditional manufacturing industries such as textiles and clothing, shipbuilding, motor vehicles etc. Again, although there are some significant changes in ranking when we consider net changes, the overall picture remains much the same. Comparison with the earlier period also reveals many similarities. These trends suggest that although households may be increasing their demands for commodities in order to make self-provision of services possible, this has not significantly affected the broad trends in employment in the manufacturing sector which remain strongly negative. Even in those industries most directly concerned with the provision of commodities to households, which are then used for self provision of services, employment has shown little sign of growth.

This reflects two main factors. The first of these is a tendency in many of these sectors for markets to approach saturation points towards the late 1970s and early 1980s. This appears to be the case in sectors which were the leading growth areas in previous decades, such as motor vehicles and domestic durable goods (eg. kitchen equipment, and home entertainment equipment). In many markets firms are now producing mainly for replacement needs, although quality improvements have enabled the more dynamic firms to maintain growth of sales. The second factor, which applies with special force to the UK case, is the impact of international competition in the provision of such goods. For the UK this has resulted in loss of markets abroad and rising import shares. The industries that seem likely to be the main suppliers of the corresponding commodities in the 1980s and 1990s are of course those in electronics and telecommunications. One of the problems facing the UK economy in particular, and to a lesser extent other EEC countries, is that the successful firms seem to be mainly based abroad, in Japan and the United States.

5.2 Some Possible Explanations

Traditional theories of the "stages of growth" such as those by Rostow (1963) or Lewis (1978) have seen the transformation from primary to secondary and then tertiary sectors as resulting from the effects of productivity improvements in the sectors coupled with the operation of Engels' law leading to the progressive substitution by consumers of products from the agricultural sector to first, the manufacturing

sector, and then the services sector, as incomes rise. The tertiary or service sector in these models eventually provides most of the jobs and becomes the area where most income is spent. This type of model has been criticised by Petit (1986), Gershuny (1983) and others as simplistic. Petit, argues that such models are inadequate for three main reasons. First, they draw conclusions about the expansion of the volume of demand for different sectors based on an analysis of the value to consumers of different products and services based on their income elasticities of demand. Volume of demand will however depend upon relative prices which may alter so as to offset the income effects. Second, these models generally ignore intermediate demands by firms for their production needs. Finally, they contain no explicit growth mechanism which can explain changes from one stage to another. Petit (1986, p.25) argues that the essential dynamic is the division of labour, which in turn depends upon the division of markets. Growth is not simply function of enterprise or exogenous innovations but depends upon the reorganisation of the work process. The spirit of enterpise is above all the quest for markets, and innovations derive from this momentum. Increasing returns to scale as well, are often the direct outcome of the extension of markets and the division of labour.

Gershuny (1983) has also argued that conventional explanations may not be subtle enough to capture all of the underlying factors in the development of the service sector. In particular he emphasises five factors:

(i) the change in the pattern of final expenditures in response to rising real incomes and changing relative prices away from basic needs to luxuries;

(ii) the increasing tendency for self-provision of many consumer services with the consequent decline in demand for marketed services and increased demand for certain manufactured goods;

(iii) the division of labour within industries leading to a process of occupational tertiarisation as the key occupations within industries find their responsibilities diffused to more specialised occupations;

(iv) the tendency for an increasing proportion of the output of the service sector to be directed towards producers rather than consumers;

(v) the reconcentration of occupations within certain service industries in order to supply services (in particular to producers) while reaping benefits of economies of scale.

While Gershuny argues that the sub-contracting of services to other firms is a relatively new and distinct phenomenon, Petit (1986) holds that it is simply a further stage in the reorganisation of the work process. This process often simply enables forms of the division of labour already existing in large forms to be extended to smaller areas. It also allows the restructuring of specific service activities which are complementary to production.

We have seen that for the last 30 years productivity growth in the primary and manufacturing sectors has outweighed the growth in output and employment has declined. In the case of marketed services the

opposite has generally been the case and, as a consequence, employment has grown. Finally in the public sector employment has risen or fallen in response to changes in public expenditure.

Because services are labour intensive and productivity growth tends to be relatively slow they typically become relatively more expensive in comparison to self-service modes of provision based on manufactured commodities which exhibit the opposite tendency. Many traditional services such as (public) transport, cinemas, launderies etc. have seen dramatically decling shares in both final expenditure and employment. For this reason the more simplistic views about the service sector as the main source of employment growth, based on a straightforward extrapolation of past trends, can be very misleading.

The demands for services can be divided into two parts. First demands from foreigners. This is particularly important for the UK which receives a large contribution to its balance of payments from so called invisibles. These include payments for transport services, tourism, other services (including commercial and financial activities, fees from rights and patents, professional consultancy etc) and net income from abroad. The UK has traditionally received a net surplus from each of the (four) main types of payments other than tourism. However, in recent years the decline in the British Merchant fleet has led to a deficit on this account. The way in which it is classified does not enable a straightforward relationship to be established between employment and these changing patterns of demand. Nevertheless it is clear that the decline of employment in other transport and the growth in banking, insurance and financial services have been influenced by foreign as well as domestic demand.

The second source of demand is from the home economy. The domestic demand for services can be analysed in various different ways. An important distinction is between those services provided to consumers and those to producers. Often this distinction cuts across official classifications, since many services are provided to both groups. However, although the distinction appears to be conceptually useful it is often difficult in practice to classify the activities of different firms or individuals. Consider transport services, for example. While most transport of goods may be services to producers, it is not the case that all passenger transport is for consumers. Similar problems emerge for other services such as insurance, banking and most professional services, where both consumers and producers are often catered for by the same company or firm.

Certainly the available statistics on employment do not in general enable us to distinguish whether they are primarily services to consumers or producers. This distinction only really emerges from input output analysis which is only available infrequently. Nevertheless it is clear from the analyses of such data that intermediate demands by firms have been an important part of the output demand in a number of service industries, most notably distribution, business services, transport, cleaning and professional services (see Petit, (1986), Gershuny, (1983) and IMS/OSG, (1986)).

In the case of services to consumers there have also been significant increases in demand underlying the growth of certain parts of the service sector. This has reflected the fact that most services are luxury goods and so relative demands have increased in line with real

incomes. However this process has been modified by the fact that wages have also risen in line with real incomes, and, since services tend to be labour intensive, relative costs have increased. This has resulted in the substitution of goods for services - what Gershuny calls "social innovation". This process of self-provision has resulted in a reduction of demand for certain services such as: public transport (due to the use of private cars); cinemas (due to use of TVs and videos); and conventional launderies (due to the use of domestic washing machines). As we have already noted in the previous section however, these trends are not necessarily set for all time. New developments such as dry cleaning or fast foods may once again tip the balance between self-provision and market provision in the opposite direction.

A major part of services to consumers are not provided through the market. This applies in particular to health and education services which as we have seen were a major source of additional jobs up until the mid-1970s. Governments, reflecting demographic trends and the demands from their populations for increased access to such services, were primarily responsible for this growth. During the late 1970s and early 1980s government policies in this area changed dramatically, especially for education services. This was not simply a consequence of temporary financial restrictions but the result of a general reconsideration of the role of the state as the main provider of welfare services and the failure of consensus on whether such services were worth the burden of taxation necessary in order to finance them. This in part may reflect the same kind of problems that we have referred to in the case of other personal services, viz that rising labour costs of labour intensive services raise their relative cost (and hence the burden of taxation) necessary to pay for them. This has been exacerbated in the case of health services by the significant increase in relative price of other important inputs such as drugs and high tech equipment.

5.3 Future Prospects

The discussion in the previous section highlighted the difficulties of assessing the prospects for employment growth in the service sector. It is clear that a simple extrapolation of past employment changes is likely to be very misleading. Most macroeconomic models in the UK do not in any case consider more than a very broad breakdown of employment into 2 or 3 main sectors. They rarely include any of the links between sectors that have clearly been of great significance in explaining the developments of the manufacturing and service sectors in recent years.

However, such criticisms of conventional models apply with much less force to disaggregated models of the type developed by the Cambridge Growth Project (CGP). This is a very detailed model of the UK economy, which attempts to explain the main structural changes in the economy using fairly conventional models of the demand for factor inputs by producers and the demand for commodities and services by both consumers and producers (see Barker, 1981 and Barker et al, 1986). This model has been used by both the CGP and the Institute for Employment Research (IER) to make forecasts of the likely future developments in employment structure (see for example, IER, 1985). Although the underlying determinants of the changes for the private sector are complex, especially given the importance in the UK of trade with other countries, nevertheless the main features seem to be explicable in terms of two

sets of fairly standard economic models : first those concerned with demands for factor input services by producers in the face of technological change and changing demand for their output; and second, those concerned with the demands for commodities by consumers, producers, government and foreigners in terms of such factors as real incomes and relative prices (appropriately adjusted for quality). The developments in the public sector require a rather different explanation, although attempts have been made to develop economic models of the government's decisions on the allocation of public expenditure in terms of maximising political appeal subject to meeting certain budget constraints, (Dunne and Smith, 1982).

Because the CGP model allows for changes in the pattern of both final demands (in response to changes in real incomes and changing relative prices); changes in intermediate demands (in the form of changing input-output relationships); and changing relative labour costs in different sectors; a model of this kind can capture many of the key influences noted by Gershuny et al. The main limitations of the CGP/IER model in this context are : first, the fact that input-output coefficients are not modelled explicitly but are obtained by extrapolation based on previous experience and expert opinion; second, the fact that the occupational dimension is not fully integrated with the rest of the model; and third, that the modelling of the labour supply/consumption decision making process is not as sophisticated as in Gershuny's model. These limitations are mainly the consequence of the absence of suitable data. Much more frequent, albeit possibly less detailed, information on input-output coefficients; the occupational structure of employment; and the allocation of time by households, would enable time series modelling of these aspects as well, which could in principal remove these limitations. The further development of models of this kind would seem to be a high priority if our understanding of the process of structural change is to improve.

The results of using the IER version of the CGP model for forecasting employment structure to 1990 have already been presented in Tables 5.1-5.3. The main features of these projections are the continued loss of jobs in primary and manufacturing sectors. The main growth in employment is expected to be in professional and miscellaneous services. Employment in the public sector is expected to decline slightly. As noted in Chapter 2 these basic trends are confirmed by the IMS/OSG (1986) survey of firms. If anything the latter study places greater emphasis on the switch from manufacturing to services due to sub-contracting. Thus they are somewhat more optimistic about the prospects for distribution and business services but more pessimistic about the manufacturing sector. The IMS/OSG study places much greater emphasis on very recent developments than the econometric equations upon which the CGP model is based. This may of course be an advantage if these recent changes are the result of a change in underlying trend. On the other hand they could be misleading if they primarily reflect short run/cyclical factors. At present there is insufficient evidence to establish which of these possibilities is nearer the truth.

Even if manufacturing industry were to see a dramatic recovery in output terms it is inconceivable, given likely trends in productivity, that this sector could provide a significant number of new jobs. Similarly the primary sector, the public utilities transport and communications seem unlikely to furnish many new jobs over the next decade. Although the immediate prospects in construction, distribution and the public

sector (notably education) are for little growth in employment it may be that there is the possibility of some extra jobs in the longer term. However, it is to the industries providing personal services and services to business i.e. insurance, banking and finance, professional services and miscellaneous services that most people are looking to for additional jobs in the 1980s and 1990s. Indeed it is these three groups (together with health services) that the IER projections show as the main source of additional jobs up to 1990 (see Table 5.3).

Let us consider the likely sources of demand for services in more detail. Petit (1986) argues that the demand for services by foreigners (tourists, transport, financial services etc) is severely limited overall and is unlikely to offer scope for the creation of a new autonomous expansion of external demand capable of helping countries, such as the UK, to guarantee the long-term financing of the imports necessary to their growth. Increasing international competition is indeed likely to threaten those countries such as the UK which currently have a net balance of payment surplus as a result. The decline of income from such services as sea transport should prevent policy makers in the UK being too sanguine about the prospects in financial services.

In the case of domestic demand it also seems unlikely that intermediate demand for services will provide a significant net increase in employment. Undoubtedly the process of specialisation and sub-contracting that we have described above will continue. But while jobs in such areas will grow they seem unlikely to match those lost in the sectors from which they have effectively been transferred. This seems likely to be the case even if many new specialised services are developed in response to the opportunities offered by new technologies.

In the case of demands by consumers the prospects for expansion of employment appears to be limited by two main constraints: first, the apparent stagnation in the demand for personal services; and second the effects of "social innovation" in the provision of many services. As noted above the demand for most personal services appears to be growing only modestly, mainly because of the tendency for the rising cost of such services to lead to a substitution effect which at least in part cancels out the income effect which would result in increased demand. Gershuny (1983), Whitley and Wilson (1986) and Barras (1984) have argued that a massive investment in infrastructure in telecommunications may be necessary to provide an environment in which new products and services can be developed which can offset the impact of labour saving process innovation on employment. However, despite some ingenious suggestions as to what form such new products and services might take, Gershuny is not able to point to concrete examples which seem likely to result in the substantial increases in employment opportunities that would be necessary to lead to a reduction in current unemployment levels. This is not to say that such new products will not emerge of course. Such prognostication is notoriously difficult. Nevertheless, the sorts of services that are currently likely to emerge seem to be limited in appeal to a rather narrow section of society (eg. young, upwardly moving professionals). The growth in associated demand for home computer terminals and the like also seems at present unlikely to match the expansion in demand for products such as TVs, domestic durable equipment and motor cars that characterised the wave of social innovation that, according to Gershuny's arguments, characterised the growth of the 1950s and 1960s.

The demand for services such as education and health also appears to offer only limited scope for additional jobs because of the lack of suitable means of allowing the expression of unsatisfied demands by individuals for such services to be made effective when they are generally provided outside the market. It seems obvious that there are enormous unmet needs in these areas and one of the major challenges facing governments is to develop mechanisms by which these currently ineffective demands, for health care, for example, can be matched against the underused resources of those unemployed who would welcome the opportunity to do a worthwhile job. However this is not by any means as simple as it seems because of the rising cost of such services given current methods of production. Gershuny (1983), Leach and Wagstaff (1986) and Handy (1984) have all made suggestions as to how this could change. It does appear however that radical changes are required. Gershuny, for example, proposes: the combination of voluntary labour with formally employed staff to expand services such as provision of creches in local authorities; the pooling of materials in education services between institutions, more along the lines presently adopted by the Open University and present; and a change in the role of General Practioners in the provision of health services. (Gershuny, 1983, p. 169-175).

6. CONCLUSIONS

6.1 New Forms and New Areas of Employment

The discussion in Chapters 2 and 5 suggests that the likely developments in the industrial structure of employment in the UK over the next few years are fairly clear. All forecasters agree that the primary and manufacturing sectors are not going to provide a major source of employment as we move into the 1990s. Even if there is a new boom in the production of durable goods analagous to that which characterised the growth in the 1950s and 1960s it is most unlikely that this will generate large numbers of jobs in manufacturing. The post-war boom resulted from the growth in demand for a wide range of goods such as motor vehicles, domestic equipment and house entertainment equipment. This benefited industries such as engineering (especially electrical) and motor vehicles directly, where employment rose up until the early 1970s.

Other industries such as chemicals and metals prospered because of intermediate demands for their output. On the other hand, more traditional areas of employment such as mining, shipbuilding, textiles and clothing were already in sharp decline so that employment in the production industries fell substantially overall during the 1950s and 1960s.

This pattern has continued during the 1970s and 1980s. The effects of labour saving process innovation have appeared throughout manufacturing while the demand for domestic output has failed to keep pace with the general expansion of the world economy or the inflow of foreign goods. The prospects are for further substantial productivity gains across the whole of the manufacturing sector as micro-electronic technology diffuses. This alone would spell out a gloomy prospect for employment. It is exacerbated, in the UK in particular, by the failure to maintain competitiveness with other countries and the consequent loss of markets abroad and import penetration at home.

While the employment consequences of the decline of manufacturing may be acceptable (since jobs can in principal be provided in other sectors), the implications for the balance of payments and for the general dynamism and growth prospects of the economy are not. Although it is possible for services (invisibles) to fill the breach in the balance of trade that will emerge as North Sea Oil production runs down, this area is also becoming subject to intense international competition. Manufacturing is therefore still regarded by many as the key area in terms of wealth creation. Furthermore although it may no longer be the major sector in terms of employment it will remain immensely important from a strategic viewpoint. It is important to stress this, since although we envisage that this sector's direct contribution to employment will decline as we move into the 1990s, its indirect contribution, through the generation of income and output and through the balance of payments, will remain crucial to the UK's prosperity. Thus although the increasing importance of "hi-tech" jobs in the manufacturing sector is not expected to make any direct inroads into the

unemployment problem, it raises important policy issues concerned with education and training that cannot be ignored.

Most forecasters are also pessimistic about the prospects for additional jobs in industries such as public utilities, transport, communications and distribution. In all of these, the effects of further productivity growth, due to rationalisation, reorganisation, and technological innovation, (the latter often linked to the application of micro-electronics), coupled with stagnant or relatively modest growth in demand, is expected to result in little growth in employment over the medium term.

The situation in construction is rather different. For this industry domestic demand particularly from the public sector is the main factor influencing future employment prospects. Given current government policy, most forecasters are also pessimistic about prospects here. There are however strong pressure from various directions to alter this situation. On the one hand are those who advocate large infrastructural investment programmes (roads, sewers etc). On the other hand there are others who emphasise the urgent need for work at a more local level to, for example, refurbish urban areas or improve house insulation. This last area has close links with developments in the informal economy of which more anon.

One area where some forecasters see hopes of growth is employment services to businesses. Services currently make a major contribution to the UK's balance of payments and this is likely to continue in the immediate future. London's role as a major financial centre is under threat from foreign competition but currently it seems to be holding its own. Nevertheless it is difficult at present to envisage such services providing a major filip to employment despite their important contributions to wealth creation and the balance of payments. The same remark applies to services to businesses in general. Although the process of reorganisation of work from manufacturing and other sectors to this part of the service sector is likely to continue it seems unlikely to result in a net increase in employment. A massive infrastructural investment in telecommunications, along the lines of the French system, is probably necessary to facilitate the development of new products and services. This could, if undertaken, result in a rather more optimistic outlook for employment in this area.

Turning to personal services the prospects appear somewhat brighter. Most forecasters project a growth in demand for banking, insurance, legal and other professional services. Increasing real incomes will also result in growth in demand for other miscellaneous services such as those connected with leisure activities, restaurants, hotels etc. However it is also clear that, because of rising real wages, the relative costs of many of these services will rise (since they tend to be labour intensive). As a consequence a negative substitution effect will tend to operate in such a way as to offset the positive income effect on demand for such services. This seems likely to limit the prospects for employment growth. As for services to businesses, the development of a new range of products and services, which could offset this tendency and lead to a substantial increase in demands for both services and related manufactured products, is probably dependent on the development of a telecommunications infrastructure based on fibre optics. This will bring such services directly into the home.

The final area of employment to consider is that of public administration and publically provided health and education services. It seems implausible that the former will contribute any increase in employment in the foreseeable future, given the political climate and the general public aversion to further increases in bureaucracy. The health and education services are a very different prospect however. While it appears that there are limits to the extent to which the population is willing to accept a rising burden of taxation to pay for such services, it is equally clear that there are enormous unmet needs for such services. The phenomenon of rising costs, as a result of increasing real wages and high labour intensity, has been a major factor in leading to the current impasse in the public provision of such services. The question is whether the unmet needs of large sectors of the population for such services can be met using current methods of provision or whether a radical change is necessary to facilitate a better match between needs for certain services and needs for meaningful work.

It is clear that the typical content of jobs and the boundaries between them are also changing very significantly. The most obvious developments are those in occupational structure and the growth in the need for formal qualifications. From the discussion in Chapter 3 it is clear that the occupational structure of employment is expected to change in a number of important respects over the medium term. Within production industries the need for high knowledge, high skill occupations will increase. Engineers and computer programmers are the most obvious examples, but there will be a general rise in the employment share of professional, technical and administrative occupations, as well as multiskilled craftsmen and technicians. However, in absolute terms, employment is likely to decline in many manufacturing industries even for these occupations. The main growth areas will be in the service sector for professional employment and certain personal services and support occupations, primarily arising from the continued developments in industrial structure outlined above. On the other hand, there will be a sharp decline in traditional craft jobs, semi-skilled and unskilled operatives across all sectors, but within manufacturing in particular.

Related to this phenomenon is the growth in demands for those with formal qualifications both at higher level and lower down the spectrum. There are no forecasts of developments in the numbers holding formal qualifications for the UK. Nevertheless a simple extrapolation of past trends and the developments in occupational structure outlined above suggest that the numbers of formally qualified people are likely to continue to grow. This trend towards the increasing importance of formal qualifications at all levels is, in part, simply the result of increasing competition for jobs. However, there is strong evidence that it also reflects changes in the technical requirements of jobs. This is especially important in areas such as engineering, technology and computing, although in a qualitative rather than quantitative sense. Despite their strategic importance it is clear that hi-tech jobs in high-tech industries will not provide a major source of new jobs over the medium term.

There are other less well quantified ways in which job content is changing. The most important aspects of this are the blurring boundaries between traditional job demarcations, often as a consequence of the application of new technologies. This applies both in the office and on the shop floor. Employers are increasingly demanding a more

flexible attitude towards job boundaries and often require people to develop a range of skills which were previously the province of a specialist.

This emphasis on flexibility characterises other aspects of the changing nature of employment which have been discussed in Chapter 4 under the heading of contractual arrangements. The latter has been interpreted much more broadly than simply the formal contractual arrangements between employer and employee. Rather, it has been taken to encompass various aspects of the changing pattern of work including: the growth of the informal economy; the changing allocation of time between formal work, domestic work and leisure; and the development of special employment and training schemes.

A key feature of recent developments has been the emphasis by employers on reducing labour costs and making their input of labour services more flexible and responsive. This has been reflected in two main ways : First in the increasing importance of certain working patterns such as, part-time work, shiftwork, temporary and casual work, and the increasing use of freelances, outworkers and homeworkers; and second, the tendency to subcontract out many services, the increasing out-sourcing of input requirements, and franchising. The second of these has been associated with a strong growth in self-employment and in small businesses.

The other side of increased flexibility for the employer is often greater job insecurity for the employee. This certainly applies to the first category of changes we outlined above, although in some respects these developments can also be seen as reflecting the desire of some workers for less rigid working patterns, (e.g. married women with children, pensioners and students). The desire for independence and flexibility on behalf of the employee can be more easily recognised as an important factor in the second category of change (i.e. in the growth of the number of self-employed working without employees and of very small business often based on franchising. At the current time it is still too early to say whether these changes in contractual arrangement are a short-term cyclical response or whether they represent a longer term change in employment patterns. Further research, including the collection of new data, will be necessary to answer this question.

The overall prospects, given current government policies, is not an optimistic one for unemployment. Employment is, according to most forecasters, unlikely to grow by much more than the expected increase in labour supply resulting from demographic and participation rate changes. The prospects for unemployment in the medium term are therefore for little change from current levels of 3-4 million (depending upon the precise method of measurement). Not everybody subscribes to this view of course. Minford (1983), for example, still argues that market forces will, if given the chance, restore full employment. The balance of opinion suggests that the market mechanism, hindered by the presence of monopolistic firms and trade unions, will operate too sluggishly to achieve this even in the medium term. This conclusion seems likely to be re-inforced by the evidence of further segmentation of the labour market.

The continuing high levels of unemployment coupled with process of fragmentation of jobs described in more detail above, seems likely to result in a growth in the informal economy. This may take three main forms: first, the expansion of domestic activities carried out within

the home (the self provision of services); second, the growth in areas of illegal activity known as the black economy; and finally, the activities on the fringe of the formal activity which are quite legal, but are not measured as part of gross domestic product (including some activities of small businesses, bartering systems of exchange, and voluntary work).

The increasing employment share of groups such as part-time, temporary and home workers, who are often less tightly attached to the formal economy, plus the expansion of very small business, often operating on its fringes, can both be seen as another aspect of the growing importance of the informal economy. The other main aspect of this concerns the changing boundaries between leisure, self-provision of services (e.g. through domestic work) and work in the formal economy.

The fruits of past economic growth have been shared between consuming more goods and services purchased in the formal economy and working fewer hours. Over the last 100 years the various dimensions of lifetime hours worked in the formal economy have declined for most groups. Earlier retirement, longer periods in formal education, longer paid holidays and shorter working weeks have resulted in a considerable increase in discretionary time available to most people. (The main exceptions are married women, for whom increasing labour market participation rates have offset these other factors.) A significant part of this extra discretionary time has been used to self-provide services (and goods) that were in earlier epochs purchased in the formal economy. This process has come about because of the rising cost of such services in the market place compared with the falling relative price of manufactured consumer durables. This tendency for self-provision has seen the decline of major service activities such as public transport, launderies and cinemas.

Finally, a mention must be made of another relatively new form of "employment". This is the government special employment or training scheme which has in recent years become a major factor on the employment scene. It is possible to argue about how valuable the training and other placements on such schemes are, but there is no disputing their importance in terms of numbers covered. By 1987 they are likely to cover almost 1 million people. The merits of such schemes and possible alternatives are discussed below.

6.2 Policy Issues

The previous section has provided a backcloth against which to discuss the main policy issues. These fall under two related headings. The first is unemployment. It seems clear that in the EEC generally, and the UK in particular, this problem is very deep-rooted and is not something that is going to simply disappear of its own accord in the foreseeable future. This raises many serious policy question about what should be done about it. The second issue is concerned with the development of a dual segmented economy, with a core of well paid, secure jobs in the formal economy, and a broad periphery of jobs in the formal and informal economies which are characterised by low pay, poor working conditions and inferior contractual arrangements. The two are related through their links to the operation of the labour market and to the question of income distribution.

The "hands off" policy advocated by some governments, such as that in the UK, has not been notably successful in generating new jobs in the formal economy. Attempts to reduce (or at least restrain the growth of) government involvement in the economy have seen significant reductions in the rate of increase in real government expenditure on goods and services (to below 1 per cent per annum since 1983). The growing social security bill, especially for unemployment benefits, has nevertheless resulted in total spending continuing to rise substantially faster. In conjunction with only modest reductions in personal taxation, the restraint on the growth of current expenditure on programs such as health and education has had a marked negative direct impact on employment (see Wilson, 1985). These policies have undoubtedly contributed to the reduction in inflation and have had some indirect beneficial effects on employment outside the public sector. Most of the jobs that have been created in this manner have however been insecure and low paid. In our view a much more active "hands on" policy regime is required, although this should not be seen as a recommendation for nationalisation or direct government involvement in job creation. There appear to us to be four main areas where more active government policy is required to stimulate employment: first, in maintaining the growth potential of the manufacturing sector; second, in stimulating a large-scale investment programme in infrastructure (both in traditional areas such as roads and housing and, possibly more importantly, in telecommunications); third, in reforming the method of provision of health and education services; and finally, in stimulating employment in small businesses and the informal economy.

While it is clear that high tech jobs in high tech industries are not going to provide job opportunities for large numbers of people, nevertheless, a strong case can be made that a country can ignore the needs of such industries at its peril. Unless the UK literally wants to become a "nation of shopkeepers" it is important to keep abreast of the latest developments in applied technology and manufacturing systems. This may require intervention by the state to encourage appropriate research and development and investment in capital equipment. The details of such a policy strategy lie outside the remit of the present report. However, some aspects are relevant here, notably the implications for education and training. Given the importance of sectors such as electronics and robotics for future prosperity, it is necessary to ensure that appropriate numbers of well-qualified persons are available to ensure that shortages in this area do not constrain growth prospects. Even today, with very high unemployment, most case study and survey evidence indicates growing shortages for key skills in electronics, engineering and computing. This is not the place to debate how real these shortages are (for a discussion see Bosworth and Wilson, 1981) but further work in this area may be crucial if such problems are to be avoided.

The second area where greater govenment involvement seems necessary is in facilitating a large-scale investment in infrastructure. Most of the political debate on this subject has concentrated on improvements to existing assets such as roads, housing and sewerage. The relative merits of such a policy compared with various alternatives, have been hotly disputed, although the main dispute remains whether public expenditure in this area will result in a net increase in employment or whether it will simply "crowd out" private expenditure and generate new inflationary pressures. (For a review, see Wilson, 1985.)

The discussion in Chapter 5 has however highlighted the need for an investment programme of a novel kind. This is to create a new communications infrastructure based on fibre optics and micro-computers. Authors such as Gershuny and Barras argue that this is crucial to the development of new products and services which could lead the next major boom. Although major steps in this direction have been made in countries such as France, progress in the UK is still very limited. Given the need for a comprehensive system based on common (and internationally agreed) standards, it seems unlikely that such a grand scheme can be undertaken without substantial government support. However, this does not necessarily mean that massive amounts of public money would be required, since it should be possible to persuade private investors to sub-contract for parts of the system.

The third area where policy changes seem necessary is in the public provision of health and education services. There is an urgent need here to develop new modes of provision which get around the difficulties of the current problems of financing. This entails making these services more responsive to customer needs but at the same time recognising the problems of rising costs and limited resources. The TUC (1985) has, however, pointed out the dangers of single-minded attempts to introduce competition into the public services. They argue that privatisation of cleaning services in schools and hospitals has resulted in declining standards of service, large job losses and poorer conditions of employment. This is not a necessary outcome, however. It is not clear why local education and health authorities are not able to obtain the levels of service they require by instituting competition between cleaning firms for example. Of course, it may be that the authorities cannot afford an adequate level of funding for such activities due to restraints on government expenditure, but this is an entirely separate issue. It is important that, if services are publically provided, they should use resources efficiently and it is apparent that this is often not the case. The problem is to develop systems which maintain the overall lvel and standards of the service while at the same time encouraging the efficient allocation and utilisation of resources. This applies not just at the level of providing cleaning services but right up to the sharp end of delivering educational or health services to the customer.

This is not the place to debate the relative merits of state versus private provision in health and education. Nevertheless, a few remarks are in order. It is clear that although systems vary between countries, most governments, directly or indirectly, play a major role in the provision of both services. Both services have some characteristics of a "public good", although the reasons for state involvement are as much to do with historical, institutional and political developments as economic factors. Most people's views of a civilised society would recognise the right of individuals to a basic education and to a minimum level of health care. The difficulty is that if this commitment is too open-ended it becomes impossible to maintain, particularly in the area of health care where equipment, drugs, and methods of treatment have become progressively more sophisticated and relatively much more expensive.

Private provision appears to offer a means of solving this dilemma since consumers then get what they pay for (and so do not waste resources) and producers are encouraged to allocate resources efficiently. On the face of it, private provision can be very successful. Appearances can be

deceptive however. One very important reason for the apparently superior performance of private as opposed to public provision is that the former discriminates and only serves a certain subset of the population. Thus many private health schemes explicitly "weed" out individuals with higher than average health risks. Private schools employ entrance examinations to cream off the more able students. Indeed, such "selectivity" bias actually makes matters worse in the public sector, which, in contrast, has to deal with all those who are excluded from the private sector.

For these reasons the case for continued state involvement in the provision of such services seems morally indisputable. Furthermore, for the same reasons, the existence of the private sector as presently constituted, is highly inequitable. This is not an arguement for the extension of state provision along current lines however. Rather it is a reason for believing that some form of minimum provision should be guaranteed by the state. How it is provided is a separate issue. It is here that the private sector seems to provide some important lessons in the benefits of the price mechanism in allocating resources efficiently. As noted in Chapter 5, various authors have offered suggestions about how modes of provision might be altered to achieve these objectives.

The final area where we see an important role for the government in stimulating employment is in the area of small businesses and the informal economy. We have seen that because of out-sourcing and sub-contracting the number of small businesses is likely to increase. Many of these may operate on the fringes of the formal economy. In addition, higher unemployment is likely to further stimulate activity in the black, mauve and grey economies. Present bureaucratic arrangements do not seem well geared to maximise the growth in employment in this area. Many would argue (see, for example, Shankland and Thomas, 1984) that to treat small businesses equally with large ones is to discriminate against them. More active measures may need to be undertaken to encourage their growth. One suggestion is to legistimise and legalise many of the activities in the black economy. At present the government receives no tax revenue from such activity (by definition) and probably expends a great deal of effort and resources to catch offenders. It might be more productive to increase tax thresholds and adopt other policies to draw such activity more into the formal economy and to actively stimulate its growth. To this end, removal of unnecessary bureaucratic red tape and regulations could bear fruit, although this may conflict with other policy objectives concerned with equity and conditions of employment as noted below.

Even if such policies were followed, unless they were very successful it seems unlikely that they would be able to make serious inroads into the current unemployment problem. Various other proposals have been made which are at least worthy of consideration. One possibility, on which there is quite widespread agreement, is on the advantages of reducing employers' National Insurance Contributions (Leach and Wagstaff, 1985; Wilson, 1985). The present tax system is still heavily biased against employment and a reduction of the tax burden in this area or a redistribution to other areas would correct this situation (see Lindley, 1986).

The second proposal that has been widely advocated, especially by the Trades Unions, is to reduce hours of work (see TUC, 1985; Shankland and

Turner, 1984, p. 181). This may take the form of reductions in average weekly hours, longer holidays or earlier retirement. Most economists (e.g. Hart, 1984) emphasise the impact that such a move would have on employers' costs and conclude that the immediate effect would be more likely to reduce than increase employment. A review of the historical evidence suggests that most of the pressure for hours reductions have come from the supply side. The observed reductions in hours over time have come about as consequence of a complex bargaining process, between employers and employees, on how the fruits of productivity improvements are distributed (Whitley and Wilson, 1986b). Consequently, any attempt to impose a reduction in hours upon employers is unlikely to have the desired effect of increasing employment. Rather, this has to come about through the normal collective bargaining process. Thus, although the scope for redistributing work through hours reductions is considerable, we do not see this as an area in which the government can make a useful contribution by intervention.

A third set of proposals have been concerned with the expansion of the Government SETMs (Layard, 1984; Davies and Metcalf, 1985; Lindley, 1986). It is clear that, compared with most alternative policies, SETMs are very cheap in terms of their PSBR cost per person removed from the unemployment register (Wilson, 1985). In the short term at least the expansion of such measures appears to offer the only hope to those groups most hard hit by unemploymnet. The main criticisms of such schemes are: the extent to which they may interfere with labour market adjustment processes; and that they create "unreal" jobs (or inadequate training places). Given the state of the labour market, it is difficult to set much store by the first criticism. The second one is more problematic. Although a case can be made for expanding the schemes as long as the value of the work done (or training given) exceeds the net cost of the scheme compared with paying out social security or unemployment benefits, the fact remains that they are sometimes regarded by both participants and the public at large as of little or no value. As noted in Chapter 4, it is very important for most people's self-esteem to feel that they have "earned" their income and that they are doing useful work. Although attempts are being made to make the various schemes less makeshift, this is inherently very difficult when placements are determined by a bureaucratic process rather than as the outcome of many individual decisions.

Various authors have taken the view that, while policies of the kind we have discussed above may help, a major reform of the mechanism for distributing income and work in our societies is necessary. Meade (1985), for example, argues that in a world dominated by multinational corporations and powerful trades unions the market mechanism can no longer be relied upon to promote full employment. Powerful groups are able to retain much of the benefits from technological progress in the form of higher profits or higher wages. The text book equalisation of wages across sectors does not occur because of increasingly segmented labour markets. In Meade's view, a new method of distributing income, not directly dependent upon employment, is therefore needed.

Standing (1985) also argues that radical reform is necessary to offset the trends towards increasingly insecure employment prospects for a large part of the labour force. While accepting that "flexibility" is important from the employers' viewpoint, he argues that the corresponding worsening in employment conditions for these workers involved needs to be recognised. He recommends the introduction of a

Social Dividend to replace existing means-tested social security and unemployment benefits and personal tax allowances. This could be paid to all adults and provide a basic income floor.

The advantages of such a scheme are numerous. A major socio-psycological one is that the stigma associated with means-tested social security benefits and unemployment would be removed. From an economic point of view, such a scheme would, by altering the relationship between income, paid and unpaid work and leisure, give workers more control over hours worked and employers more opportunities to adjust wages and employment conditions to reflect market conditions. It would, in principal, remove the "poverty trap" and thus provide direct incentives for working to supplement this basic income. Such a scheme could also remove the need for minimum wage agreements. Individuals would be free to bargain directly with employers. Having a basic income would give them some bargaining leverage to avoid employers being able to employ "sweated labour". Similarly, the need for government sponsored SETMs would be removed. If employers (including the public authorites) have a job that they want done, they can offer the opportunity at a wage reflecting its value to them. It would then be up to individuals to decide whether or not to take the job to supplement their basic income. The problem of "real" and "unreal" jobs therefore disappears. Similarly, if someone wants to do voluntary work or simply remain at home, this would reflect individual preferences. In combination with changes in tax policy as outlined above, it would also remove the need for many clandestine activities currently conducted within the black economy. A further advantage would be that it would probably lead to a sexual redivision of work, encouraging more men to work part-time. This could also improve the situation of those caught in "unemployment traps" as described by Pahl (1984).

Such a scheme would, of course, have its critics. The two most frequently voiced are: first its cost; and second, that on realistic assumptions the social dividend would need to be set at a very low level. In the light of the size of the current bill for social security and unemployment benefits, (some £40 billion per annum in the UK), the first criticism is rapidly losing force. The days of cheap social security systems are, given likely future trends in unemployment, long over. On the second point, it is clear from most estimates that, on a fiscally neutral basis, the level of a social dividend would need to be quite low. However, existing benefits are already low and the social dividend scheme would encourage individuals to earn additional taxable income. Moreover, there is no reason why it should be introduced on a fiscally neutral basis.

On balance the case for such a scheme seems overwhelming. Currently, the tax/benefit system and the labour market are both in a mess. The social dividend idea offers a means of improving both. It offers a hope of matching needs (social and economic) to supplies of people needing a useful activity to do, without necessarily increasing inflationary pressure or interfering in the market allocation process. Indeed, it would restore incentives and flexibility, encouraging a better allocation of resources and the creation of wealth.

The developments in: the industrial, occupational and qualificational structure of employment; the changing content of jobs; and the changing contractual arrangements that we have identified in previous chapters, all point towards the development of dual or divided economy. The

"dual" aspect is perhaps an oversimplification. Standing (1985), in fact identifies 5 segments. These are: first a small minority in stable, secure, high status jobs with a professional ethos; second, those in competitive but protected jobs, shielded from the worst effects of market forces by monopolistic unions or professional restrictive practices; third, mainly manual workers in declining industries whose skills have been made redundant by technological change; fourth, low-skilled jobs in services; and finally, those only marginally attached to the labour force including the unemployed.

Atkinson (1984) identifies two basic groups: the primary or core group of professional and highly skilled workers with good job prospects and job security (which correspond to the first and second of Standing's group plus some components of the third and fourth); and the secondary group which has a casual quality, low pay, poor conditions of employment and few prospects for advancement. The crucial point however is not the number of segments but the nature of the division. In particular, it is important to understand that what employers emphasise as improvements in flexibility or reductions in labour market rigidity, appear from the employee's viewpoint as greater insecurity and poorer conditions of employment.

It is important not to overstress the dual economy model. Many of the changes we have identified may, as Atkinson himself recognises, simply reflect marginal and opportunistic responses to recession. Nevertheless, it seems likely that the drive to reduce costs and increase flexibility will continue to reinforce the trends outlined in Chapter 4.

On the positive side, greater flexibility in work arrangements may encourage the development of new job opportunities whereas further regulation seems likely to further worsen prospects for job creation. Employment of a more flexible workforce comprising predominantly non-unionised females could perhaps add a new dynamic impetus to industry (see the Economist, 1986).

On the other hand, one of the major fears of many authors concerning the trends towards greater use of part-time, temporary and outworkers is that this offers opportunities for employers to exploit their labour force and to discriminate against women and minority groups. It is clear from the discussion in Chapter 4 that current regulations relating to equal pay and equal opportunities are often being outflanked by employers using such working patterns. Further research is needed into these issues to assess whether further regulatory changes are required to avoid discrimination and exploitation.

The emergence of a more divided and segmented labour market has a number of damaging social and economic consequences. The most obvious are the implications for equality of opportunity and the distribution of income. These provide additional reasons for thinking that a major reform of current methods of distributing income is necessary along the lines outlined above.

Another important implication of the dual labour market concerns training. There is a strong presumption that firms will only be willing to train workers in the core group performing highly firm-specific tasks. This implies a greater reliance on the state or the individual to provide general training. Furthermore, much of the secondary labour

force may receive no training at all.

Finally, a brief mention must be made of the regional implications of emerging trends. An excellent review of past and likely future developments is given in Wood (1985). He notes that the trends towards out-sourcing and sub-contracting, coupled with the overall changes in industrial structure identified in Chapters 2 and 5, are likely to continue the spatial polarisation of employment change observed in recent years. That is the decline of urban areas dependent on manufacturing industries, especially in the North; and the relative prosperity of free-standing towns and cities and their rural hinterlands, based mainly on services, especially in the South. Small new "hi-tech" firms or service companies are now free to locate more or less where they please, being no longer tied to traditional urban areas. This raises a further aspect of the segmentation of the economy, since it is apparent that such firms are tending to concentrate in very different parts of the country to those where unemployment is most severe. It is also important to recognise that there is often a severe mismatch of skills to reinforce the geographical disparities.

6.3 Recommendations on Data and Research

Although this study has highlighted a number of gaps in the existing information available on the labour market for the UK, it is important to stress that with the availability of many of the major data sources (summarised in Appendix B) in machine readable form, the situation has improved enormously over the last few years. Obviously, as researchers, we would like to have more data, more frequently and better harmonised. The position regarding the more conventional measures of employment structure such as industry, occupation and qualification is however now much improved. The sample sizes of some of the surveys are however small and there remains a need for more reliable data to supplement those available from Censuses of Population, especially for lower level and intermediate qualifications. Moreover, the limitations of industrial employment estimates based on censuses which are less frequent than annual, has become painfully apparent in the substantial revisions that have been necessary in recent years.

The main remaining gaps are as follows.

(i) There are few data relating to job content, skill levels, tasks, undertaken and aptitudes required. Information of this kind would be invaluable in assessing how the nature of jobs is changing and answering questions relating to the link between education, productivity and job requirements.

(ii) There are gaps concerning temporary, casual, feelance and outwork. Past surveys for the UK have been conducted at ad hoc intervals. More regular and consistent surveys are required. There are various conceptual problems here with current systems of classification which fail to distinguish this aspect of the employment contract. There are also quite difficult problems of definition which remain unresolved.

(iii) There is the very large area concerned with the informal economy. Again there are some very major conceptual problems with measurement here. There are numerous ad hoc surveys which

offer useful insights, but there is a need for harmonisation and more systematic use of such data. Surveys currently being conducted under the ESRC's "Social Change and Economic Life" initiative should fill some major gaps but there will still be a need for more frequent and regular surveys. Under this same heading we would also include information on the allocation of household time which has in the past been conducted by the BBC for its own purposes.

(iv) There is a need for better information on self-employment. In particular, data are required which distinguish labour only sub-contractors from freelances and small businesses including the genuine entrepreneur.

(v) Finally, there is a need for more frequent data of an input-output kind to analyse the sources of demand for services and, in particular, to separate out the demands by consumers and producers. Better and more detailed information on the output of the service sector is also urgently required.

Turning to recommendations for research, there are a number of areas where further work is needed.

(i) There is still a great deal more work needed on the relationship between education and training and productivity. This is very important if resources are to be allocated efficiently. The development of skill demand/supply models in key areas in order to identify potential areas of shortage is a related area of work. Both these suggestions apply equally to lower and intermediate level qualifications as to higher levels.

(ii) There is scope for considerably more work on the development of the so called secondary labour market. This should involve basic research to identify on-going trends as well as the development of empirical tests of the hypotheses proposed by Atkinson et al.

(iii) Further research on the size, nature and growth of the informal economy is highly desirable. This should encompass black, mauve and grey economies as defined in Chapter 2. As noted above the ESRC initiative will fill many of the gaps in our knowledge but much will remain to be done.

(iv) Related to the previous item, is the need to develop more comprehensive empirical models of the household labour supply/consumption decision making process which encompasses the domestic provision of services.

(v) Additional research on subcontracting and out-sourcing is needed in order to identify the causes of these developments and to assess their implication for the future.

(vi) There is a need to test empirically the sort of model developed by Gershuny. This includes elements already mentioned in the previous two points. The CGP model appears to provide a basic framework which could, with some modification, be used to quantify the qualitative model that Gershuny has outlined.

(vii) Further work is required to evaluate the effects of government SETMs compared with other policies to reduce unemployment.

(viii) Finally, considerably more research is required into the implications of introducing a social dividend, including its overall costings and macroeconomic implications as well as its microeconomic effects on labour supply and demand.

Appendix A : Shift Share Analysis

Details are give here of the shift-share analysis used in Chapter 3. Consider first the analysis of industrial and occupational employment change. If we define E_{ijt} as the level of employment in industry i and occupation j in year t, then the overall change between years t and t+1 can be decomposed into four parts as described below.

We begin with some definitions. Let m be the number of occupations and n the number of industries, then:-

total employment in industry i, $$INDTOT_{it} = \sum_{j=1}^{m} E_{ijt} \quad (1)$$

total employment in occupation j, $$OCCTOT_{jt} = \sum_{j=1}^{n} E_{ijt} \quad (2)$$

total industrial employment, $$TOT_t = \sum_{i=1}^{n} INDTOT_{it}$$

$$= \sum_{j=1}^{m} OCCTOT_{jt} \quad (3)$$

total share of industry i, $$TINDSH_{it} = \frac{INDTOT_{it}}{TOT_t} \quad (4)$$

total share of occupation j, $$TOCCSH_{jt} = \frac{OCCTOT_{jt}}{TOT_t} \quad (5)$$

share of occupation j in industry i, $$OCCSH_{ijt} = \frac{E_{ijt}}{INDTOT_{it}} \quad (6)$$

share of industry i in occupation j, $$INDSH_{ijt} = \frac{E_{ijt}}{OCCTOT_{jt}} \quad (7)$$

The first component of change is termed the scale effect (SC_{ij}). This measures the change in E_{ijt} that would have occurred if it had grown (or declined) at the same rate as employment in all industries and all occupations. The scale effect for each occupation by industry cell can be calculated as,

$$SC_{ij} = \frac{TOT_{t+1}}{TOT_t} \times E_{ijt} - E_{ijt} \quad (8)$$

Note that $$\sum_{i=1}^{n} \sum_{j=1}^{m} SC_{ij} = TOT_{t+1} - TOT_t \quad (9)$$

The second component of change is termed the industrial effect (IND_{ij}). This is the increase that would have occurred if there was no scale effect and occupational structure within each industry did not change. The industry effect for each cell is given by,

$$IND_{ij} = \frac{INDTOT_{it+1} \times E_{ijt}}{INDTOT_{it}} - \frac{TOT_{t+1} \times E_{ijt}}{TOT_t} \qquad (10)$$

Summing across industries gives us the industry effects as shown in Tables 3.1 - 3.3,

$$TIND_j = \sum_{i=1}^{n} IND_{ij} \qquad (11)$$

Note that (10) can be rewritten as follows,

$$IND_{ij} = \frac{E_{ijt}}{INDTOT_{it}} \left[INDTOT_{it+1} - \frac{TOT_{t+1}}{TOT_t} INDTOT_{it} \right]$$

$$= OCCSH_{ijt} \times \left[TINDSH_{it+1} \times TOT_{t+1} - TOT_{t+1} \times TINDSH_{it} \right]$$

$$= OCCSH_{ijt} \times TOT_{t+1} \left[TINDSH_{it+1} - TINDSH_{it} \right] \qquad (12)$$

If we define $TINDSH_{it+1} - TINDSH_{it} = D_i$, then from (11),

$$TIND_j = \sum_{i=1}^{n} TOT_{t+1} \times OCCSH_{it} \times D_i \qquad (13)$$

Multiplying through by the scalar TOT_t/TOT_{t+1} and using (4) and (6) we obtain,

$$TIND_j = \sum_{i=1}^{n} \frac{E_{ijt}}{TINDSH_{it}} \times D_i \qquad (14)$$

Summing over all occupations,

$$\sum_{j=1}^{m} TIND_j = \sum_{j=1}^{m} \sum_{i=1}^{n} E_{ijt} \times \frac{D_i}{TINDSH_{it}} \qquad (15)$$

which from (1) gives,

$$\sum_{j=1}^{m} TIND_j = \sum_{i=1}^{n} INDTOT_{it} \times \frac{Di}{TINDSH_{it}}$$

$$= \sum_{i=1}^{n} TOT_t \times TINDSH_{it} \times \frac{D_i}{TINDSH_{it}}$$

$$= \sum_{j=1}^{n} TOT_t \times D_i \qquad (16)$$

Therefore, since $\sum_{i=1}^{n} D_i = 0$, $\sum_{j=1}^{m} TIND_j = 0$

i.e. the sum of all industrial effects over all occupations is zero.

The third component is termed the occupational effect (OCC_{ij}). This is analagous to the industry effect and is defined as the change that would have occurred if there was no scale effect and the industrial deployment of each industry remained unchanged.

The occupational effect for each cell is given by,

$$OCC_{ij} = \frac{OCCTOT_{jt+1}}{OCCTOT_{jt}} \times E_{ijt} - \frac{TOT_{t+1}}{TOT_t} \times E_{ijt} \qquad (17)$$

Summing across industries gives the occupational effect as shown in Tables 3.1 - 3.3,

$$TOCC_j = \sum_{i=1}^{n} OCC_{ij} \qquad (18)$$

It can be shown in an analagous fashion to that used above that

$$\sum_{j=1}^{m} TOCC_j = 0 \qquad (19)$$

The remaining change can be divided up into two parts: first an industry-specific occupation effect (ISO_{ij}), and finally, an interactive effect (INT_{ij}) which represents the combined effects of changes in industrial and occupational structure that cannot be separated out.

Algebraically, the industry-specific occupation for effect for each cell is defined as,

$$ISO_{ij} = \left[TOT_{t+1} \times TINDSH_{it} \times OCCSH_{ijt+1} - \frac{TOT_{t+1}}{TOT_t} \times E_{ijt}\right] - OCC_{ij} \qquad (20)$$

Summing across industries gives the industry-specific occupational effect as shown in Tables 3.1 - 3.3,

$$TISO_j = \sum_{i=1}^{n} ISO_{ij} \qquad (21)$$

The interactive effect is simply a residual

$$INT_{ij} = E_{ijt+1} - E_{ijt} - IND_{ij} - OCC_{ij} - ISO_{ij} - SC_{ij} \qquad (22)$$

Again the sum of INT_{ij} across all industries and all occupations is zero.

The definitions of industrial and occupational effects used here differ slightly from those used in IER (1986) and Gershuny (1983). The main differences are that the definition of the industrial effect used in these other sources incorporates the scale effect as defined here, and the occupational effect includes the industry-specific occupational effect as well as the interactive effect. In addition the IER (1986) results are based on separate analyses for males and females which were then summed. The present analysis was conducted on total employment.

The analysis of qualificational changes in Tables 3.5 and 3.6 is exactly analagous. Here occupations are the "i" dimension (i =1,56) and qualifications the "j" dimension (j=1,2).

In Table 3.6 we also distinguish an occupation-specific qualificational effect (OSQ_{ij}). This measures the increase in the numbers of highly qualified persons that would have arisen if the overall level of employment and its occupational structure was unchanged but occupation specific shares were allowed to alter as observed, net of the overall qualificational effect.

The overall qualificational effect ($QUAL_{ij}$) is defined using analagous notation to that used above as,

$$QUAL_{ij} = \frac{QUALTOT_{jt+1}}{QUALTOT_{jt}} \times E_{ijt} - \frac{TOT_{t+1}}{TOT_t} \times E_{ijt} \qquad (23)$$

where j = 1,2. Defining the share of occupation i of those qualified at level j,

$$TOCCSH_{it} = \frac{OCCTOT_{it}}{TOT_t} \qquad (24)$$

and the share of qualified at level j in occupation i

$$QUALSH_{ijt} = \frac{E_{ijt}}{OCCTOT_{it}} \qquad (25)$$

then $$OSQ_{ij} = \left[TOT_{t+1} \times TOCCSH_{it} \times QUALSH_{ijt+1} - \frac{TOT_{t+1}}{TOT_t} \times E_{ijt}\right] - QUAL_{ij} \qquad (26)$$

Appendix B : Information on UK Data Sources

This appendix gives details of the main UK data sources relating to employment structure that have been consulted. Table B1 gives the following details for each source:

1. National title of source
2. General purpose
3. Sponsor
4. Who it is conducted by
5. Frequency of collection
6. Population represented
7. Sample size and method
8. Method of collecting data
9. Form of storage

Tables B2 - B8 then provide details of the kinds of information available on employment, unemployment, special employment and training measures, mobility and turnover and other miscellaneous data.

Table B1 General Information on Relevant Data Sources for the UK

	DATA SOURCES		
1. National title of source:	A) Census of Employment	B) Census of Population	C) Labour Force Survey
2. General purpose:	Accurate census of national, regional and industrial employment levels.	General census.	General survey of labour force as part of EEC/SOEC initiative.
3. Sponsor:	Government	Government	Government
4. Conducted by:	Department of Employment	Office of Population Censuses and Surveys.	Office of Population Censuses and Surveys.
5. Frequency of collection:	Annually 1971-1978 thereafter every 5 years. Latest survey is for 1981 although the published results are supplemented by information from other sources to produce a continous time series up to 1985.	Usually every 10 years (eg. 1961, 1971, 1981). Latest survey is for 1981.	Biannually 1973-1983 thereafter annual. Some information is available form the 1984 survey.
6. Population represented:	All employees.	All	All households in Great Britain.
7. Sample size and method:	Full survey of larger establishments (>10 employees). Simplified questionnaire for the smaller ones.	100% survey. 10% analysis of certain results on economic activity.	0.5% sample.
8. Method of obtaining data:	Official postal survey.	Official postal survey.	Voluntary survey conducted by interview.
9. Form of storage:	Machine-readable in principle, currently mainly in form of tabulations.	Machine-readable in principle.	Machine-readable.

Table B1 (continued)

	DATA SOURCES				
1] National title of source:	D] New Earnings Survey	E] Workplace Industrial Relations Survey	F] General Household Survey	G] Family Expenditure Survey	[1
2] General purpose:	Comprehensive survey of the earnings and hours of employees.	Survey of industrial relations.	General household survey of social change	General household survey of income and expenditure.	[2
3] Sponsor:	Government	Department of Employment/Policy Studies Institute/Economic and Social Research Council.	Government	Government,(Department of Employment).	[3
4] Conducted by:	Department of Employment	DE/PSI	Office of Population Censuses and Surveys.	Office of Population Censuses and Surveys.	[4
5] Frequency of of collection:	Annually since 1971. Latest survey is for 1985, although data in machine-readable form is only available up to 1982.	1980 and follow-up 1984 The results of the 1984 survey are not yet available.	Annual since 1971 The latest survey for which results have been published is 1983	Annual since 1968 The latest results published are for 1984 but machine readable data are available only up to 1983	[5
6] Population represented:	All employees in Great Britain.	All establishments with than 25 employees, in Great Britain, excluding agriculture and coal mining.	All households in Great Britain.	All households in Great Britain.	[6
7] Sample size and method:	1% sample of PAYE employees (therefore excludes some part-timers who are not on PAYE).	Random sample of about 3300 establishments based on listing from the 1977 Census of Employment.	Continuous, rotating survey of about 12 thousand households each year.	Continuous, survey of about 10 thousand households each year.	[7
8] Method of obtaining data:	Official survey directed at employers.	Interviews with management and workers.	Voluntary, interview.	Voluntary, interview.	[8
9] Form of storage:	Currently becoming available in machine-readable form.	Machine-readable.	Machine-readable in principle but not held at Warwick.	Machine-readable	[9

Table B2

National title of source	10 Employment								
	10.1 Demographic characteristics			10.2 Employment status					
	Sex	Age	Marital status	Employee	Self-employed	Full/Part time	Permanent /Temporary	Home worker	
A] Census of Employment	X			X		X			[A
B] Census of Population	X	X	X	X	X	X			[B
C] Labour Force Survey	X	X	X	X	X	X	X	X	[C
D] New Earnings Survey	X	X		X		X			[D
E] Workplace Industrial Relations Survey	X	X	X	X		X			[E
F] General Household Survey	X	X	X	X	X	X			[F
G] Family Expenditure Survey	X	X	X	X	X	X			[G

Table B3

National title of source	10 Employment							
	10.3 Industrial classification			10.4 Occupational classification				
	1980 SIC	1980 SIC class 1-9	1968 SIC orders	Full 1980 OPCS (compatable with ISCO)	CODOT in principle	Manual/ Non-manual	Broad socio/econ group	
A] Census of Employment	X(a)							[A
B] Census of Population	X			X				[B
C] Labour Force Survey	X(b)			X(a)				[C
D] New Earnings Survey	X(b)				X			[D
E] Workplace Industrial Relations Survey			X(c)			X		[E
F] General Household Survey		X					X	[F
G] Family Expenditure Survey			X				X(d)	[G

Notes: (a) Excludes H.M. Forces, Private Domestic Service, and Agriculture. Comparable data are, however, published for the first and last of these from other sources.
(b) Available in principle but sample size limits degree of detail attainable.
(c) Data published for aggregates of 1968 SIC orders.
(d) Seven broad groups.

Table B4

National title of source	10 Employment						
	10.5 Spatial Classification		10.6 Hours of work				
	Local labour market	Regions	Full/Part time only (<30 hrs.)	Annual hours, average or 'normal' weekly hours short/over time etc.	Limited info	Some info on average weekly hrs	
A] Census of Employment	X		X				[A
B] Census of Population	X		X(a)				[B
C] Labour Force Survey		X		X(b)			[C
D] New Earnings Survey		X	X(a)	X			[D
E] Workplace Industrial Relations Survey					X		[E
F] General Household Survey		X			X		[F
G] Family Expenditure Survey		X				X	[G

Notes: (a) Information on some, but not all part time workers.
(b) For selected years only.

Table B5

National title of source	10 Employment						
	10.7 Vocational training whilst employed			10.8 Other			
	See 14.1 below 'Qualifications'	Some for selected years	Limited	Ethnic origin	Size of establishment	Mobility, training info for selected years	
A] Census of Employment					X(a)		[A
B] Census of Population	X						[B
C] Labour Force Survey		X		X			[C
D] New Earnings Survey		X				X	[D
E] Workplace Industrial Relations Survey			X		X		[E
F] General Household Survey	X			X			[F
G] Family Expenditure Survey							[G

Notes: (a) Implicit, but not published.

Table B6

National title of source	11 Unemployment				12 Special employment and training measures		
	11.1 Definition of unemployment	11.2 Disaggregation of unemployment	11.3 Nature of data		12.1 Adults	12.2 Young people	
	Survey based	As for Employment See 10. above	Stocks	Duration	Some information	Some information	
A] Census of Employment							[A
B] Census of Population	X	X	X				[B
C] Labour Force Survey	X	X	X		X	X	[C
D] New Earnings Survey							[D
E] Workplace Industrial Relations Survey							[E
F] General Household Survey	X	X	X	X	X	X	[F
G] Family Expenditure Survey	X		X	X			[G

Table B7

National title of source	13 Mobility and turnover						
	13.1 Job changing (within employing organisation)	13.2 Job changing (between employing organisations)	13.3 Inter-industrial	13.4 Inter-occupational	13.5 Spatial	13.6 Movements into and out of the labour force	
A] Census of Employment							[A
B] Census of Population	.....Some information will be available in due course comparing 1971 and 1981...						[B
C] Labour Force Survey	.....Limited information via retrospective question.....						[C
D] New Earnings Survey							[D
E] Workplace Industrial Relations Survey							[E
F] General Household Survey	.....Some information.....						[F
G] Family Expenditure Survey							[G

Table B8

National title of source	14 Others						
	14.1 Educational and vocational qualifications of labour force		14.2 Earnings	14.3 Income (personal /household)		14.4 Other	
	Detailed info on educational qualifications	Broad details of qualifications	Some	Some	Detailed on household income and expenditure		
A] Census of Employment							[A
B] Census of Population	X						[B
C] Labour Force Survey	X						[C
D] New Earnings Survey							[D
E] Workplace Industrial Relations Survey							[E
F] General Household Survey		X	X	X			[F
G] Family Expenditure Survey					X		[G

References

Adams, Mark and Pamela Meadows (1985). 'The Changing Graduate Labour Market'. Gazette. September, pp. 343-51.

Alden, J. (1977). 'The Extent and Nature of Double Job Holding in Great Britain'. Industrial Relations Journal, Vol.8, No.3, pp. 14-33.

Armstrong, P.J. (1984). 'Work, Rest or Play? Changes in Time Spent at Work'. in Marstrand, P. (ed.). New Technology and the Future of Work and Skills. London: Frances Pinter.

Ashenfelter, O. (1980). 'Unemployment as Disequilibrium in a Model of Aggregate Labour Supply'. Econometrica, Vol.48, No.3, pp. 547-64.

Australian Bureau of Statistics, Alternative Working Arrangements, ABS 6341.0 Canberra : ABS.

Atkinson, A.J. (1984). 'Emerging UK Work Patterns'. In Flexible Manning: The Way Ahead, Institute of Manpower Studies Report No. 88, University of Sussex.

Atkinson, A.J. (1985). 'The Changing Corporation' in Clutterbuck, D. (ed.) New Patterns of Work. Aldershot : Gower Press.

Bannock, G. (1981). 'The Clearing Banks and Small Firms'. Lloyds Bank Review, No.142, pp. 15.

Barker, T.S. (1981). 'Projecting Economic Structure with a Large Scale Econometric Model'. Futures. Vol.13, No.6, pp. 458-67.

Barker, Terry and W. Peterson (eds.) (1986). The Cambridge Multisectoral Dynamic Model. Cambridge : Cambridge University Press (forthcoming).

Barras, R. (1984). 'Information Technology and Economic Perspectives : The Case of Office Based Services'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

Bawly, D. (1982). The Subterranean Economy. New York : McGraw Hill.

Beckerman, W. (1978). Measures of Leisure, Equality and Welfare. Paris : Organisation for Economic Cooperation and Development.

Berg, I. (1970). Education and Jobs : the Great Training Robbery. Praege, for the Centre for Urban Education.

Blanchflower, D. and B. Corry, (1985). Part-Time Employment in Great Britain : An Analysis Using Establishment Data. Report to the Department of Employment. Coventry : Institute for Employment Research, Warwick University.

Blanchflower, D. and P. Elias (1985). 'Male Part-Time Employment'. Labour Market Quarterly Report. Manpower Services Commission.

Blandy, Aurid (1984). 'New Technology and Flexible Patterns of Working Time'. Department of Employment Gazette, October, pp. 439-44.

Blanpain, R. and J.L. Drubigny (1980). 'Temporary Employment in the Countries of the EEC'. Commission of the European Communities, Study 79/52.

Boswell, J. (1973). The Rise and Decline of Small Firms. London : George Allen and Urwin.

Bosworth, D.L. (1985). The Economics of Labour Utilisation, Final Report by the National Institute for Labour Studies to the South Australian Department of Labour, Adelaide : NILS, Flinders University.

Bosworth, D.L. (1986). Work Patterns and Optimal Capital Utilisation in British Manufacturing Industry. Institute for Employment Research, University of Warwick, Research Report.

Bosworth, D.L. and P.J. Dawkins (1978). 'Proposed Changes in the Extent and Nature of Shiftworking : Some Important Policy Issues'. Personnel Review. Vol.7, No.4, pp. 32-35.

Bosworth, D.L. and P.J. Dawkins (1980). 'Compensation for Workers Disutility: Time of Day, Length of Shift and other Features of Work Patterns'. Scottish Journal of Political Economy. Vol.27, No.1, pp. 80-96.

Bosworth, D.L. and P.J. Dawkins (1981). Work Patterns - An Economic Analysis. Gower.

Bosworth, D.L. and P.J. Dawkins (1981). 'Private and Social Costs and Benefits of Shift and Night Work' in Reinberg, A., Vieux, N. and P. Andlauer (eds.) Night and Shiftwork : Biological and Social Aspects, Oxford : Pergamon Press.

Bosworth, D.L. and P.J. Dawkins (1984). 'Shiftworking and Perceived Working Conditions : An Empirical Analysis'. Seminar Paper No.9, in Wedderburn, A. and P. Smith (eds.) Psychological Approaches to Night and Shiftwork, International Research Papers, Edinburgh : Heriot-Watt University.

Bosworth, D.L. and A.J. Westaway (1986). 'Labour Hoarding, Discouraged Workers and Recorded Unemployment : An International Comparison'. (mimeo). Coventry: Institute for Employment Research, University of Warwick.

Bosworth, D.L. and R.A. Wilson (1981). 'Does Britain Need More Engineers?'. Journal of Industrial Affairs. Vol.9, No.1, pp. 1-11.

Brack, J. and K.G. Cowling (1980). 'Advertising and Hours of Work in U.S. Manufacturing, 1919-75'. Warwick Economic Research Paper 178. Mimeo.

British Broadcasting Corporation (1965). The Peoples' Activities. London : BBC.

British Broadcasting Corporation (1978). The Peoples' Activities and Use of Time. London : BBC.

British Broadcasting Corporation (1984). Daily Life in the 1980s. London : BBC.

Bruegel, I. (1979). 'Women as a Reserve Army of Labour : A Note on Recent British Experience'. Feminist Review. No.3, pp. 12-23.

Bruegel, I. (1983). 'Women's employment, legislation and the labour market'. Chapter 7 in J. Lewis (ed.) Women's Welfare, Women's Rights. London : Croom Helm.

Burton, J. (1979). The Job Support Machine : A Critique of the Subsidy Morass. London : Centre for Policy Studies

Cambridge Econometrics (1985). Forecast Report, June 1985. Cambridge Econometrics: Cambridge.

Cambridge Economic Policy Review (1982). 'Employment Problems in the Cities and Regions of the UK: Prospects for the 1980s'. Cambridge Economic Policy Review, Vol.8, No.2, Gower, Aldershot, Hants.

Carter, F.A. and E.N. Corlet (1982). Review of the European Formations' Research into Shiftwork 1977-80. The Effect on Living and Working Conditions and Recommendation for Improvements. Dublin : European Foundation for the Improvement of Living and Working Conditions.

Clark, C. (1958). 'The Economics of Housework'. Bulletin of the Oxford Institute of Statistics. May, pp. 205-11.

Clark, J. (1984). Technological Trends and Employment: 2 Basic Process Industries. Gower.

Clutterbuck, D. (1985). 'Linked Subcontracting' in Clutterbuck, D. (ed.) New Patterns of Work Aldershot : Gower Press.

Clutterbuck, D. (1985). 'New Patterns of Work in the UK, Europe and America'. BACIE Journal, January/February, pp. 11-13.

Creigh, S., Roberts, C., Gorman, A., and P. Sawyer, (1985). 'Self-Employment in Britain : Results for the Labour Force Surveys 1981-1984'. Department of Employment, Employment Gazette London : HMSO.

Cross, M. (1983). 'The United Kingdom' in Storey, D.J. (ed.). The Small Firm : an International Survey. London : Croom Helm

Daniel, W.W. and N. Millward (1983). Workplace Industrial Relations In Britain. Heinemann: London.

Davies, G. and D. Metcalf (1985). 'Generating Jobs. The Cost Effectiveness of Tax Cuts, Public Expenditure and Special Employment Measures in Cutting Unemployment'. Simon and Coates Discussion Paper.

Deiter, J.C. (1966). Moonlighting and the Short Work Week, South Western Social Science Quarterly, December.

Department of Employment (1983). 'Census of Employment: Final Results for September 1981'. Department of Employment Gazette. Occasional Supplement No.2, Vol.91,12.

Department of Employment (1985). 'Revised Estimates from the 1983 Labour Force Survey'. Department of Employment Gazette. March, pp. 109-113.

Department of Employment (1985). Special Exemption Orders, Department for Employment Gazette Monthly. London : HMSO

Department of Employment (1985). 'Shipbuilding, Engineering and Chemicals : Earnings'. Department of Employment Gazette (Biannually). London : HMSO.

Department of Employment (1986). 'Classification of Economic Activity'. Department of Employment Gazette, January, pp. 21-27.

Department of Employment (No date). The Redundancy Payments Scheme. Eleventh Revision. HMSO : London.

Department of Trade and Industry (1981). 'Analysis of British Businesses by Turnover Size'. British Business. 23rd January, pp. 183-5.

Department of Trade and Industry (1984). 'Businesses Analysis by Turnover Size 1984'. British Business. 14th December, pp. 668-9.

Department of Trade and Industry (1984). 'Companies Registered in Great Britain'. British Business. 14th December, pp. 667.

Department of Trade and Industry (1982). 'More Companies than ever'. British Business. 13th July.

Disney, R. and E.M. Szyszzcak (1984). 'Protective Legislation and Part-Time Employment in Britain'. British Journal of Industrial Relations, Vol.22, No.1, pp. 78-100.

Dunne, J.P. and R.P. Smith (1982). 'The Allocative Efficiency of Government Expenditure - Some Comparative Tests'. European Economic Review, Vol.20, pp. 381-94.

Dutton, P.A. (1984). YTS - Training for the Future? Institute for Employment Research, Research Paper, IER RP79, University of Warwick.

Dutton, P.A. (1985). 'The Demand for and Supply of Engineering Craftsmen and Technicians Within the Engineering Industry to 1989'. Institute for Employment Research, University of Warwick (mimeographed).

Economist (1986). 'Why Women get the Jobs'. August 23, pp.11-12.

Elias, D.P.B. (1982). 'The Regional Impact of National Economic Policies: A Multi-Regional Simulation Approach for the UK'. Regional Studies, Vol.16, pp. 335-44.

Elias, D.P.B. (1985). 'A Proposed Set of Broad Occupational Categories'. Institute for Employment Research, University of Warwick (mimeographed).

Elias, D.P.B. (1985). 'Changes in Occupational Structure, 1971-81'. Papers presented to the Edinburgh Survey Methodology Group, Edinburgh, 14th February. Institute for Employment Research, University of Warwick.

Elias, D.P.B. and B. Main (1982). Women's Working Lives. Institute for Employment Research Report, University of Warwick.

Elias, D.P.B. and G. Keogh (1982). 'Industrial Decline and Unemployment in the Inner City Areas of Great Britain: A Review of the Evidence'. Urban Studies, Vol.19, pp. 1-16.

European Foundation (1983). Catalogue of Publications in Print. EF/83/23/EN Dublin : European Foundation for the Improvement of Living and Working Conditions.

Faundez, Julio (1985). Special Employment Measures in Great Britain. Institute for Employment Research Report, University of Warwick.

Feige, E. (1981). 'The UK's Unobserved Economy : A Preliminary Assessment'. Journal of Economic Affairs. July, Vol.1, No.4, pp. 205.

Fothergill, G. and S. Gudgin (1982). Unequal Growth: Urban and Regional Employment Change in the UK. Heinemann: London.

Freeman, C. (1985). Technological Trends and Employment: 4 Engineering and Vehicles. Gower.

Freeman, C. and L. Soete (1985). Information Technology and Employment : An Assessment. Science Policy Research Unit, University of Sussex.

Freeman, R.B. (1971). The Labour Market for College Trained Manpower. Cambridge : Harvard University Press.

Freeman, R.B. (1976). 'A Cobweb Model of the Supply and Starting Salary of New Engineers'. Industrial and Labour Relations Review, Vol.29, No.2, pp. 236-48.

Gallie, D. (1985). 'The Social Change and Economic Life Initiative: An Overview'. (Mimeographed).

Garbarino, J. (1964). 'Fringe Benefits and Overtime as Barriers to Expanding Employment'. Industrial and Labour Relations Journal, Vol.17, April, pp. 426-42.

Gershuny, J.I. (1983). Social Innovation and the Division of Labour. Oxford : Oxford University Press.

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Gershuny, J. (1985). 'New Technology - What New Jobs?' Industrial Relations Journal, Vol.16, No.3, Autumn 74-84.

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Gershuny, J. and I.D. Miles (1985). 'Towards a New Social Economics'. Chapter 1 in B. Robert, R.Finnegan and D. Gallie (1985) - New Approaches to Economic Life. Manchester University Press, Manchester.

Goldschmift - Clermont, L. (1982). Unpaid Work in the Household : a Review of Economic Evaluation Methods. Women, Work and Development I. Geneva : International Labour Office.

Gronau, R. (1973). The Intra-Family Allocation of Time : the Value of Housewives' Time. American Economic Review. Vol.63, No.4, pp. 634-51.

Guy, K. (1984). Technological Trends and Employment: 1 Basic Consumer Goods. Gower.

Hakim, C. (1984a). 'Homework and Outwork: National Estimates from two Surveys'. Department of Employment Gazette. Vol.92, No.4, pp. 7-12.

Hakim, C. (1984b). 'Employers' Use of Homework, Outwork and Freelances'. Department of Employment Gazette. Vol. 92, No. 4, pp. 144-150.

Hakim, C. (1985). Employers' Use of Outwork. Research Paper No. 44. London : Department of Employment.

Handy, C. (1984). The Future of Work. Oxford : Blackwell.

Harland, J. and I. (1986). Beyond Graduation : The College Experience. SRHE and NFER - Nelson.

Hart, R.A. (1984). 'Worksharing and Factor Prices'. European Economic Review, Vol.24, pp. 165-88.

Hart, R.A. and T. Sharot (1978). 'The Short-Run Demand for Workers and Hours : A Recursive Model'. Review of Economic Studies, Vol.45, pp. 299-309.

Hawrylyshyn, O. (1978). 'Estimating the Value of Household Work in Canada, 1971', Statistics Canada, 1978, pp. 7.

Heertje, A., Allen, M. and H. Cohen (1982). The Black Economy. London : Pan Books.

Huws, U. (1984). 'New Technology Homeworkers'. Department of Employment Gazette. London : HMSO. January, pp. 13-17.

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Income Data Services, (1979). Shift and Unsocial Hours Payments. Study 207, December. London : IDS.

Income Data Services, (1982). CAD : Agreements and Pay. Study No. 276, October. London : IDS.

Income Data Services (1983). Shift and Unsocial Hours Payments. Study No. 287, March. London : IDS.

Income Data Services (1983). Temporary Workers. Study 295. August. London : IDS.

Industrial Facts and Forecasting (1978). Shiftwork in Manufacturing Industry : Great Britain. Research Report to the European Foundation for the Improvement of Living and Working Conditions. London : IFF.

Industrial Relations Review and Reports (1984). 'Part-time Work - A Survey'; No. 320, May, pp. 2-9.

Institute for Employment Research (1985/6). Review of the Economy and Employment (2 parts). Institute for Employment Research, University of Warwick.

Jahoda, M. (1984). 'Unemployment - Curse of Liberation' in Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Jahoda, M. (1982). Employment and Unemployment : A Social Psychological Analysis, Cambridge : Cambridge University Press.

Kaldor, N. (1966). Causes of the Slow Rate of Growth in the United Kingdom. Cambridge : Cambridge University Press.

Lauener, P., P. Mawson and E. Hill (1985). 'Review of CODOT'. Manpower Services Commission, (mimeographed).

Layard, R. (1984). 'More Jobs Without More Public Borrowing'. Centre for Labour Economics, Working Paper No. 686, London School of Economics.

Leach, D. and H. Wagstaff (1986). Future Employment and Technological Change, Kogan Press.

Leighton, P.E. (1983). 'Contractual Arrangements in Selected Industries'. Department of Employment Research Paper No. 39.

Lewis, W.A. (1978). Growth and Fluctuations, 1870-1913. London : Allen and Urwin.

Lindley, R.M. (1986). 'Labour Demand : Microeconomic Aspects of State Intervention'. in P.E Hart (ed.) Unemployment and Labour Market Policies. pp. 154-180.

Luce, G.G. (1973). Body Time : The Natural Rhythms of the Body. St. Albans : Granada.

Macafee, K. (1980). 'A Glimpse of the Hidden Economy in the National Accounts', Economic Trends, February, pp. 81-.

Manpower Services Commission (1985). 'Second Jobbing', Special Feature. Labour Market Quarterly Report. September, pp. 6-7.

Manpower Services Commission (1985). 'Temporary Work in Great Britain'. Labour Market Quarterly Report, November, pp. 7-11.

Meade, James (1983). 'A New Keynesian Approach to Full Employment'. Lloyds Bank Review, No.150, pp. 1-18.

Meager, N. (1986). 'Temporary Work in Britain'. Department of Employment Gazette. January London : HMSO. pp. 7-15.

Miles, I. (1983). 'Adaptation to Unemployment', Occasional Paper. Brighton : Science Policy Research Unit, University of Sussex.

Minford, P. (1983). Unemployment : Cause and Cure. Oxford : Martin Robertson.

Ministry of Labour (1965). 'Shiftworking', Ministry of Labour Gazette. London : HMSO, pp. 148-55.

Moy, J. and C. Sorrentimo (1982). 'Unemployment and Labour Force : Trends in Ten Industrial Nations - An Update', Monthly Labour Review (November) pp. 17-21.

National Economic Development Office (1983). The Impact of Advanced Information Systems.

National Economic Development Council (1985a). 'The Changing Organisation of Work-Covering Note'. Memorandum by the Confederation of British Industry. NEDC(85) 16, February.

National Economic Development Council (1985b). 'Working Patterns and Practices'. Memorandum by the Secretary of State. NEDC(85) 18, February.

Neubourg, C. de (1984). Labour Market Accounting and Labour Utilisation : Theory and Measurement. Publication No. 16. Maarstricht : National Programma Arbeidsmarktonderzoek.

Office of Population Censuses and Surveys (1980). Classification of Occupations 1980. HMSO: London.

Office of Population Censuses and Surveys (1982). Labour Force Survey. HMSO: London.

Office of Population Censuses and Surveys (1984). Census of Population 1981, Economic Activity, Great Britain. HMSO: London. (See also volumes for earlier years)

Office of Population Censuses and Surveys (1985). General Household Survey 1983. HMSO: London.

Organisation for Economic Cooperation and Development (1982). Growth Constraints and Work Sharing, Paris : OECD.

Organisation for Economic Cooperation and Development (1985). Employment Outlook, September.

Owen, D.W., A.C. Gillespie and M.G. Coombes (1984). 'Job Shortfalls in British Local Labour Market Areas: A classification of Labour Supply and Demand Trends, 1971-81'. Regional Studies, Vol. 8, pp. 469-88.

Pahl, R.E. (1984). Division of Labour. Basil Blackwell: Oxford.

Patel, P. and L. Soete (1984). 'Structural Unemployment, Information Technologies and the Role and Direction of Technical Change'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

Perlman, R. (1966). 'Observations on Overtime and Moonlighting'. Southern Economic Journal, October pp. 237-.

Petit, P. (1986). Slow Growth and the Service Economy, London : Frances Pinter.

Psacharopoulos, G. (1981). 'Returns to Education : An Updated International Comparison'. Comparative Education, Vol. 17, No.3, pp. 321-41.

Raffe, D. (1984). 'Small Expectations : The First Year of the Youth Training Scheme'. Paper presented at Conference on the Young Persons Labour Market, University of Warwick, November.

Redclift, N. and E. Mingione (1985). Beyond Employment: Household, Gender and Subsistence, Oxford : Basil Blackwell.

Reinberg, A., Vieux, N. and P. Andlauer (eds.) (1981). Night and Shift Work : Biological and Social Aspects, Oxford : Pergamon Press

Roberts, B., R. Finnegan and D. Gallie (eds.) (1985). New Approaches to Economic Life. Manchester University Press: Manchester.

Robinson, O. and J. Wallace (1984). Growth and Utilisation of Part-Time Labour in GB. Department of Employment Gazette. Vol.92, No.9, London : HMSO pp. 391-397.

Robinson, O. and J. Wallace (1981). 'Relative Pay and Part-time Employment in Great Britain'. Oxford Bulletin of Economics and Statistics, Vol.43, No.2.

Rose, R. (1983). Getting by in Three Economies. Centre for the Study of Public Policy, University of Strathclyde.

Rostow, W.W. (1963) (ed.). The Economics of Take-off into Sustained Growth. London : Macmillan.

Rumberger, R.W. and H.M. Levin (1985). 'Forecasting the Impact of New Technology on Job Markets'. Technological Forecasting and Social Change, No.4, July, pp. 399.

Rush, H. and K. Hoffman (1984). 'Microelectronics and the Clothing Industry'. Paper prepared for DSTI/ICCP Workshop, Paris, 27-28 June.

Senker, P. et al. (1980). 'Skill Requirements'. Part IV of Microelectronics and the Engineering Industry, Swords-Isherwood N. and P. Senker (eds.), London : Frances Pinter.

Sergean, R. (1971). Managing Shiftwork, Aldershot : Gower Press.

Shankland, G. and R. Turner, (1984). A Guide to the Informal Economy. Work and Society Report No. 14, Brighton : Institute for Manpower Studies.

Sloane, P.J. (1983). Consolidated Report on the Technological and Economic Necessity of Shiftwork in the Chemical Industry. 81-3030-28-SW-JP. Dublin : European Foundation for the Improvement of Living and Working Conditions.

Smithies, E. (1984). The Black Economy in England Since 1914. Dublin : Gill and Macmillan.

Smith, Adam (1970). The Wealth of Nations. Skinner A., (ed.) Penguin.

Smith, A.D. (1985). Technological Trends and Employment : 5 Commercial Service Industries. Aldershot : Gower.

Soete, L. (1985). Technological Trends and Employment: 3 Electronics and Communications. Aldershot : Gower.

Sorrentimo, C. (1978). International Comparisons of Unemployment. Washington : Bureau of Labour Statistics.

Standing, Guy (1985). 'Meshing Labour Flexibility with Security'. Revised version of paper delivered to conference on Basic Incomes and the Labour Market, London, June.

Stanworth, J. at al (1983). 'How Franchising Brings a New Perspective to "Us and Them"'! Personnel Management, September, pp. 34-7.

Stoneman, P. (1984). 'An Analytical Framework for an Economic Perspective on the Impact of New Information Technologies'. Paper presented for DSTI/ICCP workshop, Paris, 27-28 June.

Storey, D.J. (1982). Entrepreneurship and the New Firm. London : Croom Helm.

Szalai, A. (1972). The Use of Time. Paris : Mouton.

Toffler, A. (1980). The Third Wave. Collins : London.

Trades Union Congress (1985). 'New Jobs : Economic Adjustment and the Labour Market'. Memorandum for National Economic Development Council, NEDC(85) 19, February. 20 pp.

Upton, R. (1984). "The 'Home Office' and the New Homeworkers". Personnel Management, September, pp. 39-43.

United States Department of Labour (1980). Exchanging Earnings for Leisure : Findings of an Exploratory Survey of Work Time Preferences. Washington D.C. : Department of Labour.

Whitehead, A.K. and L. Baruch (1981). People and Employment. London : Butterworths.

Whitley, J.D. and R.A. Wilson (1986). Information Technology and Employment: Quantifying the Impact Using a Macroeconomic Model. Institute for Employment Research, University of Warwick, Research Report.

Whitley, J.D. and R.A. Wilson (1986). 'Hours Reductions Within Large-Scale Macroeconomic Models : Conflict Between Theory and Practice'. Paper prepared for Conference on Employment, Unemployment and Hours of Work, Science Centre, Berlin, September.

Whybrew, E.G. (1968). Overtime Working in Britain. Royal Commission on Trade Unions and Employee Associations, Research paper No.9, London : HMSO.

Wilensky, H.L. (1963). 'The Moonlighter : a Product of Relative Deprivation'. Industrial Relations. Vol.3, No.1, October, pp. 105-.

Wilson, R.A. (1983). Changes in the Occupational Structure of Employment. Institute for Employment Research, University of Warwick, IER RP 77, (revised version of a paper presented at the annual meeting of the British Association for the Advancement of Science, Liverpool, September 1982).

Wilson, R.A. (1984). The Impact of Information Technology on the Engineeering Industry. Institute for Employment Research, University of Warwick.

Wilson, R.A. (1985). 'Employment'. Chapter 7 in Public Expenditure Policy, 1985-1986. Cockle, P. (ed.) London : Macmillan.

Wilson, R.A. (ed.) (1986). Hours of Work. Institute for Employment Research, University of Warwick.

Wilson, R.A. (1986). 'Employment Estimates on the 1980 SIC'. IER DP 202, Institute for Employment Research, University of Warwick.

Wood, P.A. (1985). 'The Anatomy of Job Loss and Job Creation: Some Speculations on the Role of the 'Producer Service' Sector'. Regional Studies, Vol.20, No.1, pp. 37-46.

Annotated Bibliography

1. Statistical Sources; Definitions; Classifications

1.1 Sources

Australian Bureau of Statistics, Alternative Working Arrangements, ABS 6341.0 Canberra : ABS.

Survey of actual and desired hours and work patterns

British Broadcasting Corporation (1965). The Peoples' Activities. London : BBC.

Statistical survey of the allocation of time

British Broadcasting Corporation (1978). The Peoples' Activities and Use of Time. London : BBC.

Statistical survey of the allocation of time

British Broadcasting Corporation (1984). Daily Life in the 1980s. London : BBC.

Statistical survey of the allocation of time

Daniel, W.W. and N. Millward (1983). Workplace Industrial Relations In Britain. Heinemann: London.

General description of the Workplace Industrial Relations Survey.

Department of Employment (1983). 'Census of Employment: Final Results for September 1981'. Department of Employment Gazette. Occasional Supplement No.2, Vol.91,12.

Statistical summary

Department of Employment (1985). 'Revised Estimates from the 1983 Labour Force Survey'. Department of Employment Gazette. March, pp. 109-113.

Statistical summary

Department of Employment (1985). Special Exemption Orders, Department for Employment Gazette Monthly. London : HMSO.

Statistical summary

Department of Employment (1985). 'Shipbuilding, Engineering and Chemicals : Earnings'. Department of Employment Gazette (Biannually). London : HMSO.

Statistics

Department of Employment (No date). The Redundancy Payments Scheme. Eleventh Revision. HMSO : London.

Rules and regulations regarding redundancy payments under UK law

Department of Trade and Industry (1981). 'Analysis of British Businesses by Turnover Size'. British Business. 23rd January, pp. 183-5.

Statistical summary

Department of Trade and Industry (1982). 'More Companies than ever'. British Business. 13th July.

Statistical summary

Department of Trade and Industry (1984). 'Businesses Analysis by Turnover Size 1984'. British Business. 14th December, pp. 668-9.

Statistical summary

Department of Trade and Industry (1984). 'Companies Registered in Great Britain'. British Business. 14th December, pp. 667.

Statistical summary

European Foundation (1983). Catalogue of Publications in Print. EF/83/23/EN Dublin : European Foundation for the Improvement of Living and Working Conditions.

List of European foundation research publications on shift working

Gallie, D. (1985). 'The Social Change and Economic Life Initiative: An Overview'. (Mimeographed).

Outline of proposed surveys to be conducted under the initiative

Income Data Services, (1979). Shift and Unsocial Hours Payments. Study 207, December. London : IDS.

Statistical review

Income Data Services, (1982). CAD : Agreements and Pay. Study No. 276, October. London : IDS.

Statistical review

Income Data Services (1983). Shift and Unsocial Hours Payments. Study No. 287, March. London : IDS.

Statistical review

Income Data Services (1983). Temporary Workers. Study 295. August. London : IDS.

Statistical review

Industrial Facts and Forecasting (1978). Shiftwork in Manufacturing Industry : Great Britain. Research Report to the European Foundation for the Improvement of Living and Working Conditions. London : IFF.

Results of statistical survey of extent and nature of shiftworking

Ministry of Labour (1965). 'Shiftworking', Ministry of Labour Gazette. London : HMSO, pp. 148-55.

Statistical evidence broken down by industry and type of shift system

Office of Population Censuses and Surveys (1982). Labour Force Survey. HMSO: London.

Statistics

Office of Population Censuses and Surveys (1984). Census of Population 1981, Economic Activity, Great Britain. HMSO: London. (See also volumes for earlier years)

Statistics

Office of Population Censuses and Surveys (1985). General Household Survey 1983. HMSO: London.

Statistics

Wilson, R.A. (1986). 'Employment Estimates on the 1980 SIC'. IER DP 202, Institute for Employment Research, University of Warwick.

Statistics

1.2 Classifications and definitions

Department of Employment (1986). 'Classification of Economic Activity'. Department of Employment Gazette, January, pp. 21-27.

Elias, D.P.B. (1985). 'A Proposed Set of Broad Occupational Categories'. Institute for Employment Research, University of Warwick (mimeographed).

Elias, D.P.B. (1985). 'Changes in Occupational Structure, 1971-81'. Papers presented to the Edinburgh Survey Methodology Group, Edinburgh, 14th February. Institute for Employment Research, University of Warwick.

Preliminary analysis of results from the 1981 Census of Population

Lauener, P., P. Mawson and E. Hill (1985). 'Review of CODOT'. Manpower Services Commission, (mimeographed).

Office of Population Censuses and Surveys (1980). Classification of Occupations 1980. HMSO: London.

2. Global Trends, Models and Forecasts

2.1 General models of economic development

Freeman, C. and L. Soete (1985). Information Technology and Employment : An Assessment. Science Policy Research Unit, University of Sussex.

Survey of the evidence of the impact of IT on employment

Gershuny, J.I. (1983). Social Innovation and the Division of Labour. Oxford : Oxford University Press.

Self-provision of services using manufactured products

Kaldor, N. (1966). Causes of the Slow Rate of Growth in the United Kingdom. Cambridge : Cambridge University Press.

Theoretical model of economic growth based on manufacturing industries

Lewis, W.A. (1978). Growth and Fluctuations, 1870-1913. London : Allen and Urwin.

Analysis of the determinants of economic growth

Meade, James (1983). 'A New Keynesian Approach to Full Employment'. Lloyds Bank Review, No.150, pp. 1-18.

Reassessment of the relevance of Keynesian remedies for unemployment

Patel, P. and L. Soete (1984). 'Structural Unemployment, Information Technologies and the Role and Direction of Technical Change'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

Analysis of technical change and employment

Petit, P. (1986). Slow Growth and the Service Economy, London : Frances Pinter.

Detailed analysis of the development of the service sector in advanced economies

Rostow, W.W. (1963) (ed.). The Economics of Take-off into Sustained Growth. London : Macmillan.

The causes of economic growth

Smith, Adam (1970). The Wealth of Nations. Skinner A., (ed.) Penguin.

The beneficial effects of market forces

Stoneman, P. (1984). 'An Analytical Framework for an Economic Perspective on the Impact of New Information Technologies'. Paper presented for DSTI/ICCP workshop, Paris, 27-28 June.

Theoretical framework of the link between technological change and employment

2.2 Economy-wide employment assessments

Freeman, C. and L. Soete (1985). Information Technology and Employment : An Assessment. Science Policy Research Unit, University of Sussex.

Survey of the evidence of the impact of IT on employment

Gershuny, J.I. (1983). Social Innovation and the Division of Labour. Oxford : Oxford University Press.

Self-provision of services using manufactured products

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Self-provision of services and the prospects for service employment

Gershuny, J. (1985). 'New Technology - What New Jobs?' Industrial Relations Journal, Vol.16, No.3, Autumn 74-84.

The effects of new technology on self-provision of services and the implications for employment

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Development of a general model of the demand for services vis a vis manufactured goods and the implications for employment

Gershuny, J. and I.D. Miles (1985). 'Towards a New Social Economics'. Chapter 1 in B. Robert, R.Finnegan and D. Gallie (1985) - New Approaches to Economic Life. Manchester University Press, Manchester.

Handy, C. (1984). The Future of Work. Oxford : Blackwell.

General analysis of changes in working patterns and the allocation of time

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Recent trends and future prospects for employment based on a survey of employers

Institute for Employment Research (1985/6). Review of the Economy and Employment (2 parts). Institute for Employment Research, University of Warwick.

Employment prospects in the UK by industry, occupation and region

Leach, D. and H. Wagstaff (1986). Future Employment and Technological Change, Kogan Press.

Exploration of the link between technical change and employment

National Economic Development Office (1983). The Impact of Advanced Information Systems.

Review of the effects of advanced technology

Patel, P. and L. Soete (1984). 'Structural Unemployment, Information Technologies and the Role and Direction of Technical Change'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

Analysis of technical change and employment

Petit, P. (1986). Slow Growth and the Service Economy, London : Frances Pinter.

Detailed analysis of the development of the service sector in advanced economies

Wood, P.A. (1985). 'The Anatomy of Job Loss and Job Creation: Some Speculations on the Role of the 'Producer Service' Sector'. Regional Studies, Vol.20, No.1, pp. 37-46.

Review of the causes of job changes across regions of the UK economy

2.3 Forecasts, econometric models

Barker, T.S. (1981). 'Projecting Economic Structure with a Large Scale Econometric Model'. Futures. Vol.13, No.6, pp. 458-67.

Description of Cambridge Growth Project model

Barker, Terry and W. Peterson (eds.) (1986). The Cambridge Multisectoral Dynamic Model. Cambridge : Cambridge University Press (forthcoming).

Detailed description of Cambridge Growth Project model

Cambridge Econometrics (1985). Forecast Report, June 1985. Cambridge Econometrics: Cambridge.

Forecast using the Cambridge Growth Project model

Cambridge Economic Policy Review (1982). 'Employment Problems in the Cities and Regions of the UK: Prospects for the 1980s'. Cambridge Economic Policy Review, Vol.8, No.2, Gower, Aldershot, Hants.

Regional prospects

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Recent trends and future prospects for employment based on a survey of employers

Institute for Employment Research (1985/6). Review of the Economy and Employment (2 parts). Institute for Employment Research, University of Warwick.

Employment prospects in the UK by industry, occupation and region

Organisation for Economic Cooperation and Development (1985). Employment Outlook, September.

Forecast

Whitley, J.D. and R.A. Wilson (1986). Information Technology and Employment: Quantifying the Impact Using a Macroeconomic Model. Institute for Employment Research, University of Warwick, Research Report.

Attempt to quantify the employment implications of the diffusion of information technology

Whitley, J.D. and R.A. Wilson (1986). 'Hours Reductions Within Large-Scale Macroeconomic Models : Conflict Between Theory and Practice'. Paper prepared for Conference on Employment, Unemployment and Hours

Review of econometric evidence on the link between hours reductions and employment

Wilson, R.A. (ed.) (1986). Hours of Work. Institute for Employment Research, University of Warwick, Research Report.

Econometric analysis of developments in hours of work in the UK economy

2.4 Sectoral studies

Barras, R. (1984). 'Information Technology and Economic Perspectives : The Case of Office Based Services'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

The impact of IT on office employment in the UK

Clark, J. (1984). Technological Trends and Employment: 2 Basic Process Industries. Gower.

Survey of recent trends and future prospects

Dunne, J.P. and R.P. Smith (1982). 'The Allocative Efficiency of Government Expenditure - Some Comparative Tests'. European Economic Review, Vol.20, pp. 381-94.

Econometric model of the allocation of expenditure between expenditure programs

Dutton, P.A. (1985). 'The Demand for and Supply of Engineering Craftsmen and Technicians Within the Engineering Industry to 1989'. Institute for Employment Research, University of Warwick (mimeographed).

Econometric model of supply and demand

Freeman, C. (1985). Technological Trends and Employment: 4 Engineering and Vehicles. Gower.

Survey of recent trends and future prospects

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Self-provision of services and the prospects for service employment

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Development of a general model of the demand for services vis a vis manufactured goods and the implications for employment

Guy, K. (1984). Technological Trends and Employment: 1 Basic Consumer Goods. Gower.

Survey of recent trends and future prospects

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Recent trends and future prospects for employment based on a survey of employers

Petit, P. (1986). Slow Growth and the Service Economy, London : Frances Pinter.

Detailed analysis of the development of the service sector in advanced economies

Rush, H. and K. Hoffman (1984). 'Microelectronics and the Clothing Industry'. Paper prepared for DSTI/ICCP Workshop, Paris, 27-28 June.

Review of evidence of the effects of IT on the clothing industry

Senker, P. et al. (1980). 'Skill Requirements'. Part IV of Microelectronics and the Engineering Industry, Swords-Isherwood N. and P. Senker (eds.), London : Frances Pinter.

Technological change and implications of skills

Smith, A.D. (1985). Technological Trends and Employment : 5 Commercial Service Industries. Aldershot : Gower.

Survey of recent trends and future prospects

Soete, L. (1985). Technological Trends and Employment: 3 Electronics and Communications. Aldershot : Gower.

Survey of recent trends and future prospects

Wilson, R.A. (1984). The Impact of Information Technology on the Engineeering Industry. Institute for Employment Research Report, University of Warwick.

Review of the evidence on the effects of IT on engineering

Wilson, R.A. (1985). 'Employment'. Chapter 7 in Public Expenditure Policy, 1985-1986. Cockle, P. (ed.) London : Macmillan.

The employment implications of government expenditure plans

2.5 Occupational studies

Dutton, P.A. (1985). 'The Demand for and Supply of Engineering Craftsmen and Technicians Within the Engineering Industry to 1989'. Institute for Employment Research, University of Warwick (mimeographed).

Econometric model of supply and demand

Elias, D.P.B. (1985). 'Changes in Occupational Structure, 1971-81'. Papers presented to the Edinburgh Survey Methodology Group, Edinburgh, 14th February. Institute for Employment Research, University of Warwick.

Preliminary analysis of results from the 1981 Census of Population

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Recent trends and future prospects for employment based on a survey of employers

Institute for Employment Research (1985/6). Review of the Economy and Employment (2 parts). Institute for Employment Research, University of Warwick.

Employment prospects in the UK by industry, occupation and region

Wilson, R.A. (1983). Changes in the Occupational Structure of Employment. Institute for Employment Research, University of Warwick, IER RP 77, (revised version of a paper presented at the annual meeting of the British Association for the Advancement of Science, Liverpool, September 1982).

Shift-share analysis of occupational employment change

2.6 Regional studies

Cambridge Economic Policy Review (1982). 'Employment Problems in the Cities and Regions of the UK: Prospects for the 1980s'. Cambridge Economic Policy Review, Vol.8, No.2, Gower, Aldershot, Hants.

Regional prospects

Elias, D.P.B. (1982). 'The Regional Impact of National Economic Policies: A Multi-Regional Simulation Approach for the UK'. Regional Studies, Vol.16, pp. 335-44.

Analysis using an econometric model linked to the Cambridge Growth Project model

Elias, D.P.B. and G. Keogh (1982). 'Industrial Decline and Unemployment in the Inner City Areas of Great Britain: A Review of the Evidence'. Urban Studies, Vol.19, pp. 1-16.

Review paper on regional employment and unemployment

Fothergill, G. and S. Gudgin (1982). Unequal Growth: Urban and Regional Employment Change in the UK. Heinemann: London.

Analysis of regional disparities in employment and unemployment

Institute for Employment Research (1985/6). Review of the Economy and Employment (2 parts). Institute for Employment Research, University of Warwick.

Employment prospects in the UK by occupation and region

Owen, D.W., A.C. Gillespie and M.G. Coombes (1984). 'Job Shortfalls in British Local Labour Market Areas: A classification of Labour Supply and Demand Trends, 1971-81'. Regional Studies, Vol. 8, pp. 469-88.

Regional analysis of changes in employment and unemployment

2.7 New technology and employment

Armstrong, P.J. (1984). 'Work, Rest or Play? Changes in Time Spent at Work'. in Marstrand, P. (ed.). New Technology and the Future of Work and Skills. London: Frances Pinter.

The changing pattern of time allocation by households

Barras, R. (1984). 'Information Technology and Economic Perspectives : The Case of Office Based Services'. Paper prepared for OECD DSTI/ICCP Workshop, Paris, 27-28 June.

The impact of IT on office employment in the UK

Blandy, Aurid (1984). 'New Technology and Flexible Patterns of Working Time'. Department of Employment Gazette, October, pp. 439-44.

The link between IT and flexible work patterns

Clark, J. (1984). Technological Trends and Employment: 2 Basic Process Industries. Gower.

Survey of recent trends and future prospects

Freeman, C. (1985). Technological Trends and Employment: 4 Engineering and Vehicles. Gower.

Survey of recent trends and future prospects

Freeman, C. and L. Soete (1985). Information Technology and Employment : An Assessment. Science Policy Research Unit, University of Sussex.

Survey of the evidence of the impact of IT on employment

Gershuny, J.I. (1983). Social Innovation and the Division of Labour. Oxford : Oxford University Press.

Self-provision of services using manufactured products

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Self-provision of services and the prospects for service employment

Gershuny, J. (1985). 'New Technology - What New Jobs?' Industrial Relations Journal, Vol. 16, No. 3, Autumn 74-84.

The effects of new technology on self-provision of services and the implications for employment

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Development of a general model of the demand for services vis a vis manufactured goods and the implications for employment

Guy, K. (1984). Technological Trends and Employment: 1 Basic Consumer Goods. Gower.

Survey of recent trends and future prospects

Huws, U. (1984). 'New Technology Homeworkers'. Department of Employment Gazette. London : HMSO. January, pp. 13-17.

Homeworkers using IT

Rumberger, R.W. and H.M. Levin (1985). 'Forecasting the Impact of New Technology on Job Markets'. Technological Forecasting and Social Change, No.4, July, pp. 399.

Attempt to quantify the impact of new technologies on employment

Rush, H. and K. Hoffman (1984). 'Microelectronics and the Clothing Industry'. Paper prepared for DSTI/ICCP Workshop, Paris, 27-28 June.

Review of evidence of the effects of IT on the clothing industry

Senker, P. et al. (1980). 'Skill Requirements'. Part IV of Microelectronics and the Engineering Industry, Swords-Isherwood N. and P. Senker (eds.), London : Frances Pinter.

Technological change and implications for skills

Smith, A.D. (1985). Technological Trends and Employment : 5 Commercial Service Industries. Aldershot : Gower.

Survey of recent trends and future prospects

Soete, L. (1985). Technological Trends and Employment: 3 Electronics and Communications. Aldershot : Gower.

Survey of recent trends and future prospects

Stoneman, P. (1984). 'An Analytical Framework for an Economic Perspective on the Impact of New Information Technologies'. Paper presented for DSTI/ICCP workshop, Paris, 27-28 June.

Theoretical framework of the link between technological change and employment

Toffler, A. (1980). The Third Wave. London : Collins.

Information technologies seen as a third major wave of technological advance

Whitley, J.D. and R.A. Wilson (1986). Information Technology and Employment: Quantifying the Impact Using a Macroeconomic Model. Institute for Employment Research, University of Warwick, Research Report.

Attempt to quantify the employment implications of the diffusion of information technology

Wilson, R.A. (1984). The Impact of Information Technology on the Engineeering Industry. Institute for Employment Research Report, University of Warwick.

Review of the evidence on the effects of IT on engineering

2.8 Unemployment

Ashenfelter, O. (1980). 'Unemployment as Disequilibrium in a Model of Aggregate Labour Supply'. Econometrica, Vol.48, No.3, pp. 547-64.

Beckerman, W. (1978). Measures of Leisure, Equality and Welfare. Paris : Organisation for Economic Cooperation and Development.

Measurement of income and welfare, allowing for the value of leisure

Bosworth, D.L. and A.J. Westaway (1986). 'Labour Hoarding, Discouraged Workers and Recorded Unemployment : An International Comparison'. (mimeo). Coventry: Institute for Employment Research, University of Warwick.

Compares more broadly based measures of unemployment in four major OECD countries

Jahoda, M. (1982). Employment and Unemployment : A Social Psychological Analysis, Cambridge : Cambridge University Press.

The effects of unemployment on the unemployed

Jahoda, M. (1984). 'Unemployment - Curse of Liberation' in Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

The effects of unemployment on the unemployed

Miles, I. (1983). 'Adaptation to Unemployment', Occasional Paper. Brighton : Science Policy Research Unit, University of Sussex.

The impact of unemployment on the unemployed

Minford, P. (1983). Unemployment : Cause and Cure. Oxford : Martin Robertson.

Monetarist analysis of the unemployment problem

Moy, J. and C. Sorrentimo (1982). 'Unemployment and Labour Force : Trends in Ten Industrial Nationas - An Update', Monthly Labour Review (November) pp. 17-21.

Comparison of survey and claimant based unemployment statistics in ten countries

Sorrentimo, C. (1978). International Comparisons of Unemployment. Washington : Bureau of Labour Statistics.

Comparison of unemployment on a consistent basis

Standing, Guy (1985). 'Meshing Labour Flexibility with Security'. Revised version of paper delivered to conference on Basic Incomes and the Labour Market, London, June.

The conflict between labour market flexibility for employment and job security for employees

3. New Forms of Employment : Job Content

3.1 Occupation

Dutton, P.A. (1985). 'The Demand for and Supply of Engineering Craftsmen and Technicians Within the Engineering Industry to 1989'. Institute for Employment Research, University of Warwick (mimeographed).

Econometric model of supply and demand

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Self-provision of services and the prospects for service employment

Gershuny, J. (1985). 'New Technology - What New Jobs?' Industrial Relations Journal, Vol. 16, No. 3, Autumn 74-84.

The effects of new technology on self-provision of services and the implications for employment

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Development of a general model of the demand for services vis a vis manufactured goods and the implications for employment

Gershuny, J. and I.D. Miles (1985). 'Towards a New Social Economics'. Chapter 1 in B. Robert, R.Finnegan and D. Gallie (1985) - New Approaches to Economic Life. Manchester University Press, Manchester.

Income Data Services, (1982). CAD : Agreements and Pay. Study No. 276, October. London : IDS.

Statistical review

National Economic Development Office (1983). The Impact of Advanced Information Systems.

Review of the effects of advanced technology

3.2 Qualifications

Adams, Mark and Pamela Meadows (1985). 'The Changing Graduate Labour Market'. Gazette. September, pp. 343-51.

First destinations of graduates in Great Britain

Bosworth, D.L. and R.A. Wilson (1981). 'Does Britain Need More Engineers?'. Journal of Industrial Affairs. Vol.9, No.1, pp. 1-11.

Critical analysis of the case evidence on shortages of engineers in Great Britain

Freeman, R.B. (1971). The Labour Market for College Trained Manpower. Cambridge : Harvard University Press.

Econometric model of supply and demand for qualified people in the United States

Freeman, R.B. (1976). 'A Cobweb Model of the Supply and Starting Salary of New Engineers'. Industrial and Labour Relations Review, Vol.29, No.2, pp. 236-48.

Econometric model of the labour market for engineers in the United States

Harland, J. and I. (1986). Beyond Graduation : The College Experience. SRHE and NFER - Nelson.

Psacharopoulos, G. (1981). 'Returns to Education : An Updated International Comparison'. Comparative Education, Vol. 17, No.3, pp. 321-41.

Review of international evidence on rates of return

3.3 Gender

Bruegel, I. (1979). 'Women as a Reserve Army of Labour : A Note on Recent British Experience'. Feminist Review. No.3, pp. 12-23.

Sexual discrimination and occupational segregation

Bruegel, I. (1983). 'Women's employment, legislation and the labour market'. Chapter 7 in J. Lewis (ed.) Women's Welfare, Women's Rights. London : Croom Helm.

Survey of the effects of legislation on sexual discrimination

Economist (1986). 'Why Women get the Jobs'. August 23, pp.11-12.

Influences on the growth of female employment

Elias, D.P.B. and B. Main (1982). Women's Working Lives. Institute for Employment Research Report, University of Warwick.

Analysis of work histories using the National Training Survey

Redclift, N. and E. Mingione (1985). Beyond Employment: Household, Gender and Subsistence, Oxford : Basil Blackwell.

Sociological analysis of unemployment, allocation of time, sexual discrimination and poverty

4. New Forms of Employment : Contractual Arrangements

4.1 General; job flexibility; social innovation

Alden, J. (1977). 'The Extent and Nature of Double Job Holding in Great Britain'. Industrial Relations Journal, Vol.8, No.3, pp. 14-33.

Australian Bureau of Statistics, Alternative Working Arrangements, ABS 6341.0 Canberra : ABS.

Survey of actual and desired hours and work patterns

Atkinson, A.J. (1984). 'Emerging UK Work Patterns'. In Flexible Manning: The Way Ahead, Institute of Manpower Studies Report No. 88, University of Sussex.

Core versus periphery employment

Atkinson, A.J. (1985). 'The Changing Corporation' in Clutterbuck, D. (ed.) New Patterns of Work. Aldershot : Gower Press.

Flexible work patterns, core versus peripheral employment

Blandy, Aurid (1984). 'New Technology and Flexible Patterns of Working Time'. Department of Employment Gazette, October, pp. 439-44.

The link between IT and flexible work patterns

Clutterbuck, D. (1985). 'New Patterns of Work in the UK, Europe and America'. BACIE Journal, January/February, pp. 11-13.

Subcontracting and flexible working patterns

Gallie, D. (1985). 'The Social Change and Economic Life Initiative: An Overview'. (Mimeographed).

Multidisciplinary analysis of social and economic change and its implications for employment and working patterns

Gershuny, J.I. (1983). Social Innovation and the Division of Labour. Oxford : Oxford University Press.

Self-provision of services using manufactured products

Gershuny, J.I. (1984). 'The Future of Service Employment', Marstrand, P. (ed.) New Technology and the Future of Work and Skills. London : Frances Pinter.

Self-provision of services and the prospects for service employment

Gershuny, J. (1985). 'New Technology - What New Jobs?' Industrial Relations Journal, Vol. 16, No. 3, Autumn 74-84.

The effects of new technology on self-provision of services and the implications for employment

Gershuny, J. and I.D. Miles (1983). The New Service Economy. Frances Pinter, pp. 57-69.

Development of a general model of the demand for services vis a vis manufactured goods and the implications for employment

Gershuny, J. and I.D. Miles (1985). 'Towards a New Social Economics'. Chapter 1 in B. Robert, R.Finnegan and D. Gallie (1985) - New Approaches to Economic Life. Manchester University Press, Manchester.

IMS/OSG (1986). UK Occupation and Employment Trends to 1990. Rajan A. and R. Pearson (eds.), London : Butterworths.

Recent trends and future prospects for employment based on a survey of employers

Leighton, P.E. (1983). 'Contractual Arrangements in Selected Industries'. Department of Employment Research Paper No. 39.

Review of developments in contractual arrangements in Great Britain

National Economic Development Council (1985a). 'The Changing Organisation of Work-Covering Note'. Memorandum by the Confederation of British Industry. NEDC(85) 16, February.

NEDO views on new patterns of work

National Economic Development Council (1985b). 'Working Patterns and Practices'. Memorandum by the Secretary of State. NEDC(85) 18, February.

Secretary of State's views on new patterns of work

Pahl, R.E. (1984). Division of Labour. Basil Blackwell: Oxford.

Sociological analysis of changing work patterns

Roberts, B., R. Finnegan and D. Gallie (eds.) (1985). New Approaches to Economic Life. Manchester University Press: Manchester.

Sociological analysis of developments in working patterns

Trades Union Congress (1985). 'New Jobs : Economic Adjustment and the Labour Market'. Memorandum for National Economic Development Council, NEDC(85) 19, February. 20 pp.

TUC views on new patterns of work

Whitehead, A.K. and L. Baruch (1981). People and Employment. London : Butterworths.

Labour market institutions and labour economics

4.2 Part-time working

Blanchflower, D. and B. Corry, (1985). Part-Time Employment in Great Britain : An Analysis Using Establishment Data. Report to the Department of Employment. Coventry : Institute for Employment Research, Warwick University.

Detailed analysis of part-time working using the Workplace Industrial Relations Survey

Blanchflower, D. and P. Elias (1985). 'Male Part-Time Employment'. Labour Market Quarterly Report. Manpower Services Commission.

Overview of various statistics relating to male part-time working in Great Britain

Disney, R. and E.M. Szyszzcak (1984). 'Protective Legislation and Part-Time Employment in Britain'. British Journal of Industrial Relations, Vol.22, No.1, pp. 78-100.

Multi-disciplinary review of the effects of legislation on part-time employment

Industrial Relations Review and Reports (1984). 'Part-time Work - A Survey'; No. 320, May, pp. 2-9.

Statistical review

Robinson, O. and J. Wallace (1984). Growth and Utilisation of Part-Time Labour in GB. Department of Employment Gazette. Vol.92, No.9, London : HMSO pp. 391-397.

Review of evidence on recent trends in part-time working

Robinson, O. and J. Wallace (1981). 'Relative Pay and Part-time Employment in Great Britain'. Oxford Bulletin of Economics and Statistics, Vol.43, No.2.

Analysis of pay and employment for part-time workers

4.3 Self-employment

Creigh, S., Roberts, C., Gorman, A., and P. Sawyer, (1985). 'Self-Employment in Britain : Results for the Labour Force Surveys 1981-1984'. Department of Employment, Employment Gazette London : HMSO.

Statistical survey of recent trends in self-employment in Great Britain

4.4 Sub-contracting; franchising; small firms

Bannock, G. (1981). 'The Clearing Banks and Small Firms'. Lloyds Bank Review, No.142, pp. 15.

Small firm finance, success and failure

Boswell, J. (1973). The Rise and Decline of Small Firms. London : George Allen and Urwin.

Influences and consequences of growth of small firm sector

Clutterbuck, D. (1985). 'Linked Subcontracting' in Clutterbuck, D. (ed.) New Patterns of Work Aldershot : Gower Press.

Sub-contracting as a means of increased flexibility

Clutterbuck, D. (1985). 'New Patterns of Work in the UK, Europe and America'. BACIE Journal, January/February, pp. 11-13.

Sub-contracting and flexible working patterns

Cross, M. (1983). 'The United Kingdom' in Storey, D.J. (ed.). The Small Firm : an International Survey. London : Croom Helm

Small firms in the United Kingdom

Department of Trade and Industry (1981). 'Analysis of British Businesses by Turnover Size'. British Business. 23rd January, pp. 183-5.

Statistical summary

Department of Trade and Industry (1982). 'More Companies than ever'. British Business. 13th July.

Statistical summary

Department of Trade and Industry (1984). 'Businesses Analysis by Turnover Size 1984'. British Business. 14th December, pp. 668-9.

Statistical summary

Department of Trade and Industry (1984). 'Companies Registered in Great Britain'. British Business. 14th December, pp. 667.

Statistical summary

Stanworth, J. at al (1983). 'How Franchising Brings a New Perspective to "Us and Them"'! Personnel Management, September, pp. 34-7.

The growth in franchising and sub-contracting

Storey, D.J. (1982). Entrepreneurship and the New Firm. London : Croom Helm.

Growth and importance of the small firm sector

4.5 Temporary work; double jobbing

Blanpain, R. and J.L. Drubigny (1980). 'Temporary Employment in the Countries of the EEC'. Commission of the European Communities, Study 79/52.

Survey of evidence on temporary working

Income Data Services (1983). Temporary Workers. Study 295. August. London : IDS.

Statistical review

Manpower Services Commission (1985). 'Second Jobbing', Special Feature. Labour Market Quarterly Report. September, pp. 6-7.

Statistical evidence on second jobs

Manpower Services Commission (1985). 'Temporary Work in Great Britain'. Labour Market Quarterly Report, November, pp. 7-11.

Statistical evidence on temporary work

Meager, N. (1986). 'Temporary Work in Britain'. Department of Employment Gazette. January London : HMSO. pp. 7-15.

Review of evidence on temporary work

Wilensky, H.L. (1963). 'The Moonlighter : a Product of Relative Deprivation'. Industrial Relations. Vol.3, No.1, October, pp. 105-.

Causes of double or multiple job holding

4.6 Home working; out-working; freelancing

Hakim, C. (1984a). 'Homework and Outwork: National Estimates from two Surveys'. Department of Employment Gazette. Vol.92, No.4, pp. 7-12.

Statistical evidence and general review of homeworking

Hakim, C. (1984b). 'Employers' Use of Homework, Outwork and Freelances'. Department of Employment Gazette. Vol. 92, No. 4, pp. 144-150.

Trends in outwork, homework and freelances

Hakim, C. (1985). Employers' Use of Outwork. Research Paper No. 44. London : Department of Employment.

The use of outwork in Great Britain

Huws, U. (1984). 'New Technology Homeworkers'. Department of Employment Gazette. London : HMSO. January, pp. 13-17.

Homeworkers using IT

Upton, R. (1984). "The 'Home Office' and the New Homeworkers". Personnel Management, September, pp. 39-43.

New technologies and homeworking

4.7 Domestic Work; informal economy, black economy

Bawly, D. (1982). The Subterranean Economy. New York : McGraw Hill.

Causes and consequences of the informal or hidden economy

Beckerman, W. (1978). Measures of Leisure, Equality and Welfare. Paris : Organisation for Economic Cooperation and Development.

Measurement of income and welfare, allowing for the value of leisure

Clark, C. (1958). 'The Economics of Housework'. Bulletin of the Oxford Institute of Statistics. May, pp. 205-11.

Economic analysis of the allocation of time to domestic work

Feige, E. (1981). 'The UK's Unobserved Economy : A Preliminary Assessment'. Journal of Economic Affairs. July, Vol.1, No.4, pp. 205.

An attempt to quantify the size of the black economy

Goldschmift - Clermont, L. (1982). Unpaid Work in the Household : a Review of Economic Evaluation Methods. Women, Work and Development I. Geneva : International Labour Office.

Extent and value of unpaid domestic work

Gronau, R. (1973). The Intra-Family Allocation of Time : the Value of Housewives' Time. American Economic Review. Vol.63, No.4, pp. 634-51.

Generalises traditional leisure work tradeoff to look at non-market work

Hawrylyshyn, O. (1978). 'Estimating the Value of Household Work in Canada, 1971', Statistics Canada, 1978, pp. 7.

Quantifying the value of work done at home

Heertje, A., Allen, M. and H. Cohen (1982). The Black Economy. London : Pan Books.

Survey of evidence on the black economy

Macafee, K. (1980). 'A Glimpse of the Hidden Economy in the National Accounts', Economic Trends, February, pp. 81-.

Statistical evidence on the black economy

Pahl, R.E. (1984). Division of Labour. Basil Blackwell: Oxford.

Sociological analysis of the changing patterns of work

Redclift, N. and E. Mingione (1985). Beyond Employment: Household, Gender and Subsistence, Oxford : Basil Blackwell.

Sociological analysis of unemployment, allocation of time, sexual discrimination and poverty

Rose, R. (1983). Getting by in Three Economies. Centre for the Study of Public Policy, University of Strathclyde.

The black, grey and mauve economies

Shankland, G. and R. Turner, (1984). A Guide to the Informal Economy. Work and Society Report No. 14, Brighton : Institute for Manpower Studies.

The black economy, domestic work

Smithies, E. (1984). The Black Economy in England Since 1914. Dublin : Gill and Macmillan.

Long-term trends in the black economy

4.8 Hours; overtime; labour utilisation; allocation of time; work sharing

Armstrong, P.J. (1984). 'Work, Rest or Play? Changes in Time Spent at Work'. in Marstrand, P. (ed.). New Technology and the Future of Work and Skills. London: Frances Pinter.

The chaning problem of time allocation by households

Bosworth, D.L. (1985). The Economics of Labour Utilisation, Final Report by the National Institute for Labour Studies to the South Australian Department of Labour, Adelaide : NILS, Flinders University.

Empirical evidence on hours of work and labour utilisation

Bosworth, D.L. and P.J. Dawkins (1980). 'Compensation for Workers Disutility: Time of Day, Length of Shift and other Features of Work Patterns'. Scottish Journal of Political Economy. Vol.27, No.1, pp. 80-96.

Evidence that shift premia can be decomposed into both length of shift and time of day components

Bosworth, D.L. and P.J. Dawkins (1981). Work Patterns - An Economic Analysis. Gower.

Theoretical and empirical models of hours of work, shiftworking and the allocation of time

Brack, J. and K.G. Cowling (1980). 'Advertising and Hours of Work in U.S. Manufacturing, 1919-75'. Warwick Economic Research Paper 178. Mimeo.

Econometric model of the link between advertising and hours worked

Clark, C. (1958). 'The Economics of Housework'. Bulletin of the Oxford Institute of Statistics. May, pp. 205-11.

Economic analysis of the allocation of time to domestic work

Deiter, J.C. (1966). Moonlighting and the Short Work Week, South Western Social Science Quarterly, December.

Causes of double or multiple job holding

Garbarino, J. (1964). 'Fringe Benefits and Overtime as Barriers to Expanding Employment'. Industrial and Labour Relations Journal, Vol.17, April, pp. 426-42.

Shows that quasi-fixed labour costs are unlikely to be sufficiently large to affect the optimal hours demanded

Gronau, R. (1973). The Intra-Family Allocation of Time : the Value of Housewives' Time. American Economic Review. Vol. 63, No. 4, pp. 634-51.

Generalises traditional leisure work tradeoff to look at non-market work

Hart, R.A. (1984). 'Worksharing and Factor Prices'. European Economic Review, Vol.24, pp. 165-88.

Review of the theoretical link between hours reductions and changes in employment

Hart, R.A. and T. Sharot (1978). 'The Short-Run Demand for Workers and Hours : A Recursive Model'. Review of Economic Studies, Vol.45, pp. 299-309.

Econometric model of factor demands

Neubourg, C. de (1984). Labour Market Accounting and Labour Utilisation : Theory and Measurement. Publication No. 16. Maarstricht : National Programma Arbeidsmarktonderzoek.

Presents a revised system of labour market accounts and examines the implications for the measurement of unemployment

Organisation for Economic Cooperation and Development (1982). Growth Constraints and Work Sharing, Paris : OECD.

Review of evidence on worksharing and employment

Perlman, R. (1966). 'Observations on Overtime and Moonlighting'. Southern Economic Journal, October pp. 237-.

The individual supply of hours may exceed normal hours or hours demanded

Szalai, A. (1972). The Use of Time. Paris : Mouton.

Statistics of the allocation of time in large number of countries

Leisure : Findings of an Exploratory Survey of Work Time Preferences. Washington D.C. : Department of Labour.

Survey of individual preferences for income versus leisure

Whitley, J.D. and R.A. Wilson (1986). 'Hours Reductions Within Large-Scale Macroeconomic Models : Conflict Between Theory and Practice'. Paper prepared for Conference on Employment, Unemployment and Hours of Work, Science Centre, Berlin, September.

Review of econometric evidence on the link between hours reductions and employment

Whybrew, E.G. (1968). Overtime Working in Britain. Royal Commission on Trade Unions and Employee Associations, Research paper No.9, London : HMSO.

Analysis of the determinants of overtime working

Wilson, R.A. (ed.) (1986). Hours of Work. Institute for Employment Research, University of Warwick, Research Report.

Econometric analysis of developments in hours of work in the UK economy

4.9 Shiftworking; capital utilization

Bosworth, D.L. (1986). Work Patterns and Optimal Capital Utilisation in British Manufacturing Industry. Institute for Employment Research, University of Warwick, Research Report.

Outlines theoretical models of shiftwork and hours of work, providing empirical evidence from UK manufacturing industry

Bosworth, D.L. and P.J. Dawkins (1978). 'Proposed Changes in the Extent and Nature of Shiftworking : Some Important Policy Issues'. Personnel Review. Vol.7, No.4, pp. 32-35.

Comparisons of UK and foreign laws relating to hours and shiftwork

Bosworth, D.L. and P.J. Dawkins (1980). 'Compensation for Workers Disutility: Time of Day, Length of Shift and other Features of Work Patterns'. Scottish Journal of Political Economy. Vol.27, No.1, pp. 80-96.

Evidence that shift premia can be decomposed into both length of shift and time of day components

Bosworth, D.L. and P.J. Dawkins (1981). 'Private and Social Costs and Benefits of Shift and Night Work' in Reinberg, A., Vieux, N. and P. Andlauer (eds.) Night and Shiftwork : Biological and Social Aspects, Oxford : Pergamon Press.

Theoretical and empirical models of hours of work, shiftworking and the allocation of time

Bosworth, D.L. and P.J. Dawkins (1984). 'Shiftworking and Perceived Working Conditions : An Empirical Analysis'. Seminar Paper No.9, in Wedderburn, A. and P. Smith (eds.) Psychological Approaches to Night and Shiftwork, International Research Papers, Edinburgh : Heriot-Watt University.

Argues that shift premia not only reflect unsocial length and times of work, but also other unfavourable aspects of shiftwork such as noise, risk, etc.

Carter, F.A. and E.N. Corlet (1982). Review of the European Formations' Research into Shiftwork 1977-80. The Effect on Living and Working Conditions and Recommendation for Improvements. Dublin : European Foundation for the Improvement of Living and Working Conditions.

Synthesis of the results of the European Foundations research on shiftwork

Income Data Services (1979). Shift and Unsocial Hours Payments. Study 207. December. London : IDS.

Statistical review

Income Data Services (1983). Shift and Unsocial Hours Payments. Study 287, March. London : IDS.

Statistical review

Industrial Facts and Forecasting (1978). Shiftwork in Manufacturing Industry : Great Britain. Research Report to the European Foundation for the Improvement of Living and Working Conditions. London : IFF.

Results of statistical survey of extent and nature of shiftworking

Luce, G.G. (1973). Body Time : The Natural Rhythms of the Body. St. Albans : Granada.

Causes and consequences of biorhythms

Reinberg, A., Vieux, N. and P. Andlauer (eds.) (1981). Night and Shift Work : Biological and Social Aspects, Oxford : Pergamon Press

Collection of articles on physiological, psychological, sociological and economic aspects of shiftwork

Sergean, R. (1971). Managing Shiftwork, Aldershot : Gower Press.

Determinants of choice between alternative shift work systems

Sloane, P.J. (1983). Consolidated Report on the Technological and Economic Necessity of Shiftwork in the Chemical Industry. 81-3030-28-SW-JP. Dublin : European Foundation for the Improvement of Living and Working Conditions.

Study of the extent to which continuous working is technologically or economically determined

4.10 Training and special employment schemes

Berg, I. (1970). Education and Jobs : the Great Training Robbery. Praege, for the Centre for Urban Education.

Qualifications as a screening device rather than an indicator of increased productivity

Burton, J. (1979). The Job Support Machine : A Critique of the Subsidy Morass. London : Centre for Policy Studies

Employment subsidies

Davies, G. and D. Metcalf (1985). 'Generating Jobs. The Cost Effectiveness of Tax Cuts, Public Expenditure and Special Employment Measures in Cutting Unemployment'. Simon and Coates Discussion Paper.

Survey of econometric and other evidence

Dutton, P.A. (1984). YTS - Training for the Future? Institute for Employment Research, Research Paper, IER RP79, University of Warwick.

Critical review of the effects of the Youth Training Scheme

Faundez, Julio (1985). Special Employment Measures in Great Britain. Institute for Employment Research Report, University of Warwick.

Survey of measures introduced in the UK in the late 1970s and early 1980s

Layard, R. (1984). 'More Jobs Without More Public Borrowing'. Centre for Labour Economics, Working Paper No. 686, London School of Economics.

The case for expansion of special employment and training schemes

Lindley, R.M. (1986). 'Labour Demand : Microeconomic Aspects of State Intervention'. in P.E Hart (ed.) Unemployment and Labour Market Policies. pp. 154-180.

Overview of UK experience of special employment measures

Raffe, D. (1984). 'Small Expectations : The First Year of the Youth Training Scheme'. Paper presented at Conference on the Young Persons Labour Market, University of Warwick, November.

Preliminary analysis of the effects of YTS

Wilson, R.A. (1985). 'Employment'. Chapter 7 in Public Expenditure Policy, 1985-1986. Cockle, P. (ed.) London : Macmillan.

The employment implications of government expenditure plans

4.11 Distribution of income; social dividend

Beckerman, W. (1978). Measures of Leisure, Equality and Welfare. Paris : Organisation for Economic Cooperation and Development.

Measurement of income and welfare, allowing for the value of leisure

Meade, James (1983). 'A New Keynesian Approach to Full Employment'. Lloyds Bank Review, No. 150, pp. 1-18.

Reassessment of the relevance of Keynesian remedies for unemployment

Pahl, R.E. (1984). Division of Labour. Basil Blackwell: Oxford.

Changing work patterns and the distribution of incomes

Redclift, N. and E. Mingione (1985). Beyond Employment: Household, Gender and Subsistence, Oxford : Basil Blackwell.

Sociological analysis of unemployment, allocation of time, sexual discrimination and poverty

Standing, Guy (1985). 'Meshing Labour Flexibility with Security'. Revised version of paper delivered to conference on Basic Incomes and the Labour Market, London, June.

The conflict between labour market flexibility for employment and job security for employees

Wilensky, H.L. (1963). 'The Moonlighter : a Product of Relative Deprivation'. Industrial Relations. Vol.3, No.1, October, pp. 105-.

Causes of double or multiple job holding

European Communities — Commission

Programme for research and actions on the development of the labour market
New form and new areas of employment growth
Final report for the United Kingdom

by R.A. Wilson & D.L. Bosworth — University of Warwick, Coventry CV4 7AL, United Kingdom

Document

Luxembourg: Office for Official Publications of the European Communities

1987 — 190 pp. — 21.0 × 29.7 cm

EN

ISBN 92-825-7198-X

Catalogue number: CB-49-87-486-EN-C

Price (excluding VAT) in Luxembourg:

ECU 15.70 BFR 675 IRL 12.20 UKL 11 USD 17.50

Venta y suscripciones · Salg og abonnement · Verkauf und Abonnement · Πωλήσεις και συνδρομές
Sales and subscriptions · Vente et abonnements · Vendita e abbonamenti
Verkoop en abonnementen · Venda e assinaturas

BELGIQUE / BELGIE

Moniteur belge / Belgisch Staatsblad
Rue de Louvain 40-42 / Leuvensestraat 40-42
1000 Bruxelles / 1000 Brussel
Tél. 512 00 26
CCP / Postrekening 000-2005502-27

Sous-dépôts / Agentschappen

Librairie européenne / Europese Boekhandel
Rue de la Loi 244 / Wetstraat 244
1040 Bruxelles / 1040 Brussel

CREDOC
Rue de la Montagne 34 / Bergstraat 34
Bte 11 / Bus 11
1000 Bruxelles / 1000 Brussel

DANMARK

Schultz EF-publikationer
Mentergade 19
1116 København K
Tlf. (01) 14 11 95
Telecopier (01) 32 75 11

BR DEUTSCHLAND

Bundesanzeiger Verlag
Breite Straße
Postfach 10 80 06
5000 Köln 1
Tel. (02 21) 20 29-0
Fernschreiber ANZEIGER BONN 8 882 595
Telecopierer 20 29 278

GREECE

G.C. Eleftheroudakis SA
International Bookstore
4 Nikis Street
105 63 Athens
Tel. 322 22 55
Telex 219410 ELEF

Sub-agent for Northern Greece

Molho's Bookstore
The Business Bookshop
10 Tsimiski Street
Thessaloniki
Tel. 275 271
Telex 412885 LIMO

ESPAÑA

Boletín Oficial del Estado
Trafalgar 27
28010 Madrid
Tel. (91) 448 60 00

Mundi-Prensa Libros, S.A.
Castelló 37
28001 Madrid
Tel. (91) 431 33 99 (Libros)
431 32 22 (Suscripciones)
435 36 37 (Dirección)
Télex 49370-MPLI-E

FRANCE

Journal officiel
Service des publications des Communautés européennes
26, rue Desaix
75727 Paris Cedex 15
Tél. (1) 45 78 61 39

IRELAND

Government Publications Sales Office
Sun Alliance House
Molesworth Street
Dublin 2
Tel. 71 03 09

or by post

Government Stationery Office
Publications Section
6th floor
Bishop Street
Dublin 8
Tel. 78 16 66

ITALIA

Licosa Spa
Via Lamarmora, 45
Casella postale 552
50 121 Firenze
Tel. 57 97 51
Telex 570466 LICOSA I
CCP 343 509

Subagenti

Libreria scientifica Lucio de Biasio - AEIOU
Via Meravigli, 16
20 123 Milano
Tel. 80 76 79

Libreria Tassi
Via A. Farnese, 28
00 192 Roma
Tel. 31 05 90

Libreria giuridica
Via 12 Ottobre, 172/R
16 121 Genova
Tel. 59 56 93

GRAND-DUCHÉ DE LUXEMBOURG
et autres pays / and other countries

Office des publications officielles des Communautés européennes
2, rue Mercier
L-2985 Luxembourg
Tél. 49 92 81
Télex PUBOF LU 1324 b
CCP 19190-81
CC bancaire BIL 8-109/6003/200

Abonnements / Subscriptions

Messageries Paul Kraus
11, rue Christophe Plantin
L-2339 Luxembourg
Tél. 49 98 888
Télex 2515
CCP 49242-63

NEDERLAND

Staatsdrukkerij- en uitgeverijbedrijf
Christoffel Plantijnstraat
Postbus 20014
2500 EA 's-Gravenhage
Tel. (070) 78 98 80 (bestellingen)

PORTUGAL

Imprensa Nacional
Casa da Moeda, E. P.
Rua D. Francisco Manuel de Melo, 5
1092 Lisboa Codex
Tel. 69 34 14
Telex 15328 INCM

Distribuidora Livros Bertrand Lda.
Grupo Bertrand, SARL
Rua das Terras dos Vales, 4-A
Apart. 37
2700 Amadora CODEX
Tel. 493 90 50 - 494 87 88
Telex 15798 BERDIS

UNITED KINGDOM

HM Stationery Office
HMSO Publications Centre
51 Nine Elms Lane
London SW8 5DR
Tel. (01) 211 56 56

Sub-agent

Alan Armstrong & Associates Ltd
72 Park Road
London NW1 4SH
Tel. (01) 723 39 02
Telex 297635 AAALTD G

UNITED STATES OF AMERICA

European Community Information Service
2100 M Street, NW
Suite 707
Washington, DC 20037
Tel. (202) 862 9500

CANADA

Renouf Publishing Co., Ltd
61 Sparks Street
Ottawa
Ontario K1P 5R1
Tel. Toll Free 1 (800) 267 4164
Ottawa Region (613) 238 8985-6
Telex 053-4936

JAPAN

Kinokuniya Company Ltd
17-7 Shinjuku 3-Chome
Shinjuku-ku
Tokyo 160-91
Tel. (03) 354 0131

Journal Department
PO Box 55 Chitose
Tokyo 156
Tel. (03) 439 0124

Price (excluding VAT) in Luxembourg:
ECU 15.70 BFR 675 IRL 12.20 UKL 11 USD 17.50

OFFICE FOR OFFICIAL PUBLICATIONS
OF THE EUROPEAN COMMUNITIES

L-2985 Luxembourg

ISBN 92-825-7198-X