

Final Report to the DTI

# **Examining the Potential for Women Returners to Work in Areas of High Occupational Gender Segregation**

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## CONTENTS

<b>EXECUTIVE SUMMARY.....</b>	<b>5</b>
<i>Overview.....</i>	5
<i>Key Findings.....</i>	5
<i>Women’s Employment.....</i>	6
<i>The Role of Training in Ensuring Women Returners Maximize their Potential in the Workplace.....</i>	7
<i>Recommendations.....</i>	8
<b>REPORT DEFINITIONS AND ABBREVIATIONS.....</b>	<b>9</b>
<b>1. INTRODUCTION.....</b>	<b>11</b>
1.1 <i>Context.....</i>	11
1.2 <i>Data Used in the Report.....</i>	12
<b>2. SKILLS SHORTAGES AND WOMEN RETURNERS.....</b>	<b>13</b>
2.1 <i>Definitions.....</i>	13
2.2 <i>Introduction.....</i>	13
2.3 <i>Shortages of Skills and Qualifications as Perceived by Employers.....</i>	14
2.4 <i>Occupational Downgrading and the Over-Qualification of Returners.....</i>	21
2.5 <i>Summary.....</i>	24
<b>3. A REVIEW OF THE LITERATURE AND DATA ABOUT WOMEN RETURNERS AND POTENTIAL RETURNERS.....</b>	<b>26</b>
3.1 <i>Introduction.....</i>	26
3.2 <i>Women’s Labour Force Participation.....</i>	26
3.3 <i>Women Returners’ Preference for Part-time Jobs or Part-time Hours?.....</i>	32
3.4 <i>Occupational Segregation.....</i>	34
3.5 <i>Explaining Segregation.....</i>	37
3.6 <i>Summary.....</i>	40
<b>4. QUALIFICATIONS, AGE, PAY AND OCCUPATIONAL MOBILITY.....</b>	<b>41</b>
4.1 <i>Introduction.....</i>	41
4.2 <i>Age, Qualifications and Wages.....</i>	41
4.3 <i>Exploring the Relationship Between Qualifications and Likelihood of Working.....</i>	46

4.4	<i>Qualifications, Employment and Wages</i>	52
4.5	<i>Analysis of Occupational Mobility, Occupational Downgrading and Over-Qualification</i>	53
4.6	<i>Occupational Mobility 1991-2002</i>	54
4.7	<i>Gender Segregation and Wage-Rates</i>	59
4.8	<i>Women Returners and Skills Shortages in Gender-Segregated Occupations</i>	63
4.9	<i>Summary</i>	65
<b>5.</b>	<b>ORGANISATIONAL CULTURES IN AREAS OF HIGH GENDER SEGREGATION</b>	<b>66</b>
5.1	<i>Introduction</i>	66
5.2	<i>Barriers to Women Returners</i>	66
5.3	<i>Transitions to Part Time Work</i>	69
5.4	<i>Summary</i>	70
<b>6.</b>	<b>AN OVERVIEW OF INITIATIVES FOR FACILITATING WOMEN RETURNERS' EMPLOYMENT IN AREAS OF OCCUPATIONAL SEGREGATION</b>	<b>71</b>
6.1	<i>Introduction</i>	71
6.2	<i>Qualification Levels and Occupations</i>	71
6.3	<i>Recent Training Provision and Skills Shortages</i>	73
6.4	<i>Current Training and Initiatives for Women Returning to SET</i>	76
6.5	<i>Summary</i>	78
<b>7.</b>	<b>CONCLUSIONS</b>	<b>79</b>
<b>8.</b>	<b>REFERENCES</b>	<b>82</b>
	<b>APPENDICES</b>	<b>85</b>

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The views expressed in this report are those of the authors and do not necessarily reflect the views of the Department, or any individual or body associated with this research.

### **BHPS**

The original data creators of the British Household Panel Survey and the UK Data Archive bear no responsibility for the further analysis or interpretation of the BHPS data offered here.

### **Census Data**

Crown copyright is acknowledged for the use of the Census Data 2001 for England, Wales and Scotland.

# EXECUTIVE SUMMARY

## Overview

The aim of this project was to review the employment and earnings potential of women who return to employment after a period of caring for children or other family members. The report includes analysis of the literature and statistical data on women's employment histories, the kinds of jobs they do and what they are paid. It also looks at women's qualifications and skills and the way in which their employment reflects their skills and explores employers attitudes to women returners and the training opportunities available to them.

## Key Findings

- Women returners form a quarter of the female labour force in the UK. In 2005, mothers returning to work part-time were heavily concentrated in four occupations: elementary administration; sales and customer services; caring personal services and administration. These occupations are female dominated and have lower rates of pay in the UK compared with male-dominated occupations.
- Mothers returning to work full-time were found to work in a broader range of occupational areas than those returning part-time, including some of the ones listed above, but also other areas such as teaching and management.
- Women who gain a formal Level 2 (GCSE) or Level 3 (A-Level) equivalent qualification are far more likely to be in paid employment, compared with women who have not achieved these levels of qualification.
- Women returners tend to under-utilize their past training – e.g. scientific and technical training – when they take less skilled jobs for which they are over-qualified. Over-qualification of mothers is most notable among the caring occupations and sales and customer services.
- Returners who are currently working part-time experience an extra 16 percent loss of wages (per hour), given their characteristics. Full-time well-qualified returners have much higher wages and are in better-paid occupations than part-time returners.
- Women returners' lower rate of pay is likely to reflect three factors: oversupply of labour, poorer opportunities for training and support, and choosing an employer close to home.
- Women who return to full-time work are more likely to gain advancement and promotion than those who return to part-time work.
- Male-dominated jobs are more likely to have skills shortages. A number of male-dominated occupations, notably the skilled trades and some construction occupations, had skills-shortages in ESS 2001. However, a number of important female-dominated occupations (notably health and social work professionals) also had skills-shortages.
- Skills shortages are partly due to the need for qualifications in certain occupations, notably science and technology professionals, skilled construction and building trades, and skilled metal and electrical trades.

- Across the four 'SET' trades at least 80 percent of the workforce are male. Wages are higher in male-dominated occupations even after allowing for productivity of the industry, size of the firm, and educational qualifications. Women who work in male-dominated occupations tend to earn higher wages. The literature suggests that many inter-related factors reduce the likelihood of women remaining in SET occupations: inflexible hours which do not fit within the boundaries of many women's childcare arrangements; masculine workplace cultures; long hours of working; stereotypical attitudes of employers and a lack of work-life balance policies and initiatives. Women might be encouraged to work in traditionally 'male' jobs if they were more aware of potential gains they would make in wages and if SET workplaces had a more positive family-friendly culture.
- Women returners and women who would like to return to work have not been recognized in most policy documentation as distinct groups and do not necessarily have access to training and development.
- While the Sector Skills Councils appear to recognize diversity and a better gender balance as positive goals, training initiatives such as those in the Sector Skills Council strategy documents focus on encouraging young women. This is true of the emphasis on Apprenticeships as a means for achieving a Level 2 training qualification. Apprenticeships have typically been full-time placements unsuitable for those with caring responsibilities.

## **Women's Employment**

Women's employment paths are changing and the notion of the 'woman returner' is evolving. Parents now have the right to request flexible working when they have a child under five. Women are entitled to longer maternity leave, and can return to their job up to a year following the birth of their child. Men can also now take paternity leave. While on maternity leave, women are not considered to have technically exited the labour market. Thus if women take a full year's maternity leave and then return to work part-time, as is commonplace, they may experience discontinuity in career paths, but not necessarily inactivity. In such a scenario, women today have different employment experiences compared to women of earlier generations. Despite this, many women take breaks from work in order to care for children or other family members. Evidence from the British Household Panel Survey (BHPS) showed that around 1.4 percent of working-age women - or about 250,000 - return to the labour force each year.

It is often argued that women who experience occupational down-grading from returning to part-time, as opposed to full-time work, are those who can benefit from the non-monetised aspects of a job such as working only in the school-terms. That is a rational choice to sacrifice wages for work flexibility. Typically the part-time jobs that women returners occupy tend to be low status. The UK has a relatively poor integration of part-time work into higher occupational grades: just 3.6 percent of female part-time jobs are of managerial status. Eurostat data show that of the 5.6 million women working part-time in 2001, two categories: 'service and sales' (2.1 million jobs) and 'clerical' (1.3 million jobs) accounted for well over half.

Individual women have different preferences about how best to combine work and family life (Hakim 1996; 2000). But that statement should be further qualified – women are also diverse in their abilities to translate preferences into actual labour market outcomes (Houston and Marks 2003). Some will be more successful than others (McRae 2003). A woman's occupational status prior to maternity, her social class, and the employer's policies on flexibility and work-life balance combine to shape women's abilities to fulfil their preferences.

This preference or rational choice argument does not stand scrutiny when looking at research into workplaces in male dominated occupational areas such as Science, Engineering, Technology and Construction. Such research highlights working practices that restrict women's promotional prospects and reveal evidence of organisational cultures that have negative implications for women's abilities to combine careers with raising a family. However, in very recent years, research suggests more encouraging findings in organisations in these occupational areas. Some employers are recognising the need to retain their female staff and are implementing practices and policies aimed at retaining women returning from maternity.

The fact women returners find it difficult to work part-time in traditional male dominated sectors has implications for the economy. Skill shortages are higher in sectors where there is a gender dominance. Further, this research found that women returners on average experience a 16% drop in wages due to being "over-qualified" for the part-time job they are undertaking. For recent returners, downward mobility was more common than among all women. For those working part-time, upward mobility was much more limited than among all women and men. The long-term employment pathways of these women are associated with detrimental outcomes not only for the employee, but also for the economy as a whole.

## **The Role of Training in Ensuring Women Returners Maximize their Potential in the Workplace.**

As stated above women without a qualification at Level 2 are significantly less likely to be in employment – this is also true for women with caring responsibilities. The Skills White Paper, *Skills: Getting on in Business, Getting on at Work* published in March 2005 reiterates the Government's commitment that anyone without a full Level 2 will be entitled to support to achieve one. However, for women returners to receive this training it has to be delivered in such a way that they can still fulfil their caring commitments and any work responsibilities.

Initiatives do exist to actively help those claiming welfare benefits (e.g. single mothers) to receive training to enable them to compete for jobs in the current labour market through the 'New Deal' schemes. However, these initiatives do not necessarily extend to women returners and potential women returners who may be partnered and therefore not in receipt of welfare benefits. These returners are a distinct group of individuals with specific skill and training requirements. As a distinct category, they fall between those caught under the policies and incentives aimed at individuals currently working in the labour market and those who can be established as a potential labour supply. Further work is needed to test how or if these women could be supported to access training that will lead to higher status employment including in areas of skill shortage.

Where women returners already have a Level 2 or Level 3 qualification but have lost contact with the labour market, support is needed for them to achieve a fresh Level 2 or Level 3 qualification in a specified area of gender segregation and skills shortage, such as science, engineering, technology (SET) or construction – enabling a change in career path or a way of re-training and refreshing one's skills. However, as well as training there will have to be a concerted effort to overcome barriers such as organizational cultures that inhibit female employment in these sectors.

## Recommendations

- Women returners remain a partially untapped workforce resource. Explicit and formal recognition that women returners and potential returners have been overlooked in UK training and skills policy will be important if policy makers are to succeed in making training and other means of skill-acquisition more accessible.
- Certain employment-related training programs have omitted the category of 'women returners' from the list of target groups. Additional education and training targeted at women returners could improve women's capacity to earn in the labour market.
- Incentives, funding and resources to address the UK's intermediate-level skill gaps can be directed in part to those working in occupational areas that have high male-dominance. It may be desirable for training offered to workers aiming at these occupations to be gender-inclusive and age-inclusive as well as welcoming and encouraging those who do caring work.
- Mechanisms for improving the quality of part-time jobs need to be found. The diversification of part-time work and the adoption of genuinely flexible working practices need to be encouraged if women returners are to avoid occupational downgrading.
- Firms paying women wages that are below their potential productivity level would benefit from attempts at job re-design if the changes allow the workers to remain part-time but to use their existing skills better.
- Employers need to recognise that institutional cultures and embedded practices such as working overtime, working away from home, and irregular hours can serve as barriers to women and especially to women returners. The long-term employment trajectories of women returners could be improved by concerted efforts to achieve a more family-friendly workplace culture across all sectors.
- Women themselves can be discouraged from occupational downgrading, but it is essential that childcare services, help with domestic work, and work-life balance policies in the workplace be put into place too. Otherwise women will tend to be seen as 'to blame for' or as 'choosing' the overall situation which results in them being over-qualified.
- Skills shortages in specific occupations can in part be addressed through reducing the gender-segregation of the male-dominated occupations. The converse of male-domination of the occupations with high skills shortages is overcrowding in the female-dominated occupations. Gender segregation should be reduced in UK occupations through job redesign, re-training, a welcoming attitude to women joining in male-stereotyped jobs, and a fresh attitude to flexible working hours and part-time working.



## REPORT DEFINITIONS AND ABBREVIATIONS

### **Actual Returners**

Working Mothers (Full-time or Part-time) - women with at least one child in the household, and who are employed either part-time or full-time. A Recent Returner is a woman who was employed at some time in the 10 years between 1990/1 to 2000/1, following which she had for at least one of the 5 years from 1996-2000 had the employment status of family care work, thus resulting in a gap in employment; and then was back in employment including the year 2001/2.

The differences between maternity leave and 'doing family care work' are very important. Maternity leave is a condition from which one returns to the same workplace and usually to the same job. The category of doing family care work is construed as a competing category of 'employment status'. In the LFS and BHPS alike, the two categories are mutually exclusive. The actual returners included a few women on maternity leave. In the recent returners categories, however, those currently on maternity leave were left out. Maternity leave *per se* was not considered to qualify as a career interruption.

### **Potential Returners: Three Types:**

A Potential Returner 1 is a woman with children who states caring responsibilities as her daily activity and has no job.

A Potential Returner 2 is a woman with children who does not claim to have caring responsibilities, and has no job.

A Potential Returner 3 is a woman currently without children who has no job.

### **Types of Vacancies**

A Hard-to-Fill Vacancy is a vacancy which the respondent (an employer) classified as hard-to-fill (HtFV).

A Skill-Shortage Vacancy is a skill-related hard-to-fill vacancy where the respondent cited as a cause either a low number of applicants with the required skills, lack of work experience the company demands or lack of qualifications the company demands or a combination. (SSV)

### **Shortage Ratios**

The Skills Shortage Ratio is defined as the total number of skills shortage vacancies divided by the total number of jobs in an occupational group. The Skills Shortage Index is the Skills Shortage Ratio multiplied by 100.

The Qualification Shortage Ratio represents the percentage of jobs for which employers stated that their skill-shortage vacancy was due to a lack of qualification of the applicants that the company desires.

The Experience Shortage Ratio represents the percentage of jobs for which employers said that their skill-shortage vacancy is due to a lack of experience of applicants that the company desires.

The Application-Shortage Ratio represents the percentage of jobs for which employers said that their skill-shortage vacancy is due to a lack of applicants.

### **Skill gaps**

Skill gaps are the extent to which employers perceive their employees as not being fully proficient at their jobs.

### **Over- and Under-Qualification**

Qualifications were measured using the Labour Force Survey in which Level 2 qualifications refer to passing 5 GCSEs at grades A\*-C, or equivalent; Level 3 involves passing at least two A-Level at pass grades, or equivalent; and 'above Level 3' refers to a degree or higher qualification. Level 1 contains those who did not pass five GCSE exams.

Over-qualification is defined by measuring the difference between the typical qualification level of employees by occupation groups (SOC2) as reported in ESS in England 2001, and the actual qualification level of the employees as reported in LFS. This difference is the qualification gap. Each qualification level is converted into years, taking education below Level 2 to be 8 years of schooling, Level 2 as 9 years of schooling, Level 3 as 11 years of schooling, and above Level 3 as 14 years of schooling (usually reflecting a degree).

If the over-qualification measure is negative, there is over-qualification. It is, in general, mildly positive in Great Britain 2001. An analysis of qualifications levels by gender is also presented and for this purpose the difference between the men's mean (in years) and the women's mean (in years) is calculated before a statistical test is conducted.

### **Gender-segregation ratio**

The male ratio is obtained by dividing the number of male employees by the total number of employees within each occupation (Standard Occupational Classification 2000, 2-digit version). The figures show the percentage of male employees by occupation (whereby 1 = 100 percent and 0 = 0 percent).

### **Abbreviations**

LFS –	Labour Force Survey
BHPS –	British Household Panel Survey
ESS –	Employers Skills Survey (2001)
NESS –	National Employers Skills Survey (2003)
SIC1 –	Standard Industrial Classification
SOC1 –	Standard Occupational Classification 2000 at the one-digit level
SOC2 –	Standard Occupational Classification 2000 at the two-digit level
SSV –	Shortage-Skill Vacancy
HtFV –	Hard-to-Fill Vacancy
SICSOC –	Combined classification using SOC1 and SIC 92
SET –	Science, Engineering and Technology

# 1. INTRODUCTION

## 1.1 Context

This report addresses questions of when and why women who experience career interruptions face downgrading in the labour market. The questions have to do with their levels of qualifications, their skills and the rewards they get to working, and background issues about which women rejoin in paid work (and why) after having children. Besides occupational downgrading of some women returners, the report also examines the related empirical questions ‘how do formal qualifications affect the women’s likelihood of taking up employment?’ and ‘how do organisational cultures and training affect women’s likelihood of taking up well-paid jobs after having children?’. The answers to these questions are tied up with gender segregation in many workplaces, and in particular within specific occupations such as construction and the skilled trades. The report gives a detailed answer to each of the questions raised here whilst providing a rounded overview of the occupational situation of actual returners to the labour market at this time.

Many women who return to employment after having children or periods of caring can experience difficulties reconciling work and family life. In the short term, this can be as they adapt to changes at work and in family composition. In the long term, this can be as women attempt to resume careers after a longer period of inactivity or part-time work. Often when women return to work part-time they have to change employment. Many occupational areas in the labour market, particularly those that are male dominated, do not accommodate part-time working or hours that suit childcare arrangements. When women change occupations they often do not utilise their past experience, training and skills, and this may in turn have negative implications for their pay, quality of working life, employment status and career progression.

In this research we explore these complex issues affecting those who are termed ‘women returners’. We review the existing literature on women returners, women’s employment trajectories and areas of occupational gender segregation. We specifically focus on Science, Engineering and Technology (SET) jobs, as well as the Construction and ICT sectors, which are recognised as having high levels of gender segregation and skills shortages.

The report is presented as follows: first, we set out working definitions of the different types of women returners including those who are working and those who are not currently working. Section two summarises the skill shortages in the UK and identifies the qualifications and skills of women returners. Section three reviews the literature and data about women returners’ situation and prospects. Section four is in two parts; it documents the age, qualifications and wages of women returners and provides analysis of occupational downgrading amongst women returners. Section five examines the organisational cultures in areas of high gender segregation and occupational downgrading. Section six reviews the training available to those returning to the labour market and reports the findings following consultation with key experts. Section seven outlines our conclusions. The sources of our detailed literature review are listed in section eight. In addition, detailed Appendices provide further statistical evidence.

## 1.2 Data Used in the Report

### Defining Returners

Career interruptions are associated with lower wages, but maternity leave *per se* is not (Olsen & Walby 2004). Therefore careful definitions are needed. A women returner is a woman who returns to employment after having children or after a period of family caring. Maternity leave *per se* is not considered here as a period of family caring. We further distinguish between actual returners, recent returners, and potential returners. More detail is available in the definition section at the beginning of this report.

The different groups can be identified using the Labour Force Survey (LFS) and the British Household Panel Survey (BHPS) data. In both cases we have excluded self-employed women for the pragmatic reason that their working conditions are hard to compare with those who are employees. Separate research will be needed on self-employed women and unpaid family workers in small businesses.

The LFS is a large national survey, conducted each quarter on five independent samples (waves) of British adults. Each wave stays in the LFS for five successive quarters and the wave entry dates are staggered. The BHPS, by contrast, retains the same sample over many years (1990/91 to present). In the LFS, the employed women returners are identified by checking that there is at least one child age 0-16 in the household. These women are termed 'mothers' in the report. Two caveats apply when the LFS is used in this way. Firstly, the woman could have a non-mothering relation to that child. We explicitly omitted sisters of young children from the employed returners' category, but in a few cases the woman respondent could be step-mother or unrelated adult. This is a weakness inherent in the LFS. Secondly, the usage here is that the adult woman is called a 'mother' if she has a child of 16 years or younger – not older children or those who have left home.

The dividing line for part-time work is 30 hours a week.

The work experience of 'recent returners' has three specific stages. A working stage – which includes self-employment and employment as possibilities – dated 1990-2000; then a period of family care work (not including those who only care for someone outside the family in another household); and finally the period 2001/2 when they had a job.

In the BHPS and LFS a person has a weight which allows the whole panel of respondents to accurately represent the age, sex and other main characteristics of the national population. We report the raw numbers of cases but always use the weighted data for optimum representativeness.

The typology of returners and potential returners offered here is explored in this report and the educational qualifications, working conditions (notably occupational gender segregation), pay, and hours of each group are compared. The main typology necessitates combining data from two sources, LFS and BHPS. Each dataset is adjusted to make the samples representative of the combined Great Britain terrain (England plus Wales and Scotland). Northern Ireland is not covered by the report and will require further research. We also draw on Eurostat data and the 2001 Census data for Great Britain.

## 2. SKILLS SHORTAGES AND WOMEN RETURNERS

### 2.1 Definitions

The Employers Skills Survey (ESS) 2001 for England classifies vacancies in three ways, as normal, hard-to-fill and as skill-shortage vacancies.

Vacancies are defined as all current vacancies reported by the respondents, whereas hard-to-fill vacancies are those vacancies which the respondent classified as hard-to-fill. Skill-shortage vacancies are defined as hard-to-fill vacancies “which were skill related where at least one of the following causes were cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands” (ESS 2001: ii). The main causes are listed below along with the percentage of vacancies which are deemed to fit under each heading. The percentages total more than 100 because a vacancy can be named as caused by more than one of the listed factors. The less widely cited factors included company location, irregular hours, unattractive conditions of work and poor career progression.

#### Causes of Hard-To-Fill Vacancies, Including Skills-Shortage

<i>Low number of applicants with required skills (34%)</i>	<i>SSV component</i>
<i>Lack of work experience (9%)</i>	<i>SSV component</i>
<i>Lack of qualifications (8%)</i>	<i>SSV component</i>
<i>Too much competition (15%)</i>	
<i>Not enough people interested (21%)</i>	
<i>Company does not pay enough (15%)</i>	
<i>Low number of applicants with motivation (15%)</i>	
<i>Low number of applicants generally (26%)</i>	

Thus, hard-to-fill vacancies are a subset of all current vacancies. The hard-to-fill set of vacancies in turn has a subset which has become known as the skill-shortage vacancies. A ratio measures the proportion of skills-shortage vacancies by employment. See also ‘Report Definitions and Abbreviations’ at the beginning of this report.

### 2.2 Introduction

In this section we study the location of skills shortages in detail. The 2003 Skills in England survey showed that the largest skills shortages remain in sales and customer service occupations. The largest skills shortage relative to the size of the occupation was among science and technology professionals and skilled construction & building trades (see Figure 2.1 below). These results are based upon ESS 2001 whose raw data are used in this report. Over half of the science and technology professionals’ vacancies were reported to be skills-shortage vacancies.

Other central findings from NESS 2003 were that the intensity of skill demand is increasing, in terms of both formal qualifications and generic skills; for instance, growth in managerial and professional occupations leads to demand for more individuals with relevant professional and managerial skills and qualifications; skill-shortage vacancies are increasingly found in education and health and social care and among professional occupations; and that skilled trades stand out as having the biggest recruitment problems, accounting for 15 percent of hard to fill vacancies and 18 percent of skill-shortage vacancies.

Areas of high gender segregation are also often the occupational areas where skill-shortage vacancies are most common: among female dominated areas - education, health and social care and customer services; and among male dominated areas - skilled trades, construction and science professionals. Areas of growth and expansion, for example, managerial and professional occupations (the latter including scientific professionals and associate

professionals) and construction occupations are also areas with relatively high levels of skill shortages and hard-to-fill vacancies

Mismatches between supply and demand, which result in hard-to fill vacancies and skill gaps differ between occupational area and industry. According to the National Employers Skills Survey:

“Skilled trade occupations stand out as having the highest share of all recruitment problems. But it is also important to gauge the extent to which recruitment problems are disproportionately high or low relative to the distribution of employment. Looked at in this way recruitment problems were disproportionately high in skilled trades, personal service, process and assembly occupations and among associate professionals.” (NESS, 2003: 14)

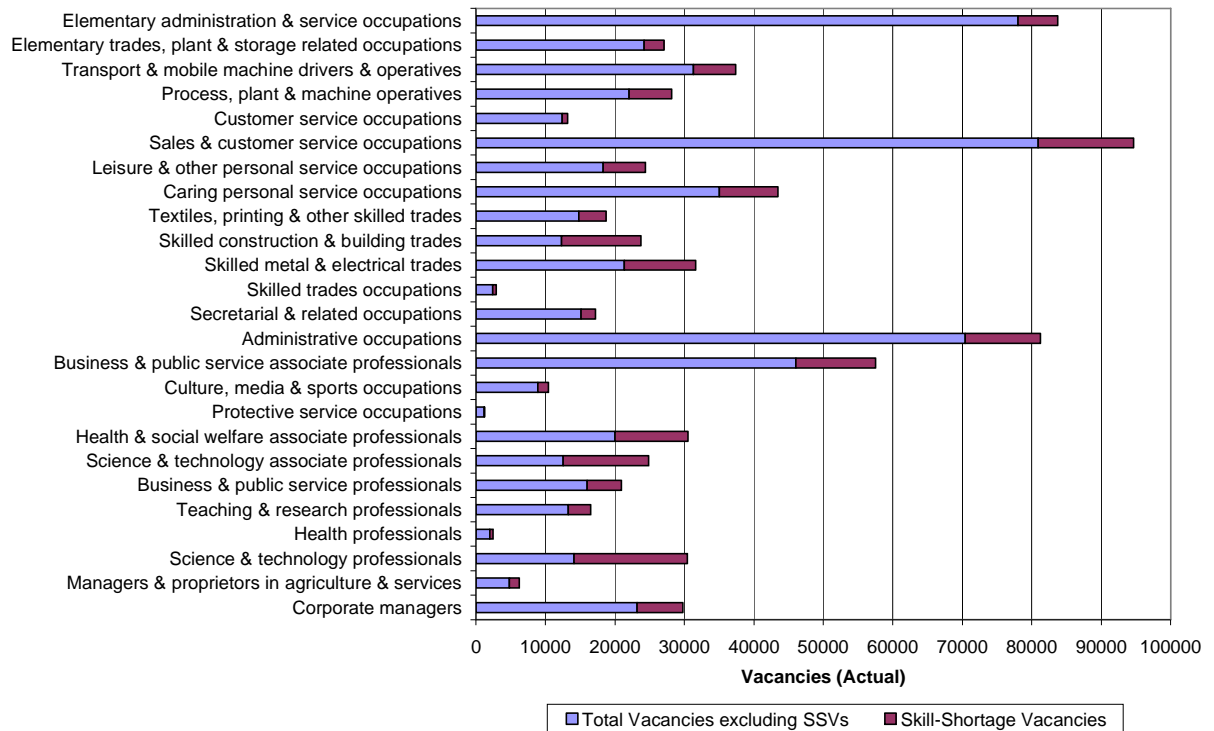
The main causes of hard-to-fill vacancies are: the low numbers of applicants with the required skills, attitude, a lack of people interested in doing this sort of work and a low number of applicants generally. The main causes of skill gaps are the lack of experience of the member of staff. The most common skills lacking in applicants were technical and practical, communication and problem solving skills. Thus skills associated with “women’s work” such as communicative skills and customer relation skills, are lacking in traditionally male occupational areas.

Reports from the National Employers Skills Survey 2003 showed similar results. (Hogarth and Wilson, 2003). Analysis of the Employers Skill Survey (2001) has also shown that most employers thought that their skill needs were likely to change over the next few years to cope with changes in new technology and working practices, particularly in line with the rise in use of ICT. Changes were mostly anticipated in communication skills, customer handling skills, team working and management skills.

### **2.3 Shortages of Skills and Qualifications as Perceived by Employers**

Figure 2.1 shows the actual numbers of vacancies in England 2000/1 broken down by the main occupational categories. In each bar, the actual number of skills-shortage vacancies can be seen as the upper segment.

**Figure 2.1 Actual Numbers of Vacancies and Skill-Shortage Vacancies by Occupations in England**



Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)

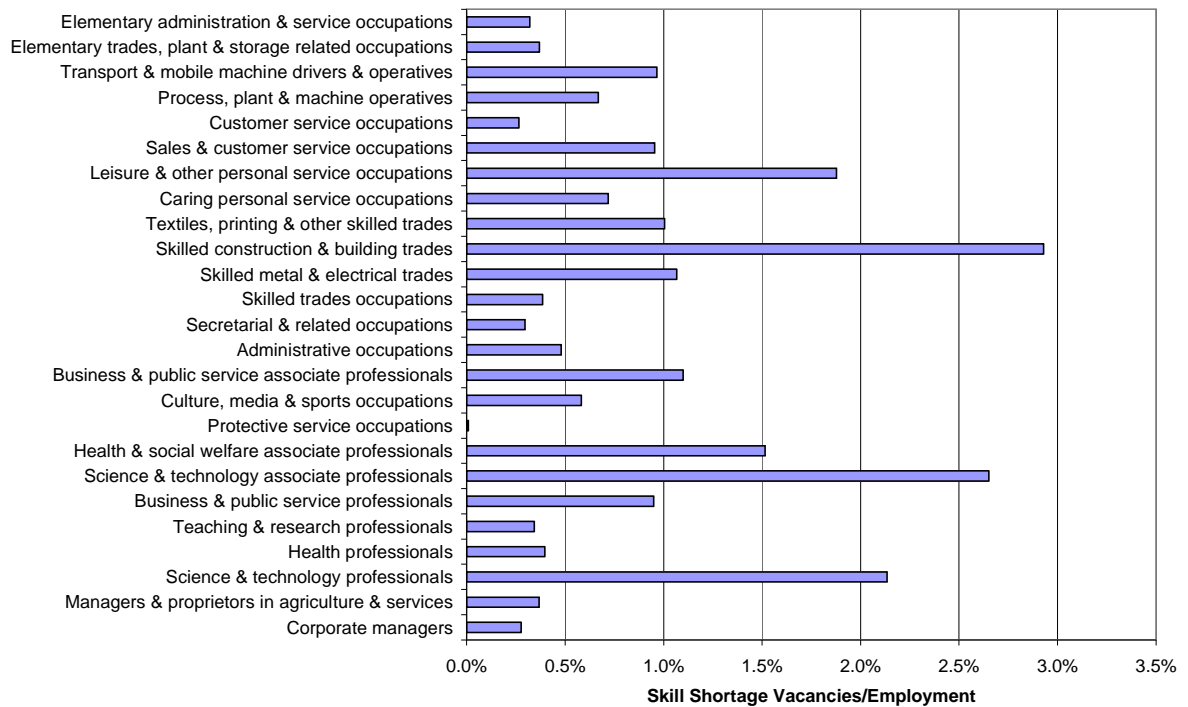
Occupations as classified under the Standard Occupational Classification using the 2-digit code.

SSV (Skill-shortage vacancies): These are 'hard-to-fill vacancies which are skill related where **at least one** of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands.

There seems to be a different pattern of vacancies and skill-shortage vacancies by occupational groups so it is therefore sensible to create a ratio which takes this into account. The skills-shortage ratio is expressed as the proportion of skill-shortage vacancies by the total number employed in the different occupational groups. Since the ESS 2001 only contains data for England, the skills-shortage ratio is created for England only. Later these figures are mapped onto British Household Panel Survey data for all of Great Britain.

Figure 2.2 shows the percentage of skill-shortage vacancies as a percentage of employment within occupational groups. Skilled construction & building trade occupations, science and technology assistant professional and professional occupations have the highest skills-shortage values. The lowest values are among the corporate managers, the customer service occupations and the secretarial & related occupations. Thus in absolute terms, the ESS shows that sales and customer services has the biggest skills shortages (Figure 2.1), whilst relative to the occupation's own size the skills-shortage is most severe among science and technology professionals and skilled construction & building trades.

**Figure 2.2 Skills-Shortage Level by Occupation for England**



Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.  
 Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)  
 Occupations as classified under the Standard Occupational Classification-2 digit code.  
 SSV (Skill-shortage vacancies): These are 'hard-to-fill vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands.

In order to focus on very specific areas of shortages the skills-shortage ratio is also applied to the LFS data at a very high level of detail. 126 occupations exist if you look within each industrial sector (at SOC 2000 one digit level – whereby some combinations are empty). The skills-shortage ratio was matched onto LFS in this way, and Figure 2.3 shows the 30 highest shortage jobs among these 126 industry/occupation classifications broken down by gender segregation.



**Figure 2.3 Thirty Occupational Groups with the Highest Skill-Shortages in 2001 for England.**

**A. Male-Dominated Jobs With the Highest Skills-Shortage Index - England**

Rank	Occupation	Industry	Gender Segregation	Skills-shortage Index	Percent of Employment
5	Skilled trades occupations	Construction	0.92	2.72	2.0%
6	Skilled trades occupations	Business services	1.00	2.67	0.4%
8	Professional occupations	Business services	0.78	1.71	2.2%
12	Skilled trades occupations	Wholesale, retail	0.95	1.53	1.1%
14	Process, plant & machine operatives	Transport & communication	0.88	1.36	1.5%
15	Skilled trades occupations	Agriculture & fishing	0.93	1.31	0.2%
18	Process, plant & machine operatives	Business services	0.83	1.10	0.2%
20	Skilled trades occupations	Hotels & restaurants	0.67	0.99	0.5%
21	Professional occupations	Electricity & water supply	0.98	0.97	0.1%
23	Professional occupations	Construction	0.86	0.80	0.4%
24	Skilled trades occupations	Manufacturing	0.91	0.77	3.4%
25	Process, plant & machine operatives	Construction	0.93	0.76	0.5%

**B. Jobs in Mixed-Sex Occupations with the Highest Skills-Shortage Index - England**

Rank	Occupation	Industry Sector	Gender Segregation	Skills-shortage Index	Percent of Employment
1	Professional occupations	Finance	0.74	11.43	0.4%
2	Associate professional & technical occupations	Finance	0.54	5.51	1.0%
3	Sales & customer service occupations	Business services	0.37	4.16	0.3%
4	Sales & customer service occupations	Hotels & restaurants	0.44	2.99	0.2%
9	Managerial & senior official occupations	Finance	0.68	1.70	1.1%
10	Associate professional & technical occupations	Wholesale & retail	0.50	1.63	0.9%
11	Process, plant & machine operatives	Agriculture & fishing	0.60	1.58	0.1%
13	Associate professional & technical occupations	Construction	0.70	1.45	0.3%
16	Sales & customer service occupations	Manufacturing	0.39	1.23	0.3%
20	Skilled trades occupations	Hotels & restaurants	0.67	0.99	0.5%
27	Associate professional & technical occupations	Business services	0.57	0.75	1.7%
29	Elementary occupations	Hotels & restaurants	0.36	0.62	2.5%
30	Sales & customer service occupations	Transport & communication	0.38	0.59	0.4%

### C. Female-Dominated Jobs With the Highest Skills-Shortage Index - England

Rank	Occupation	Industry Sector	Gender Segregation	Skills-shortage Index	Percent of Employment
7	Personal service occupations	Other community & services	0.25	2.64	1.0%
17	Sales & customer service occupations	Health & social work	0.20	1.22	0.1%
19	Personal service occupations	Health & social work	0.09	1.00	3.5%
22	Associate professional & technical occupations	Health & social work	0.19	0.85	3.1%
26	Sales & customer service occupations	Finance	0.21	0.76	0.4%
28	Administrative & secretarial occupations	Business services	0.20	0.67	2.3%

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004; Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Base: 24753 (raw), 20027919 (weighted).

Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)

Rank: The occupational groups shown are defined as jobs falling in the Standard Occupational Classification within a one-digit sector of the Standard Industrial Classification. This two-way classification gives 126 occupational groups of varying sizes. Rank then refers to the rank of the occupational group among these 126 different occupational groups. Note: The gender segregation cut-off points were: 0-0.25 Female-Dominated and .75 to 1.00 Male-Dominated, with the intermediate mixtures from 25% to 75% as Mixed Sex Occupations. See Appendix 2.

The finance, business services, manufacturing, skilled trades and construction sectors appear to have high skill shortages. See also the Appendix where further details of the size of each occupation and its skills shortage level is provided for all the 126 occupational groups.<sup>1</sup>

High levels of skills shortages can be found in both male-dominated and female-dominated jobs. For instance, males dominate in the skilled trades listed in Figure 2.3. However, female-dominated jobs among health and social welfare associate professionals also experienced skills shortage in 2001.

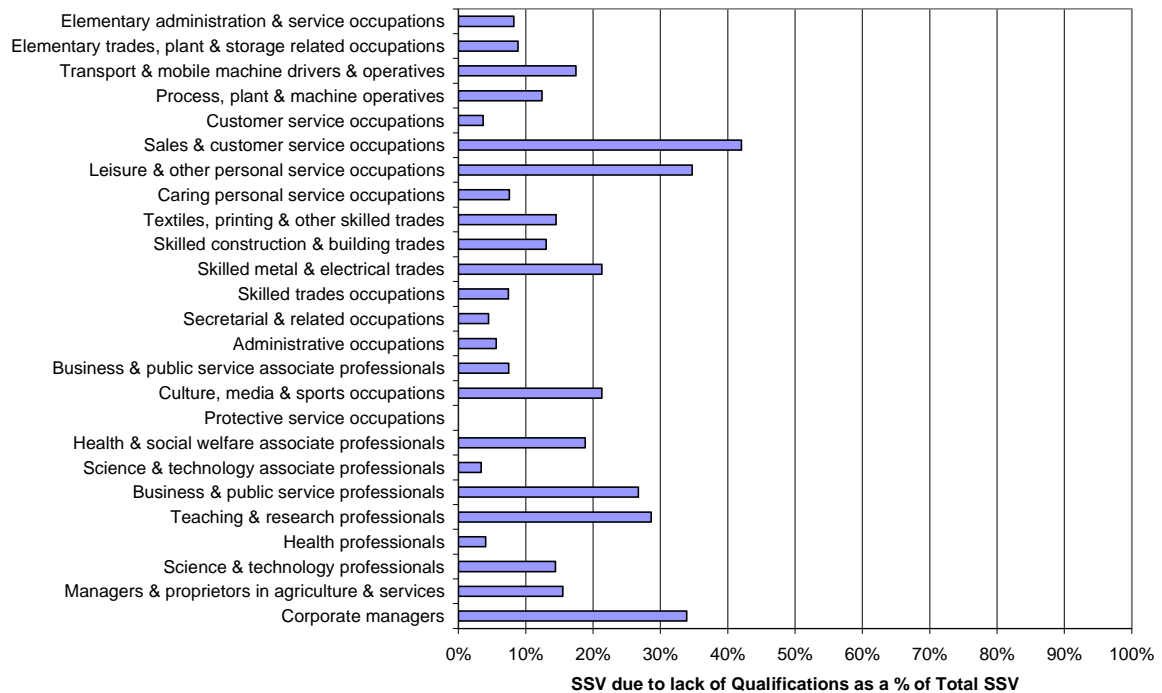
Based upon the subjective indicators found in the Employers Skills Survey of the reasons for vacancies being hard-to-fill, it is possible to separate the three sub-types of skill-shortage vacancies. These are discussed below.

#### **[i] Lack of qualifications**

The qualification-shortage ratio gives the percentage of employers who said that their skill-shortage vacancy is due to a lack of qualification of the applicants his or her company desires. As Figure 2.4 shows, the lack of qualifications demanded by the company was an important reason for skills shortages (>25 percent of skill-shortage vacancies) in five occupations: sales and customer services; corporate managers; leisure and other personal services and teaching and research professionals.

<sup>1</sup> We must stress that the data from the Employers Skills Survey 2003 were not available to the authors of this report, but that the Employers Skills Survey 2001 data were used instead. For comparison, we take the ESS 2001 data as a numerator and compare it with the LFS data for the period 2001-2004 inclusive. This approach cannot give us change over time in specific skills shortages.

**Figure 2.4 Skill-Shortage Vacancies due to a Lack of Qualifications**



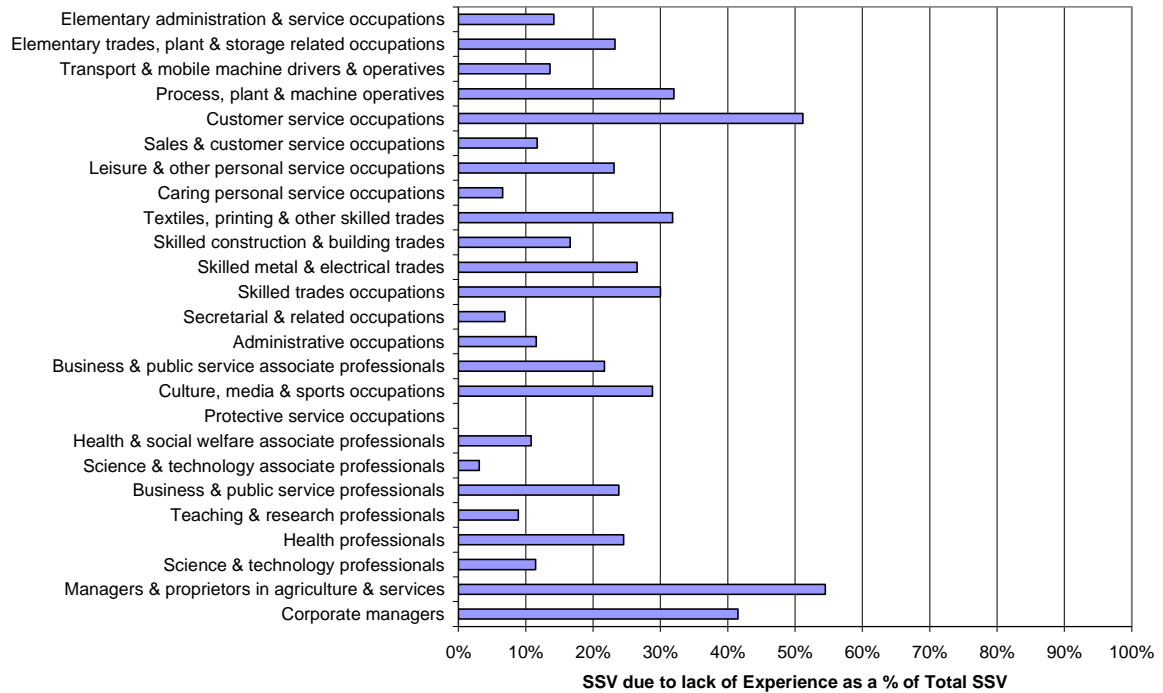
Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.  
 Population: All women and men except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.  
 Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)  
 Occupations as classified under the Standard Occupational Classification-2 digit code.  
 SSV (Skill-shortage vacancies): These are 'hard-to-fill vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands'

**[ii] Lack of Experience**

The experience-shortage ratio gives the percentage of employers who said that their skill-shortage vacancy is due to a lack of experience the applicants have which his or her company desires.

The foremost occupations for which experience was lacking are management and customer service occupations. In addition, a wide range of skilled jobs had applicants who lacked experience: health professionals; textiles and printing trades; process, plant and machine operatives; elementary trades workers; skilled metal and electrical trades; culture, media and sports occupations, and business and public service associate professionals.

**Figure 2.5 Skill-Shortage Vacancies Due to a Lack of Experience**



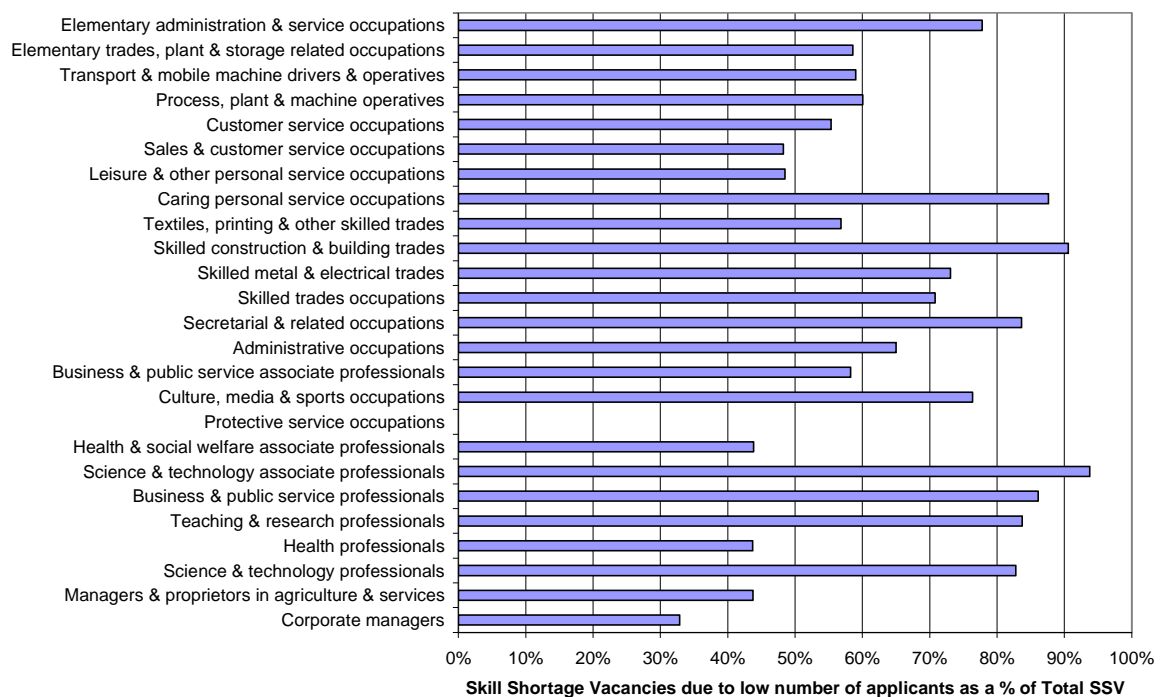
Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.  
 Population: All women and men except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.  
 Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All vacancies in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)  
 Occupations as classified under the Standard Occupational Classification-2 digit code.  
 SSV (Skill-shortage vacancies): These are 'hard-to-fill vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands.

**[iii] Lack of Skilled Applicants**

The third sub-type of skill-shortage vacancies is simply a lack of skilled applicants for a vacant post. The applicant-shortage ratio gives the percentage of employers who said that their skill-shortage vacancy was due to a lack of applicants with the required skills the company demands.

Figure 2.6 suggests that most employers claimed that a lack of skilled applicants was among the reasons for having a hard-to-fill vacancy. 93 percent of the employers claimed that in science and technology assistant professional occupations the difficulty with filling vacancies was due to a low number of applicants with the required skills. Similarly, 91 percent of the employers in skilled construction and building trades occupations and 86 percent of the employers in caring personal service occupations mentioned the low number of applicants with the required skills.

**Figure 2.6 Skill-Shortage Vacancies due to a Low Number of Applicants**



Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Population: All women and men except those who are Self-Employed, in the age group 16-59 for women, and 16-64 for men.

Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment)

Occupations as classified under the Standard Occupational Classification-2 digit code.

SSV (Skill-shortage vacancies): These are 'hard-to-fill vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands'

## 2.4 Occupational Downgrading and the Over-Qualification of Returners

In this section we measure the over-qualification and under-qualification of employees in particular occupations using the Employers Skills Survey (ESS).

The employers surveyed in the Employers Skills Survey 2001 were asked to state the typical qualification level their employees in certain occupational groups have. These typical qualification levels were used to calculate a mean typical qualification level for each of the SOC 2000 occupational categories (on a two-digit level).

Other authors have shown that it matters very much what level is used to measure occupational characteristics such as skills (Kilbourne, *et al.*, 1994). The estimates here are rough and draw crude large-scale dividing lines between occupations. Much finer estimates have been done elsewhere. For instance, Allen and van der Velden (2001) use firm-level employers' data to show that educational mismatches of the kind to be measured here are only part of the story. By using worker self-ratings, details are obtained about skills deficits which are more specific than the qualifications gap or qualifications mis-match problem (*ibid.*: 437). Each worker self-rating is located in that worker's own occupation within their work cell within their firm. No gross averaging was used.

However, to link the ESS data with the LFS it is necessary to find a common variable, which in the present case is the Standard Occupational Classification at 2-digit level. The ESS mean typical qualification levels were matched onto both the LFS and BHPS data for Great Britain in order to compute t-tests regarding the significance of differences between the mean qualification level of the employed mothers and other groups in each occupation.

In Figure 2.7 we show which of the occupations had workers who were over-qualified or under-qualified, compared to the mean typical qualification level of employees in the occupational group as stated by their employers. The qualification of workers in the occupation was defined as the average of their years of education. This was subtracted from the typical qualification level stated by employers, also measured in years. Neither figure could exceed 14 years due to the limits of accuracy of the data in ESS. The results apply only to England since that is where the ESS was based.

The over-qualification measure is negative for over- and positive for under-qualification. It is measured for each group separately (women, employed mothers and recent returners). Hence, if the groups are on average over-qualified, they will have a negative value as the qualification difference.

To ensure a sufficient sample size especially for mothers who are employed in each occupational category, the pooled LFS data (2001-2004) was first used. We then examined the qualification gap using the LFS spring wave in 2001 alone. The gaps were more distinct. The results in Figure 2.7 refer only to LFS 2001.

If there are considerable shifts in skills of the actual workforce, our data will tend to mask them. Felstead *et al.* (2002) show that the gender gap in skills is narrowing over time (1986 to 2001) with computer skills rising rapidly and qualifications becoming of growing importance to the skills identified as important by employers.

As the figure shows, women are over-qualified in three occupations: the health and social welfare associate professional occupations, the caring personal service occupations and the customer service occupations

For a comparison with the actual qualification levels of men see the Appendix.

**Figure 2.7 Qualification Differences for Women and Women Returners**

<b>Standard Occupational Classification 2000</b>	<b>Women</b>	<b>Mothers Employed Part-time</b>	<b>Mothers Employed Full-time</b>	<b>Recent Returners Part-time</b>	<b>Recent Returners Full-time</b>
Corporate managers	UQ	n.s.	n.s.	n.s.	n.s.c
Managers & proprietors in agriculture & services	UQ	UQ	n.s.	n.s.c.	n.s.
Science & technology professionals	UQ	n.s.c	n.s.c	n.s.	n.s.c.
Health professionals	n.s.	n.s.	n.s.c.	n.s.c.	n.s.c.
Teaching & research professionals	n.s.	n.s.	n.s.	n.s.	n.s.c.
Business & public service professionals	UQ	n.s.c.	UQ	n.s.c.	n.s.c.
Science & technology associate professionals	UQ	n.s.c.	UQ	n.s.c.	n.s.c.
Health & social welfare associate professionals	OQ	n.s.	n.s.	n.s.c	n.s.c.
Protective service occupations	n.s.c.	n.s.c.	n.s.	n.s.c	n.s.c.
Culture, media & sports occupations	UQ	n.s.c	n.s.c.	n.s.c	n.s.c.
Business & public service associate professionals	UQ	n.s.	UQ	n.s.	n.s.
Administrative occupations	UQ	UQ	n.s.	OQ	OQ
Secretarial & related occupations	UQ	UQ	n.s.	OQ	n.s.
Skilled trades occupations	n.s.c.	n.s.c	n.s.c.	n.s.c.	n.s.c.
Skilled metal & electrical trades	n.s.c.	n.s.c.	n.s.c.	n.s.c.	n.s.c.
Skilled construction & building trades	n.s.c.	n.s.c.	n.s.c.	n.s.c	n.s.c.
Textiles, printing & other skilled trades	UQ	UQ	n.s.c	n.s.	n.s.c.
Caring personal service occupations	OQ	OQ	OQ	OQ	n.s.c.
Leisure & other personal service occupations	n.s.	n.s.	n.s.c.	n.s.	n.s.c.
Sales & customer service occupations	UQ	n.s.	UQ	OQ	OQ
Customer service occupations	OQ	n.s.	n.s.c.	n.s.c.	n.s.c.
Process, plant & machine operatives	UQ	n.s.	UQ	n.s.	n.s.
Transport & mobile machine drivers & operatives	n.s.c	n.s.	n.s.c.	n.s.c.	n.s.c.
Elementary trades, plant & storage related occupations	UQ	n.s.	n.s.c	n.s.c.	n.s.
Elementary administration & service occupations	UQ	UQ	UQ	OQ	n.s.
<b>Average Qualification Difference</b>	<b>0.23***(UQ)</b>	<b>0.27***(UQ)</b>	<b>0.32***(UQ)</b>	<b>-1.74***(OQ)</b>	<b>-1.40***(OQ)</b>

Source: Labour Force Survey data March 2001 (Wave 1 - Study Number 4661),, Employers Skills Survey Study Number 4731 November 2000 - April 2001, British Household Panel Survey 2001/2.  
 Base: LFS: 28,969 (raw), 23,218,485 (weighted); BHPS:10,543 (raw), 9,365 (weighted)  
 \*\*\* refers to 1% significance; \*\* refers to 5% significance  
 Qualification index = 'Typical' Qualification Level – Actual Qualification Level. Hence over-qualified (OQ) will have values less than 0 and under-qualified (UQ) will have values greater than 0.  
 n.s. : Not Significant; n.s.c. : No tSufficient Cases  
 (See Appendix 3 for detailed table on qualification differences)

Over-qualification is not found to be particularly strong among mothers (i.e. our LFS category of actual returners who are mothers), among whom only the caring personal service occupations had statistically significant levels of over qualification in 2001.

By contrast, the recent returners show a different picture. Among recent returners there are no cases of under-qualification and there are five job categories with evidence of over-qualification. The recent returners who work part-time are over-qualified in administrative occupations, secretarial and related occupations, and sales and personal service occupations, as well as the caring personal service occupations and elementary administration and service occupations.

Recent returners employed full-time had over-qualification in the administrative occupations and in sales and customer service occupations. Thus the findings for recent returners were different from those for mothers overall.

For mothers employed full-time, the over-qualification levels were positive and statistically significant only in the caring personal service occupations. Only 8 percent of caring personal service workers were male in the period 2001-2004. Over-qualification is not generally the case across the whole population of women returners. Occupational downgrading might occur more widely but it is among the caring personal service occupations that we find explicit evidence of its effects.

For mothers employed part-time, taking all mothers together (even if they weren't returners *per se*), the only case of over-qualification was the caring and personal service occupations.

To some extent these different results reflect where each type of women are working, but at the same time they reflect a comparison with other workers (both male and female) in those jobs.

There were some cases of under-qualification, notably among science and technology professionals and among managers and proprietors in agriculture and services, both among the mothers who are employed full-time and those employed part-time. A detailed report of the size and statistical significance of each occupation's under- or over-qualification level is provided in the Appendix.

A test of the overall under-qualification level among men, among women, among mothers who are employed part-time, and among mothers who are employed full-time, showed it to be significant. In 2001 employers thus, on average, predicted a 'typical' level of qualification slightly above the level actually found among workers. When individual occupations are examined, however, localised and sometimes large-scale over-qualification was observed.

## **2.5 Summary**

Areas of high gender segregation are also often the occupational areas where skill-shortage vacancies are most common: among female dominated areas - education, health and social care and customer services; and among male dominated areas - skilled trades, construction and science professionals. Areas of growth and expansion, for example, managerial and professional occupations (the latter including scientific professionals and associate professionals) are also areas with relatively high levels of skill-shortages and hard-to-fill vacancies.

The main causes of hard-to-fill vacancies are the low numbers of applicants with the required skills, attitude, a lack of people interested in doing this sort of work and a low number of applicants generally. The main causes of skill gaps are the lack of experience of the member of staff. Soft skills such as communication skills and customer relation skills – ie



the skills frequently associated with female-dominated work – are the skills that employers most commonly cite as lacking across all occupations.

Women are over-qualified in three occupations: the health and social welfare associate professional occupations, the caring personal service occupations and the customer service occupations. Over-qualification is especially evident among recent returners, particularly those that work part-time.

## **3. A REVIEW OF THE LITERATURE AND DATA ABOUT WOMEN RETURNERS AND POTENTIAL RETURNERS**

### **3.1 Introduction**

This literature review contextualises and frames the research on women returners' employment options and prospects in areas of high occupational gender segregation. The discussions are formed with the following themes in mind:

- women's employment trajectories and transitions through part-time work, and the different ways in which women return to work following a period of absence, usually for child caring
- theories of, and explanations for, gender segregation, and the ways in which women returners are likely to experience, and contribute to, the high level of segregation evident in the UK
- organisational cultures in areas of high occupational segregation and skill shortages are examined (Science Engineering and Technology (SET) and Construction and ICT sectors) with regard to their potential suitability for women returning to the labour market
- the concept of occupational downgrading is also introduced as a potential pitfall which occurs when women's skills are underutilised and their likelihood of achieving 'high quality' employment is reduced

### **3.2 Women's Labour Force Participation**

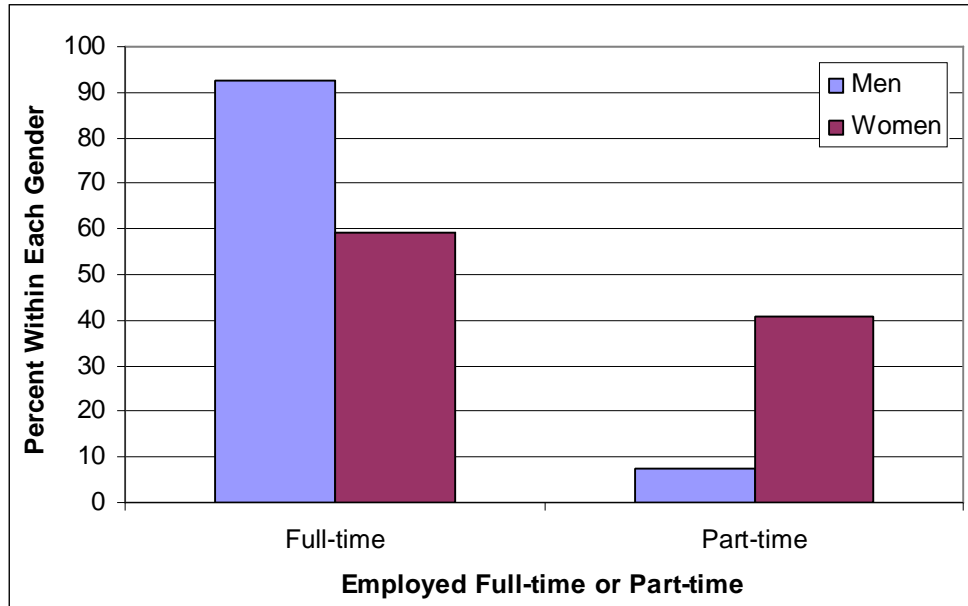
Women's employment trajectories are changing and the notion of the 'woman returner' is evolving. Parents now have the right to request flexible working when they have a child under five (DTI 2003); women are also now entitled to longer maternity leave, and can return to their job up to a year following the birth of their child (DTI 2002c).

While on maternity leave, women are not considered to have technically exited the labour market. Thus, if women take a full year's maternity leave and then return to work part-time, as is commonplace, they may experience discontinuity in career paths, but not necessarily inactivity. In such a scenario, women today have different employment trajectories, compared to women of earlier generations.

Increasingly, women are combining employment and childcare. In 2004, 74 percent of women aged 16-59, were economically active (ONS, 2004). In the twenty years between 1984 and 2003, the gender gap in economic activity has halved and now stands at 11 percent (ONS, 2003b). In particular, we have witnessed a dramatic increase in women with very young children working. In 1990, 41 percent of women with a child under five were employed. By 2001, this figure was 54 percent. 66 percent of mothers in employment with at least one child under five were working part-time (ONS 2003a).

It is also estimated that over 66 percent of all women work part-time over their life course (Blackwell 2001; Joshi and Paci 1998). Whilst men's likelihood of working part-time is increasing, part-time work remains highly gendered as 83 percent of those working part-time are women (ONS 2003b). As shown below, the 2001 Census data highlights that amongst those people working a greater proportion of women work part-time compared to men.

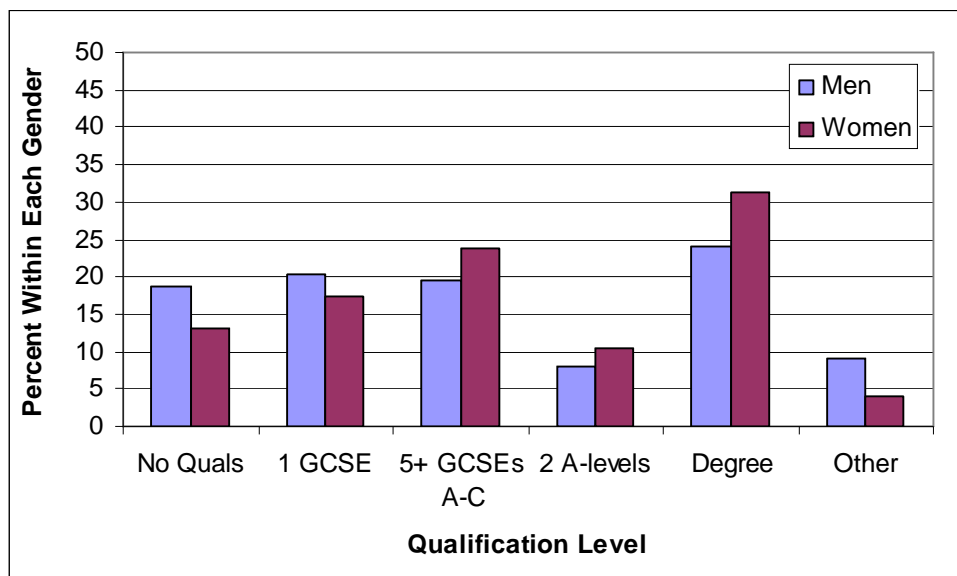
**Figure 3.1 Full-time and Part-time Employed by Gender**



Source: Census of Great Britain, 2001; Crown copyright.  
Base population: All people in employment.

In relation to working time and qualification levels, differences are also apparent regarding gender. Overall it is clear that amongst those working full time there is a greater distribution of qualification levels than amongst those working part time. As shown below, amongst women working full time there is a visible pattern: the higher the qualification level, the higher the proportion of full-time employment – with the exception of A-level qualification. A similar, but less clear, pattern can be found among the men.

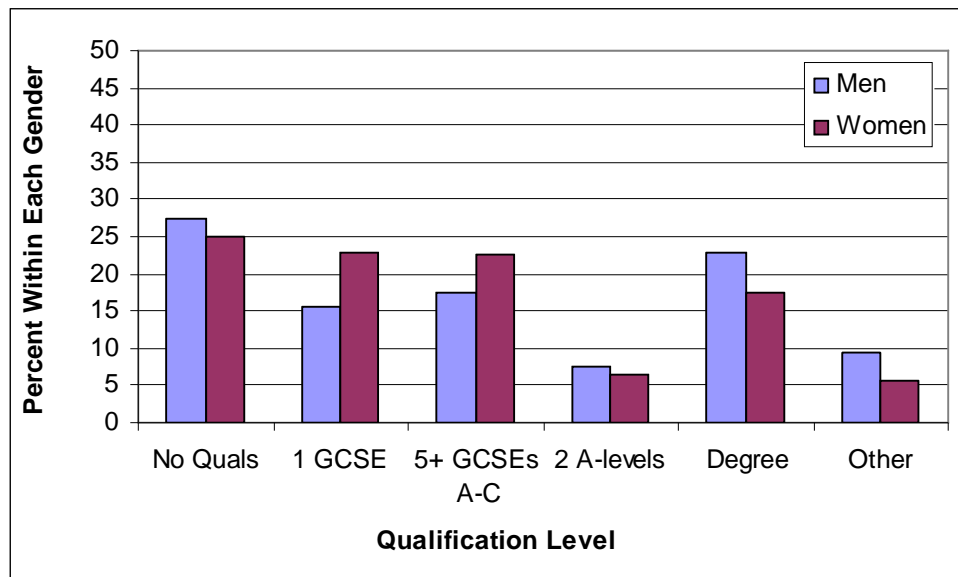
**Figure 3.2 Qualification Level of Full-time Employed People by Gender**



Source: Census of Great Britain, 2001; Crown copyright.  
Base population: All people in full-time employment.

Amongst those working part time the patterns are less clear. Figure 3.3 shows that for those working part-time, the largest proportion have no qualifications. Amongst those working part time, women are more likely to have 1 GCSE or 5+ GCSE's as their highest qualification compared to men. In contrast, amongst those working part time with degrees and A-levels the opposite is the case.

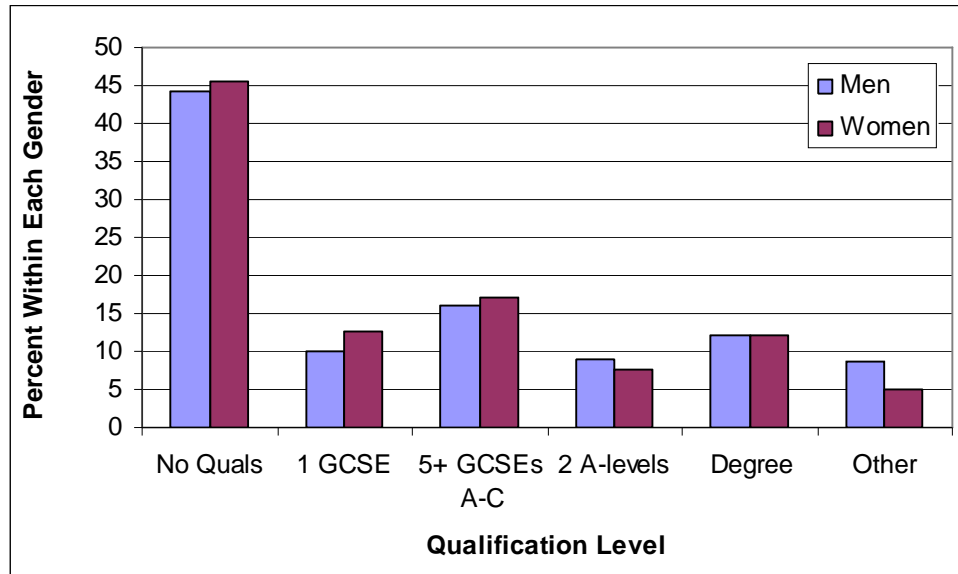
**Figure 3.3 Qualification Level of Part-time Employed People by Gender**



Source: Census of Great Britain, 2001; Crown copyright.  
Base population: All people in part-time employment.

Figure 3.4 shows the qualifications levels by gender of those not working. It is clear there are very similar patterns amongst men and women.

**Figure 3.4 Qualification Levels of People Not Employed by Gender**



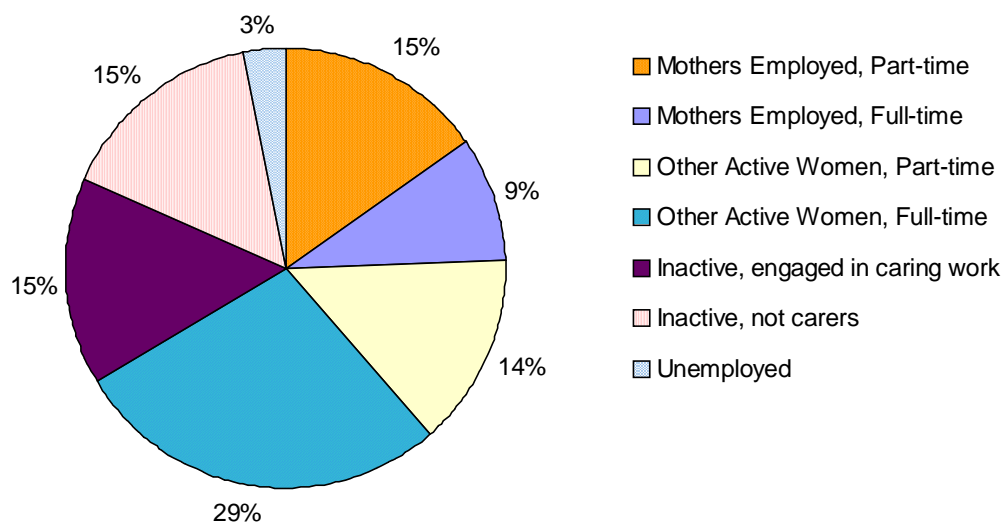
Source: Census of Great Britain, 2001; Crown copyright.  
Base population: All people not in employment.

Explanations for transitions through part-time work and discontinuity in economic activity and career paths are varied. Certainly the importance of education and social class (often represented through occupational status) in increasing the likelihood of full-time work among women and men, and for women's economic activity following maternity has been documented (Joshi et al. 1998; Joshi and Paci 1998; Macran et al 1996; Fagan et al. 2002). Links have also been made between women working at senior occupational grades, being well educated or highly skilled, and women being able to use employment policies and practices that enable them to secure preferential returns to work following maternity (Cully et al. 1999; McRae 1993, 1994; Tomlinson 2004).

These and other factors are central to the debate surrounding choice, preference and constraint in analyses of women’s employment trajectories (Hakim 2000, 2002; Marks and Houston 2002; McRae 2003). Alongside employer policies, education and social class, other leading researchers emphasise a range of other factors which shape women’s employment outcomes in terms of whether they work full-time, part-time or make a transition to inactivity following maternity. These include: welfare policy entitlements such as the Child and Working Tax Credits (Bennett 2002), stress levels of combining childcare and work (Ginn and Sandell 1997), availability and affordability of childcare facilities (Dex and Joshi 1999) and flexibility of childcare facilities (Fagan 2001).

In 2004, 66% of UK women were employed and 78 percent of men were employed (*Employment in Europe 2004*). The overall employment rate in the EU averaged just 56 percent among women and 71 percent among in the same year (*ibid.*). Among people aged 55-64 years old, the UK has the third highest employment rate in Europe: 47 percent of women and 66 percent of men. Using the UK Labour Force Survey for 2001-2004 combined, 67 percent of women are labour-market active compared with 77 percent of men. As shown in Figure 3.5, mothers who are employed make up a substantial proportion of the female labour force.

**Figure 3.5 Women’s Labour Force Participation**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.  
 Base: 20,979 (raw), 16,363,169 (weighted).  
 Population: All women in Great Britain except those who are self-employed, in the age group 16-59.  
 Notes: Unemployment is recorded according to the standard ILO definition that they are seeking work.

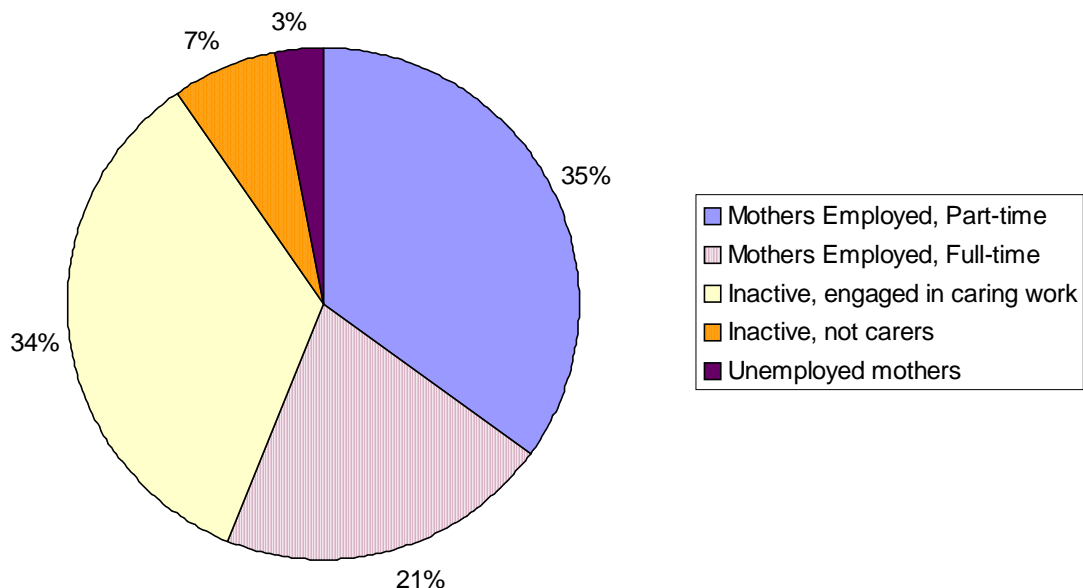
Measuring female unemployment is problematic because their roles in the home are often construed as making them ineligible to register as unemployed. In the LFS, unemployment is recorded using the International Labour Organisation (ILO) method. According to ILO methods, if a person is seeking work and does not have a job, they are unemployed (even if they are not registered as unemployed). This method tends to give a higher level of women’s unemployment, here shown as 3 percent. Using the same ILO method men’s average rate of unemployment was 5 percent over this period 2001-2004.

An anomaly of underemployment can occur when using the ILO definition, if a person would like to have full-time work but they do currently have a job such as a part-time job or

piecework. This kind of hidden unemployment is not measured in the current report. The concept of hidden unemployment touches on the subjective aspect of unemployment, which can be important for both women and men. The subjective view might be that a person takes a job but would like a different job, perhaps with different hours, and is therefore still seeking work. Since women frequently work part-time, the hazard of unrecorded hidden unemployment is of potentially more concern among women than among men.

In Figure 3.6 the mothers whose children are currently living at home are separated out. The full-time and part-time employees among them are shown separately. 35 percent of all mothers are working part-time, and 21 percent work full-time. A huge group of mothers (34 percent) do not have jobs, but are doing caring work and have declared this as their employment status. As outlined above, this group gets treated separately in the report as a particular type of potential returner.

**Figure 3.6 Labour Force Participation of Mothers**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.  
 Base: 8,381 (raw), 6,602,433 (weighted).  
 Population: All women in Great Britain except those who are self-employed, in the age group 16-59.  
 Notes: Unemployment is recorded according to the ILO definition that they are seeking work.

Women are heterogeneous in their preferences of how they would ideally combine work and family life. But this should be further qualified – women are also diverse in their abilities to translate preferences into actual labour market outcomes. Some women will be more successful than others (McRae 1994, 2003; Tomlinson 2003).

There are many different ways that women combine work and family life. Some women maintain a full-time continuous work trajectory, with minimal interruption, though this is rare (Dex and Joshi 1999; Hakim 2002). Others work full-time and then return to part-time work after maternity leave, without a period of inactivity. This is becoming much more typical with extended maternity leave. Other women work full-time and then take an extended break either returning (sometimes) to full-time work, or, (usually) to part-time work (Blackwell 2001), often when children have started school (Walsh 1999). These latter two trajectories are how ‘woman returners’ are traditionally defined, but it is important to note that while women now often stay attached to the labour market through maternity leave, they often

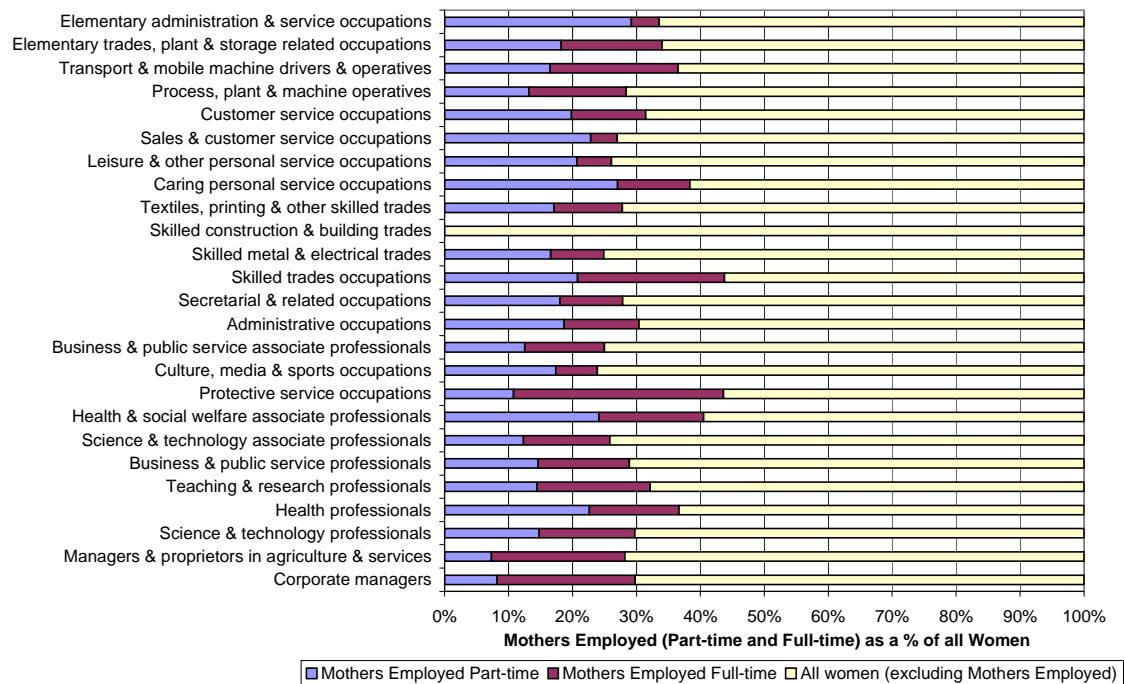
return to different jobs - jobs that are often part-time and of different occupation and status. This is termed occupational downgrading.

As shown in section, there is evidence that part-time working women returners are also likely to be over-qualified for the work they are doing. Over-qualification is part of the occupational downgrading syndrome but is more likely to be located in particular occupations – often those with a rather high female preponderance among the workforce. Part-time working women are shown to have experienced downward mobility to a greater degree than other women and men.

Sociologists have argued that the age at which women become mothers can shape their transitions following maternity. For example, the younger a woman is when she starts her family, the more likely she is to make a transition to inactivity after childbirth. Conversely, women who delay starting families (which is increasingly the case (Duncan 2002; Irwin 1999)), are more likely to be economically active and to remain in full-time employment (Macran et al. 1996). This may in part be their personal choice. Another explanation for this pattern is that older women have made stronger attachments to the labour market prior to maternity. Such women are more likely to have the credentials and skills that employers wish to retain (Crompton and Harris 1998; Dex and Joshi 1999; Joshi et al. 1999).

The occupations of mothers employed full- and part-time are shown below using pooled LFS data 2001-2004. Mothers who are employed were defined as women who have at least one dependent child under the age of 16 in their household, and who are employed full or part-time. Employment was taken to include working on a government scheme or being an unpaid family worker in the business of a family member (a rare situation in the LFS). Here we see that some occupations in the Standard Occupational Classification scheme have large proportions of mothers among their women workers. By pooling the LFS over a 4-year period (taking just one wave in each year), we obtain a sample of 14,400 cases. This sample is large enough to ensure that most occupations have some men and some women in them, allowing comparisons to be made.

**Figure 3.7 Mothers Employed (Part-time and Full-time as a percentage of all Women by Occupation)**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 14,448 (raw), 11,011,291 (weighted).

Population: All employed women in Great Britain except those who are self-employed, in the age group 16-59.

Occupations as classified under the Standard Occupational Classification-2 digit code.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

Taking into account the total number of female employees, as the figure above shows, in relative terms, protective service occupations, transport & mobile machine operatives, health & social welfare assistant professionals, skilled trades occupation, health professionals and caring personal services have the highest percentage of mothers who are employed full- or part-time. Part-time work was rare among mothers in management occupations. However, 30 percent of those in the two management categories found in the standard system of classification were mothers (SOC 2000).

### 3.3 Women Returners' Preference for Part-time Jobs or Part-time Hours?

The structuring and status of the (typically part-time) jobs that women returners occupy have important implications for women's economic security and quality of work. The structuring of part-time work in the UK is such that women working part-time usually work in low status jobs.

The UK has a relatively poor integration of part-time work into higher occupational grades - just 3.6 percent of female part-time jobs are of managerial status (European Commission 2002). Though the proportion is estimated to have increased, Manning and Petrongolo (2004) calculate the figure as 4.4 percent. EUROSTAT data show that of the 5,570,000 women working part-time in 2001 in the UK, two categories: 'service and sales' (2,115,000 jobs) and 'clerical' (1,287,000 jobs) accounted for well over half of their jobs (European Commission 2002). This differs from other countries in the EU, for example in Germany, the Netherlands and Denmark, while 'sales and services' is the most common occupation for a female part-timer, there are proportionately more technicians working part-time than there are clerical workers (European Commission 2002).



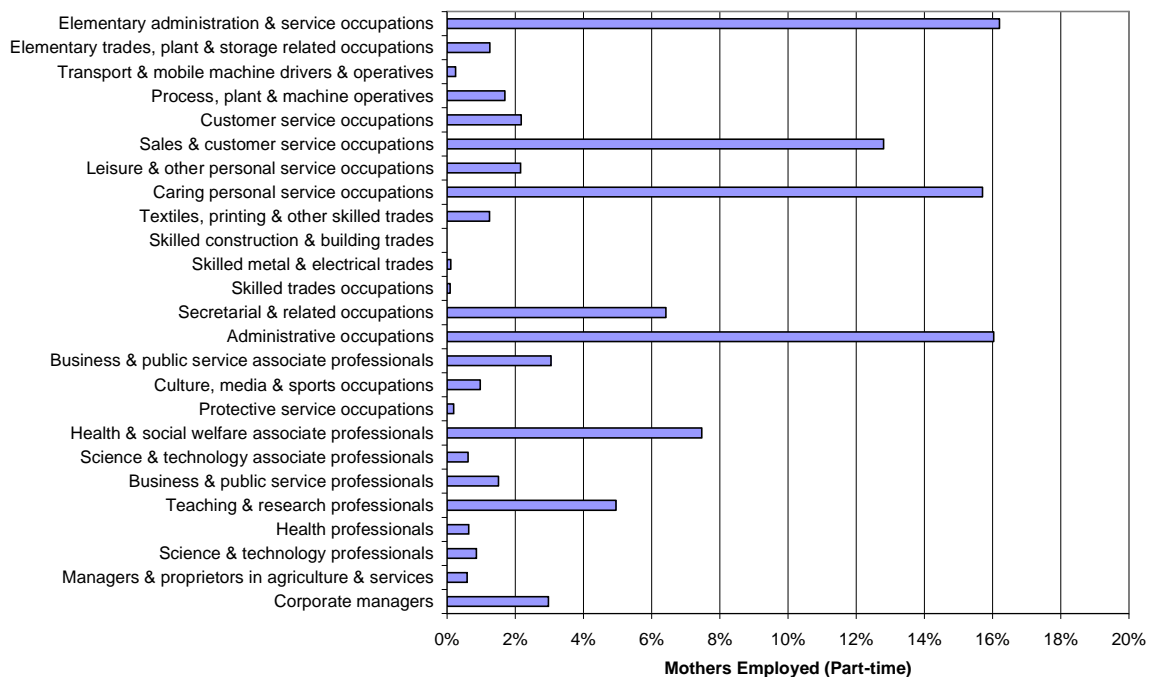
It is argued by Fagan (2001) that in the UK women's working hours are largely out of step with their preferences. Fagan refers to evidence on women's desired hours of work compared with their paid working hours. Many British women wish to work either less or more hours than they do. Using data from the British Household Panel Survey and the Women and Employment Survey, Fagan (2001) found that 47 percent of full-time workers wanted to adjust their hours, with most women stating a preference for a reduction in working-hours. Indeed more full-time workers wanted to change their hours of work than part-time workers did. It would appear that many women are constrained to work the hours they do by factors other than their own personal choice.

Alongside a preferred reduction in working hours among full-time workers, a significant minority of part-time workers wanted to increase their hours. Fagan (2001) claims that women's decisions to work part-time should not be assumed to reflect lower work commitment. Instead it might be more appropriate to focus upon the way in which employers design jobs. Often mothers must choose between long full-time hours and short part-time hours – and hence in this respect such jobs are 'out of step with people's preferences' (2001: 260), a point which is also supported by Rubery *et al.* (2002) in their research on working-time regimes.

In this sense, women are revealing an acceptance of, rather than preference for, the design of the jobs that are currently available in the UK's labour market (Fagan 2001; Rose 2001). Thus while women prefer part-time hours over long full-time ones, it does not necessarily correspond that women want elementary, clerical or sales jobs.

Figure 3.8 shows that most mothers who are employed part-time are in administrative occupations, caring personal service occupations, elementary administration and service occupation and sales & customer service occupations.

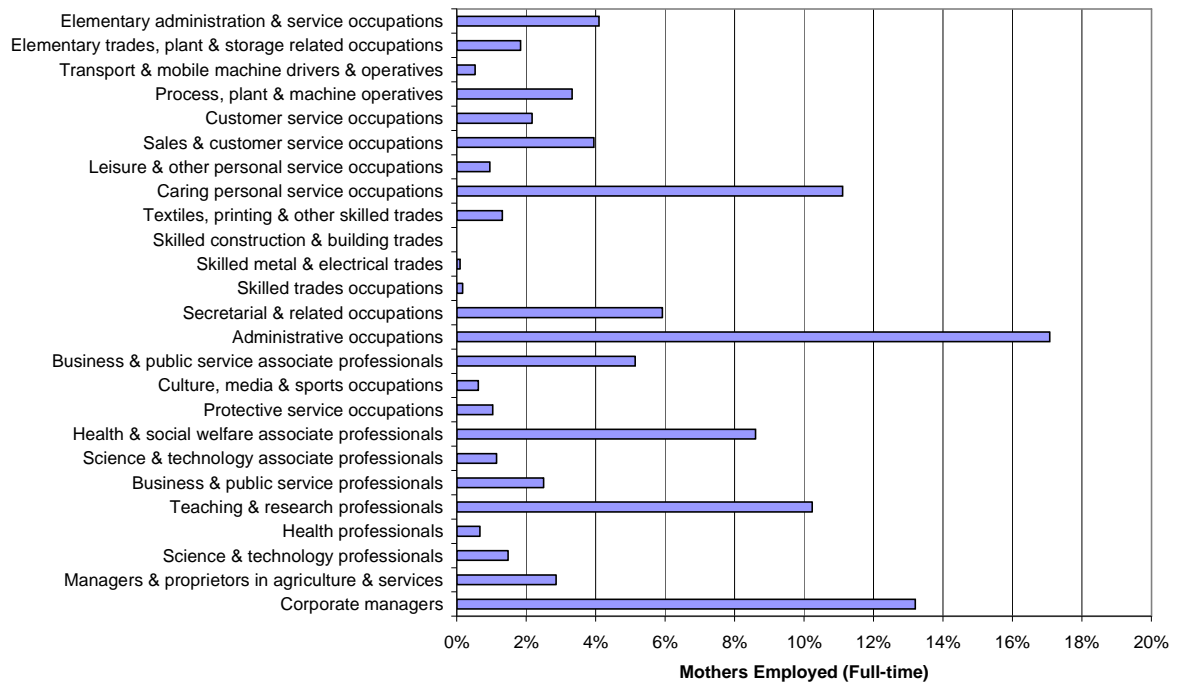
**Figure 3.8 Occupations of Mothers Who Are Employed Part-time**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.  
 Base: 3,448 (raw), 2,524,910 (weighted).  
 Population: All part-time employed mothers in Great Britain except those who are self-employed, in the age group 16-59.  
 Occupations as classified under the Standard Occupational Classification-2 digit code.  
 Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

In contrast, mothers who are employed full-time are found in a wider range of occupational areas. As Figure 3.9 shows, while mothers who are employed full-time are still likely to be working in administrative occupations or in caring personal service occupations, they are also much more likely to be working in senior occupational categories such as ‘corporate managers’, ‘teaching & research professionals’ and ‘health and social welfare associated professionals’ than mothers who are employed part-time. It is likely that this is, in part, due to the job design of senior graded jobs, particularly managerial positions, which often do not support part-time working.

**Figure 3.9 Occupations of Mothers Who Are Employed Full-time**



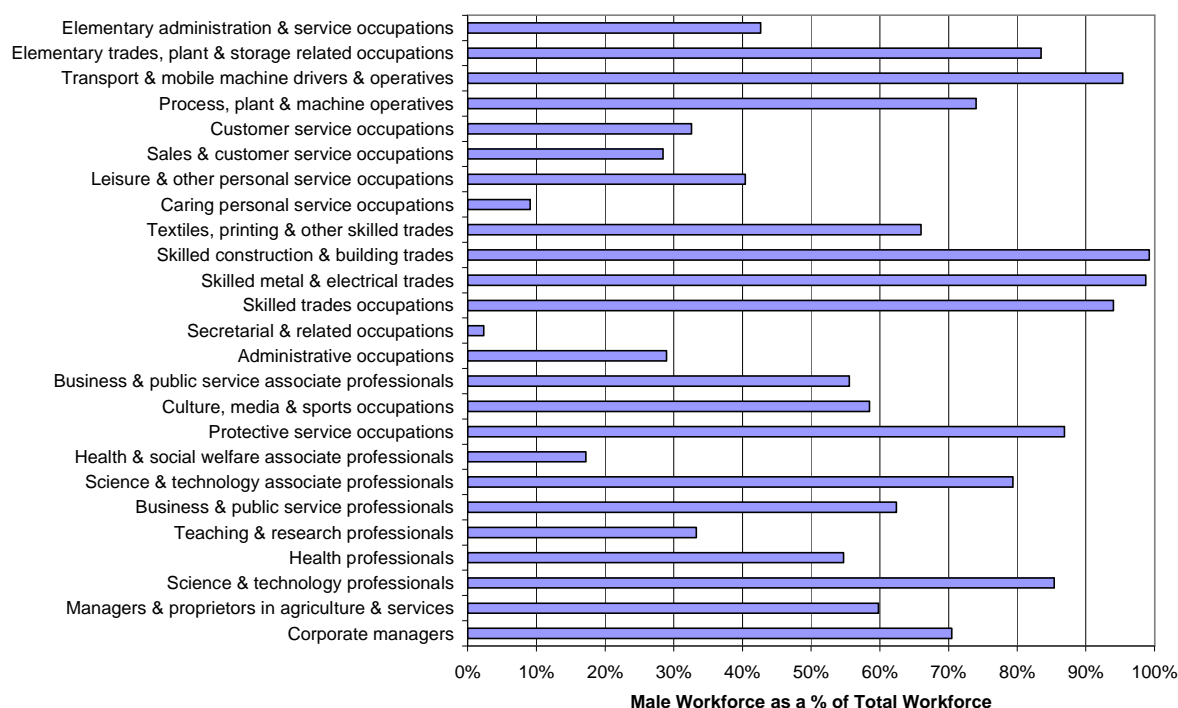
Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.  
 Base: 2,060 (raw), 1,525,017 (weighted).  
 Population: All full-time employed mothers in Great Britain except those who are self-employed, in the age group 16-59.  
 Occupations as classified under the Standard Occupational Classification-2 digit code.  
 Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16

As this analysis highlights, confirming Fagan’s (2001) research, it appears women are divided between trading off hours of work with quality of work and occupational status. While some may work long full-time hours ‘involuntarily’ but retain a high occupational status, others opt for a trade-off in which they accept part-time hours and a lower quality of employment. As yet, due to the very recent implementation of right to request flexible working, there has not been time to generate, analyze and publish research on the extent to which this might have changed since the introduction of these new rights for working parents.

### 3.4 Occupational Segregation

Occupational segregation is high in the UK, to the extent that it is the key target of the EU Employment National Action for the UK (Rubery 2001). This gender segregation is illustrated clearly in the figure below which sets out the 25 main occupations for men in the UK labour market.

**Figure 3.10 Gender Segregation by Occupation: Males**



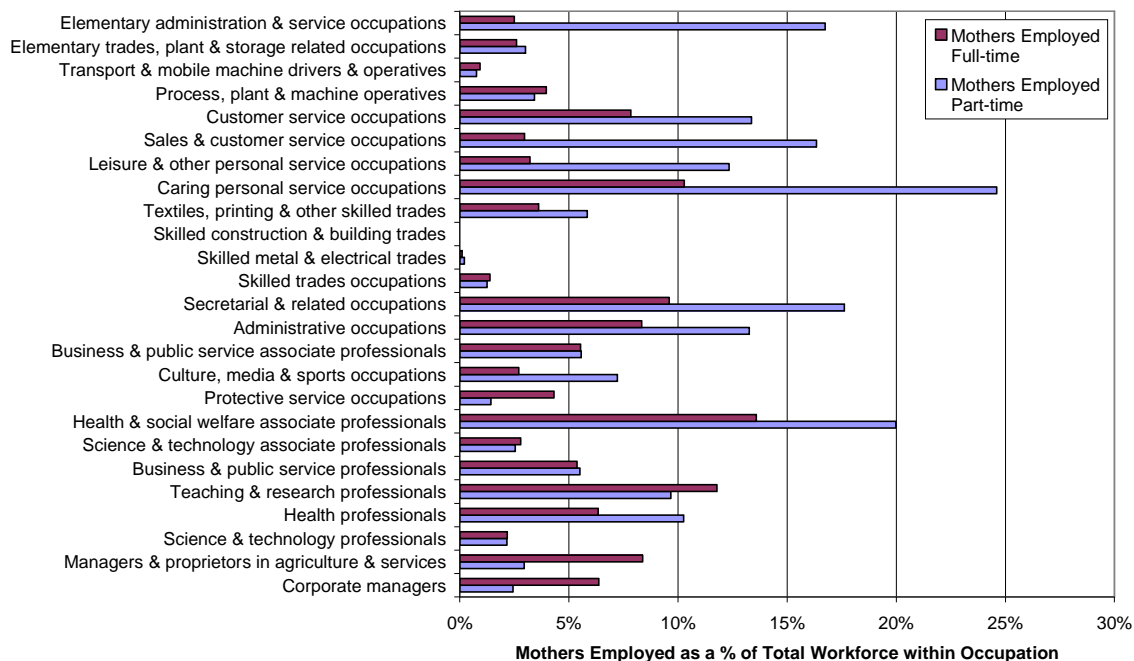
Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.  
 Base: 28,969 (raw), 23,218,485 (weighted).  
 Population: All working men in Great Britain except those who are self-Employed, in the age group 16-59 for women, and 16-64 for men.  
 Male Ratio (Gender Segregation) = Total Number of Employees/ Number of male Employees.  
 Occupations as classified under the Standard Occupational Classification-2 digit code.

Not surprisingly, the highest proportions of males are found in the ‘skilled construction and building trades’, ‘skilled metal and electrical trades’, ‘transport & mobile machine drivers and operatives’, and ‘skilled trades occupations’. In addition to these SET occupations, there is also high male dominance among transport drivers; elementary trades; the protective service occupations; and process, plant and machine operatives. It is also the case that corporate managers are much more likely to be men than women (71 percent compared to 29 percent).

At the other extreme the caring and personal service occupations and secretarial work are both occupational areas where men are scarce: less than 10 percent of employees are male. Health and social welfare professionals are similarly female dominated: just 16 percent of employees are male.

Figure 3.11 below shows the distribution of mothers who are employed either part or full time within the same occupations. Mothers who are employed part-time are highly represented in the caring and health and social welfare occupational groupings and comprise over 15 percent of secretarial and related occupations. Mothers who are employed full-time are more likely to be found in health and social welfare assistant professionals, teaching and research occupations and in management. For further detail about the segregation ratios, along with the numbers of returners working full- and part-time in each major occupation see Appendix.

**Figure 3.11 Percentage of Mothers Employed Part-time and Full-time by Occupation as a Percentage of Total Employment**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004

Base: 5,508 (raw), 4,049,927 (weighted).

Population: All working mothers part-time and full-time in Great Britain except those who are self-employed, in the age group 16-59.

Occupations as classified under the Standard Occupational Classification-2 digit code.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

A few occupations were so rare among women that the figures for returners among them can hardly be thought of as typical. The sample size is too small for women in the skilled trades and skilled construction in particular. See Appendix for further information on the gaps in data for mothers who are employed part-time in protective services and in transport. These gaps must be borne in mind, but all other occupational groups were populated for both men and women, including mothers who are employed.

Using the British Household Panel Survey (BHPS) it is possible to examine the circumstances of women workers. In the BHPS data over 5,000 working age women have records for several concurrent years including 2001/2. Of these 3,431 were employed in 2001/2.

Using the BHPS it is also possible to look at recent returners<sup>2</sup>. Recent returners made up only 2.2 percent of employed women, in 2002 (204 cases). Figure 3.12 breaks these women into part-time and full-time employees. The self-employed are, again, omitted for simplicity. Recent returners were highly concentrated in just a handful of occupations, most of which are highly gender segregated.

<sup>2</sup> A recent returner is a woman who was employed at some time in the 10 years between 1991 to 2001; following which had sometime in the 5 years from 1996-2000 recorded her employment status as family care work thus had had a gap in employment; and was back in employment in the year 2001\2.

**Figure 3.12 Summary Statistics of Women Workers**

Population	Percentage of Working Age Population	Average Hourly Wage £	Average Hours Worked	Average Percent Male, in Their Occupation	Average Years of Education
All Men	47.51	10.27	41.2	68	12.4
All Women	52.49	7.91	30.5	32	12.2
Mothers Employed Part-time	6.95	7.09	17.75	25	12.4
Mothers Employed Full-time	5.82	8.58	37.31	36	12.7
Recent Returners (Now Employed Part-time)	1.68	6.94	15.48	26	12.1
Recent Returners (Now Employed Full-time)	0.50	6.57	35.62	32	12.1
All Recent Returners	2.18	6.79	21.4	27	12.1
Mothers Doing Caring Work	5.26	-	-	-	11.1
Mothers Not Doing Caring Work	2.62	-	-	-	11.6
Other Inactive Women	7.53	-	-	-	11.1

Source: British Household Panel Survey 2001/2 and BHPS Work-Life History Dataset 2002.  
 Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men. The survey is weighted to make it representative for England, Wales and Scotland, including the Welsh and Scottish booster samples.

The wage figures used here are gross hourly pay without unpaid overtime but inclusive of paid overtime in the past week. Since BHPS interviews are staggered, the figures are not biased by the season. The average female wage was 7.91 per hour, and the average male wage was 10.27 per hour.

Men's and women's average wages were both higher than mothers who worked part-time in 2001/2 (£7.09 per hour). Mothers employed full-time had higher wages averaging £8.58 per hour. More detail on wages is provided in section four.

The gender segregation ratio (which is the percent of workers in each occupation who are male) averaged 68 percent among men and 32 percent among women. Gender segregation was very high among mothers who are employed part-time, with the figure of 25 percent describing the low male proportion in the female-dominated occupations. However, the 'occupations' used here are not necessarily the best way to measure gender segregation, because local workplaces or specific workspaces could be 100 percent female. At different levels of aggregation, different results would ensue for the gender-segregation of a given group of employees. Nevertheless the male percentage given here for 2-digit Standard Occupational Classification offers a rough indicator.

### 3.5 Explaining Segregation

Theories that attempt to explain occupational gender segregation are diverse. They relate to both demand (employee based preferences) and supply (employer supply of jobs). These

theories include preference theory or rational choice theory (Hakim 1996, 2000), where labour market outcomes reflect preferences or rational economic choices made by individuals. Similarly, human capital theory focuses on the different investments in education, training and skills that women and men make in attempts to explain occupational gender segregation. Alternatively, feminist theories often emphasise the role of structure and/or culture in explanations for the persistence of segregation and inequality (Evetts 2000), which relate both to public and private spheres (Walby 1990, 1997). For example, cultural factors relate to both gendered expectations of men and women's traditional roles in the domestic sphere and stereotypical perceptions of men and women's capabilities in the labour market. Organisational cultures have also been found to reflect masculine working practices (Lewis 1997) resulting in organisational barriers and glass ceilings for women who do not, or cannot, conform to typical male working practices (Cooper-Jackson 2001; Wirth 2001).

The design of jobs in areas of high occupational gender segregation and the structuring of jobs and career paths, shape women's perceived occupational choices. For example, occupational areas where jobs typically have very long working hours, and do not offer part-time work or hours of work that fit within boundaries of childcare provisions, are likely to be less attractive to women when they have young children. It is also the case that within organisations in a particular sector, policies that help to reconcile work and family life are uneven. Qualitative case study research has shown that some employers do not recognise a 'business case' for implementing flexible working practices, or that when they do, an employer may only offer highly skilled women the opportunity to achieve an 'optimal' work-life balance as they do not want to lose key staff to more flexible competitors (Tomlinson 2004). Often, for lower skilled employees, with fewer specific skills and expertise, their ability to tailor jobs to suit their work-life balance preferences is restricted as they have less bargaining power in organisations.

No single theory can adequately and fully explain occupational segregation (Blackwell 2001; Miller et al 2004), thus it is useful to recognise that several factors can overlap and be mutually reinforcing – potentially providing a more rounded account of explanations for the persistence of occupational segregation. As Evetts (2000) suggests, an integrated approach is important to help explain women's location in the labour market, one which incorporates agency (women's choices and preferences), structure (job design and locations of full- and part-time jobs available in the labour market) and culture (particularly in organisations and among employers, but also in gender roles and the domestic division of labour).

Segregation is difficult to challenge and remedy, since it can be tracked back to processes of early socialisation, for instance in the home and school. At school, girls and boys often gravitate towards subject areas that are typically thought of as feminine or masculine, and choose different subjects at GCSE and A level. This has consequences for the types of qualifications men and women acquire and their subsequent training and labour market participation. The gendering of subject choice and career planning is also apparent in the take up of 'on-the-job' training schemes. Modern Apprenticeships (MAs), introduced in September 1994, (now referred to simply as Apprenticeships (DfES 2005)) demonstrate the resilience of gendered occupational segregation. According to Miller et al. (2004), ten male dominated sectors account for 82 percent of male MAs and ten female dominated sectors account for 92 percent of female MAs.

Women are making in-roads into some of these occupational areas via education. At post-graduate level (PhD and Masters') women have increased their rate of achieving qualifications in SET subject areas. This is most notable in engineering where there has been an increase from 12 percent in 1995 to 16 percent in 2000. Over the last 20 years the percentage of women gaining degrees in biology and chemistry has increased steadily, however the Greenfield Report states that since 2001 gains being made by women are not evident in statistics (Peters et al, 2003: 37). Alongside the slowing down of women's

increasing participation in biology and chemistry, the retention of women in these occupational areas is also concerning. Women with SET degrees have a lower economic activity rate than either men with SET degrees or women with non-SET degrees (Miller et al. 2004). It is also the case that fewer women return to SET occupations after maternity or a break from the labour market (Peters et al, 2003). Just 25 percent of women and 40 percent of men with SET graduate qualifications are working in SET occupations (DTI, 2002a: 6).

As well as SET employment, Information and Communication Technology (ICT) is flagged up as an area of high gender segregation (Miller et al. 2004). In 2000, just 29 percent of post-graduate qualifications in computer science were awarded to women (Miller et al. 2004; Peters et al. 2003: 39). Furthermore, the Greenfield report states that the number of women in ICT employment is actually declining. Women held just 22 percent of jobs in this sector in 2000 compared with 25 percent in 1995 (Peters et al. 2003: XIV citing Labour Force Survey data). The *Women in Industrial Research Report* (2003) highlights a similar trend across the EU, stating that just 19 percent of those achieving a PhD in computing were women in 2000, and an even smaller percentage of these women make it to the top of the ICT profession (Rubsamen-Waigmann et al, 2003: 33).

Segregation has substantial implications for women's pay prospects. The average earnings in male dominated sectors are much higher than in female dominated sectors according to New Earnings Survey data. Thus it is important to state that there are clear financial incentives, all other things being equal, for women to choose work in a non-standard (i.e. male dominated) occupational area, as the tables below clearly show.

**Figure 3.13 Average earnings in selected sector occupations 2003**

Occupational Category (Selected Groups Only)	Hourly Earnings £		Annual Personal Earnings £	
	Males	Females	Males	Females
Managers	14.60	10.83	30,992	20,176
Professionals	15.11	13.44	29,848	21,892
Personal Services	8.45	5.57	17,368	7,748
Retail Sales	9.22	5.49	17,264	6,968
ALL CATEGORIES	10.27	7.91	21,736	12,896

Source: British Household Panel Survey 2001/2. The one-digit Standard Occupational Classification groups are used here. Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men. The survey is weighted to make it representative for England, Wales and Scotland, including the Welsh and Scottish booster samples. Earnings are reported gross here.

**Figure 3.14 Gender Segregation and Wages**

Occupational Category	Percent Male	Mean Wage £/hour
General managers & Administrators	68	20
Engineers and technologists	93	14
Technicians	74	14
Construction	99	9
Electrical/electronic	97	9
Health professionals	13	10
Secretaries	1	8
Receptionists	10	5
Childcare	2	5
Sales assistants	26	5

Source: Adapted from Walby and Olsen (2002): 90-91. The data used are from BHPS 2001/2. The SOC classification used here is the 1992 rather than the 2000 version, and therefore the labels on occupations are more detailed than elsewhere in this report. SOC at 2-digit level was reduced from 77 occupations in 1992 to 26 in the 2000 version.

As well as clear differences in hourly wage rates in male and female dominated occupations, it is also the case that there is little evidence that men working in atypical occupations face the same barriers as women working in atypical occupations. For example, while fewer men than women work in nursing, studies show that men's perceived commitment to careers and ability to work full-time acts as a mechanism which speeds up their career trajectories comparably with women, especially if women work part-time (Lane, 2000). Similarly, in secondary schools, women hold the majority of teaching posts, and therefore are the dominant gender - but despite this, men occupy more head teacher posts by far - 68 percent of these positions (Miller et al, 2004: 24).

Conversely women, who choose to work in male dominated sectors, for example in SET employment, struggle to maintain career paths when they work flexibly, part-time or if they have discontinuous career histories (Dainty et al. 2000, 2001; Singh and Vinnicombe 2000).

Female dominated occupations are generally recognised as more 'family friendly' and oriented to the use of work-life balance policies, and this contributes towards women's tendency to choose work in organisations which are more likely to accommodate part-time and flexible employment. Thus, this has the potential to contribute to the maintenance of gender segregation, particularly the crowding of women into a small number of occupational areas (Blackwell, 2001). This also serves to perpetuate differences and inequalities in pay (England 1992), the range of perceived occupational choices (Joshi and Paci, 1998) and the promotional prospects between men and women.

### **3.6 Summary**

Women are increasingly combining employment and childcare, with greater numbers of mothers in employment having at least one child under five. 56 percent of mothers work, with 35 percent working part time, and 21 percent working full time. 34 percent of mothers are not currently working, but are doing caring work.

Women with higher qualification levels are more likely to work full time; those working part time tend to have lower levels of qualifications and work in lower status jobs. Many mothers have made compromises in their occupational choices, because of the need to combine work and childcare commitments. Women returning to part time work were heavily concentrated in four occupations: elementary administration; sales and customer services; caring personal services and administration. Mothers returning to work full time work in a broader range of occupational areas, including some of the ones listed above, but also other areas such as teaching and management. Female dominated occupations are generally recognised as more 'family-friendly'.

Fewer women return to SET or ICT occupations after maternity or a break from the labour market. These are highly gender segregated sectors due in part to cultural barriers. Gender segregation, in turn, has substantial implications for women's pay prospects, because average earnings in male dominated sectors are much higher than in female dominated sectors.

These circumstances and inflexibilities in the labour market have negative implications for women, employers and the economy in three ways described so far. The inflexibilities compound and reinforce existing gender segregation, which leads to women being crowded into occupational areas that tolerate part-time work but are ultimately low paid and low skilled jobs and are only partially marginalised from some of the most financially and creatively rewarding areas of work in the new knowledge economy, for example, ICT and scientific research. Finally, women remain an untapped resource, employers who are not flexible and accommodating of work-life balance issues may be unable to retain women's skills, labour market experience and education.



## **4. QUALIFICATIONS, AGE, PAY AND OCCUPATIONAL MOBILITY**

### **4.1 Introduction**

Educational qualifications, training, skills, and work experience form the basis of human capital. They have each been found in various studies to be positively associated with pay and productivity growth. Additional education targeted at women returners could improve their capacity to earn in the labour market. However, the differentiation among returners must be kept in mind since some returners have high levels of educational qualifications.

In the first half of this section we explore the educational qualifications of the women who have, or could, return to employment. We report the average actual wages for men and women working part-time and full-time. We then examine the way that qualifications influence the tendency to take up employment. Finally, we conduct a statistical analysis which shows that part-time returners face a further shortfall of wage-rates, beyond what would be predicted in a human capital model.

In the second half we use empirical data to analyse in more detail the issues of occupational mobility, over qualification and occupational downgrading.

### **4.2 Age, Qualifications and Wages**

Mean wages of the employed mothers of three types are compared below. Hourly wages vary with the level of qualification.

The oldest group is the inactive non-mothers, whereas mothers' mean age is not very different from the national average for employed women (37 or 38 years). Note that the word 'mother' is used here to mean those currently having a child age 0-16 in the home. Potential returners' were on average 33 years old if they were mothers doing caring work; 30 years old if they were mothers who were not doing caring work (i.e. who were students, sick/disabled, or unemployed, as well as being mothers); and 44 years old among other inactive women.

The educational qualifications of recent returners who are currently employed are different from women in general; 40 percent have a degree! Mothers employed full-time are three times as likely to have a degree as potential returners are. Mothers employed part-time also have more qualifications than inactive potential returners. Mothers employed part-time come from a younger age-cohort than other inactive potential returners.

**Figure 4.1 Education Level and Age of Women Returners<sup>3</sup>**

POPULATION	Qualification				Total %	Mean Age
	% < L2	% L2	% L3	% > L3		
<b>Mothers Employed (Part-time)</b>	40%	25%	11%	24%	100%	36.8
<b>Mothers Employed (Full-time)</b>	30%	21%	13%	36%	100%	37.6
<b>Potential Returners</b>						
Mothers doing caring work	61%	19%	8%	12%	100%	32.9
Mothers not doing caring work	52%	25%	12%	11%	100%	30.3
Other inactive women	62%	16%	10%	12%	100%	43.9
<b>All Recent Returners</b>	17%	8%	36%	40%	100%	40.1
Recent Returners (Part-time)	20%	7%	31%	42%	100%	40.1
Recent Returners (Full-time)	7%	10%	51%	32%	100%	38.4
<b>All Employed Women</b>	35%	23%	13%	29%	100%	37.8
<b>All Non-employed Women</b>	53%	21%	12%	13%	100%	32.5
<b>All Women</b>	43%	21%	12%	23%	100%	37.6
<b>All Employed Men</b>	30%	24%	18%	28%	100%	38.5
<b>All Non-employed Men</b>	49%	20%	14%	17%	100%	34.2
<b>All Men</b>	35%	23%	17%	25%	100%	39.0
<b>All Working-age Adults*</b>	39%	22%	15%	24%	100%	38.3

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004; British Household Panel Survey 2001/2002.

Base: Pooled LFS: 39,906 (raw), 32,253,439 (weighted); BHPS:10,543 (raw), 9365 (weighted)

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

\*Working-age adults are in the age group 16-59 for women, and 16-64 for men.

Level 2 qualifications refer to passing 5 GCSEs at grades A-C or equivalent; Level 3 involves passing at least two A-Level at pass grades; and 'above Level 3' refers to a degree or higher qualification. The column <L2 thus contains those who did not pass five GCSE exams, ie less than Level 2 qualifications.

The qualification pattern among the distinct groups is quite different. 43% of all women do not have any qualifications but for the mothers who are employed full-time, just 30 percent have no qualifications. 36 percent of the mothers employed full-time have an education level higher than Level 3, i.e. a degree or similar. By comparison, a lower proportion (24 percent) of the mothers employed part-time have degree-level qualifications. Among women generally, 23% have a degree.

Among the potential returners the qualification pattern is completely different. The potential returners who are mothers and do caring work have virtually the lowest educational qualifications of any group listed. 61 percent have no Level 2 qualification, and just 12 percent have a qualification level higher than a Level 3.

<sup>3</sup> It should be kept in mind that students and the people reporting themselves as sick or disabled for the long-term were not excluded from the BHPS data or LFS data used in this study. Such people may work, as with students who are now often found working part-time. They also may be eligible to join the labour force but unable to due to various constraints. Instead of omitting them from the data set, they are included in one or another of our potential returners' categories if they are female.

Over 70 percent of mothers who are recent returners still have a child at home (aged 0-16). Among the recent returners, we find some very well qualified younger women. Very few of the actual recent returners had no qualifications (12 percent of those employed part-time and just 7 percent of those employed full-time).

The background to women returners' wages is further described in Figure 4.2 where their ages, children, student status, and illness status are summarised. Here we are averaging within each group to get a general sense of differences between groups.

This figure shows that the 56 percent of potential returners who are mothers not doing family care work are students. Of the rest, 21 percent are on long-term sick leave or are disabled; 54 percent of mothers not in work and not doing caring work are under age 25. This shows that studying is a viable alternative to returning to work for many young mothers.

**Figure 4.2 Detailed Status of Women Returners and Potential Returners**

	Population of Potential or Actual Returners	Age and Detailed Status							
		Percent With a Child	Percent < 25 Years Old	Percent > 50 Years Old	Percent Who Are Students	Percent Who are Long-Term Sick or Disabled	Part-Time Proportion of Work History	Percent Without Any Qualifications at Level 2	% With Limiting Illness ~
Potential Returners –	Mothers doing caring work	100%	9%	6%	0%	0%	22%	61%	17%
	Mothers not doing caring work	100%	54%	2%	56%	21%	26%	52%	25%
	Other inactive women	0%	40%	38%	37%	25%	28%	62%	36%
Recent Returners –	Recent Returners (Part-time)	79%	0%	15%	0%	0%	38%	20%	13%
	Recent Returners (Full-time)	71%	0%	4%	0%	0%	30%	7%	13%
	All Recent Returners	76%	0%	14%	0%	0%	35%	15%	13%
All Women		42%	19%	21%	8%	5%	28%	43%	15%
All Men		37%	19%	21%	8%	6%	3%	35%	13%

Source: British Household Panel Survey 2001/2002, and BHPS Work-Life History Data Set 2002, updated using BHPS annual work-history data. Base:10,543 (raw), 9365 (weighted)

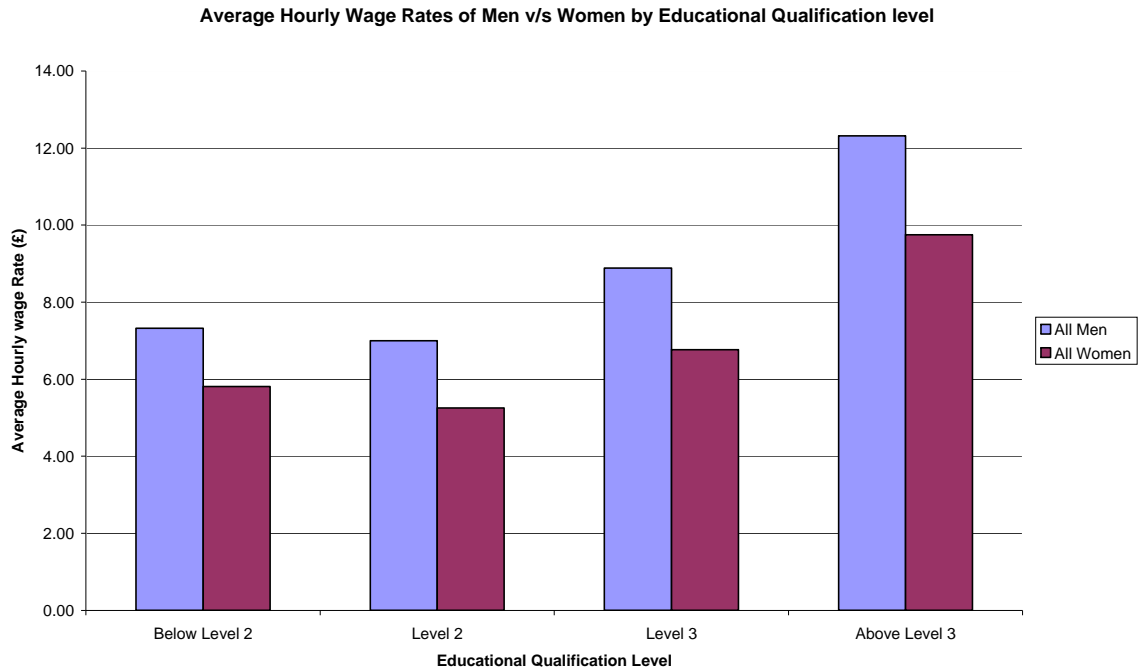
Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

~ The record of a person stating that they have a limiting long-term illness or other disability (which limits their ability to do work) is independent of the record of employment status. For this reason, some employees can reveal that they have a limiting long-term illness without recording their employment status as 'long-term sick or disabled' *per se*.

Clearly the inactive part of the workforce is composed of a mixture of people among whom mothers are just one part. Mothers who report that they are doing caring work are less likely to have a limiting long-term illness than other women returners (17 percent), but this is still higher than among women in general (15 percent).

We now look at the issue of income. Below we compare the income of women and men and mothers working full and part time. Figure 4.3 shows the wages of the employed women compared with men by qualification level.

**Figure 4.3 Hourly Wage Rates of Men and Women by Qualification Level**



Source: British Household Panel Survey 2001/2002.

Base: 10,543 (raw), 9365 (weighted)

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

Note: Outliers have been excluded.

In Figure 4.3 among both men and women, an anomaly shows up because wages go down (in the aggregate) when we take Level 2 achievers versus those without any qualification. This anomaly is explained by work experience. The older workers in the “no-qualifications” groups of both sexes have more work experience than those in the Level 2 groups, which increases their wages.

We now compare the wage rates of mothers working either part or full time. Figure 4.4 shows separately the wages of mothers employed part-time and full-time.

**Figure 4.4 Wage Rates of Mothers Employed Full-Time Versus Part-Time**



Source: British Household Panel Survey 2001/2002.

Base: 10,543 (raw), 9365 (weighted)

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

Note: Outliers have been excluded

A much higher wage among degree holding mothers can be observed when they are compared with mothers who have A-levels only. Other evidence suggests that the degree-holding mothers are more likely to have had maternity leave. That is, during their career breaks some women were still tied to their old employer, who funded the maternity leave payments, rather than leaving that employer upon becoming pregnant. Partly as a result of this continuity, these women have higher wages. Those women who broke their work career to do family care are also more likely to be the ones with lower levels of educational qualifications.

Wider access to maternity leave and discouraging departures from the workplace when having children would perhaps change this reward curve by making it rise before it reaches the degree level employees.

### 4.3 Exploring the Relationship Between Qualifications and Likelihood of Working

Regression analysis has been used to examine the relationship between higher levels of education and the likelihood of a woman working. The results are shown in Figure 4.5. The context here is cross-sectional and takes into account all the students and other potential workers described earlier. The logistic dependent variable is 'whether the person has a job' and is coded 1 for yes and 0 for no. The logistic equation examines the probability of the person being employed. We include both men and women in the analysis.

A wide range of intervening factors are allowed for, and the net result (which is typical for UK research) is that women are less likely to work. Men who are married are more likely to work than un-married men. The regressions are conducted with LFS data for 2004 and have as independent variables: qualifications, age, sex, number of children, children below the age of two and other variables. Whilst probit models can be used for the same causal model, we

find logistic models useful because they lend themselves to an interpretation in terms of the 'odds' of working<sup>4</sup>.

There is a danger that the age composition of the low-qualification group will be masked when we look at the table of means. The younger women tend to have higher qualifications, since levels of education have become equalized between the sexes in the generation currently leaving school. Regression analysis, shown below, allows the 'age' of respondent to be controlled for. Other factors, such as the additional impact of education on the probability of being employed, can then be described. The strengths of regression include its ability to 'control' for regional labour market differences, the capacity to test for a sex difference in the 'effect' of a variable, and the exact way that results are provided. There are also three weaknesses: the possibility that cohort effects still appear to be 'movements' along a variable's values, when they are not; the problem that unobserved facets of the person, including their caring duties, will be un-recorded and hence pollute the correlations that are observed; and thirdly, that the exclusion of the self-employed people leaves out an important group of workers who have varied job characteristics.

In Figure 4.5 the outcome is whether one has a job. The odds are defined as the ratio of those having a job to those without a job. These odds of having a job go up with the level of educational qualifications. As the educational level goes up, the foregone earnings are higher if one does not remain employed. In this model the work experience of the person is not explicitly allowed for as it is not available in the LFS, so age is used as a proxy. All women of working age 16-59 and all men 16-64 are included using Labour Force Survey data for 2001 to 2004 (four waves pooled).

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<sup>4</sup> Further research might look at the weekly hours of work as a second decision made by women and men in the labour market. Depending on the household conditions, people may tend to have preferences for flexible working, jobs near to home, and work that is in school terms only. The prediction of weekly hours is not covered here.

**Figure 4.5 Factors Affecting the Odds of Employment**

Have Job	All	Men	Women
	Coefficient	Coefficient	Coefficient
Child < 2 years	-0.34***	0.45***	-0.73***
Number of Dependent Children	-0.32***	-0.12***	-0.46***
Age	0.28***	0.32***	0.25***
Age <sup>2</sup>	-0.00***	-0.01***	-0.01***
Level 2	0.46***	0.50***	0.61***
Level 3	0.41***	0.45***	0.64***
> Level 3	0.72***	0.68***	1.04***
Renting	-1.08***	-1.16***	-1.08***
Married and Living with Husband/ Wife <sup>®</sup>	0.29***	0.73***	-0.04
Married and Separated from Husband/ Wife	0.06	0.27*	-0.01
Divorced	0.11*	0.26***	-0.01
Widowed	-0.16	0.05	-0.43***
Constant	-3.21***	-4.01***	-3.05***
Sex Female	-0.70***		
Interaction Variable 2 (Level 2 Qual. & Female)	0.17**		
Interaction Variable 3 (Level 3 Qual. & Female)	0.29***		
Interaction Variable 4 (> Level 3 Qual. & Female)	0.29***		

Logistic regression of the odds of employment.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

F statistic 138.6

Number of observations = 39712 (raw), 40287 (weighted)

Base cases have ownership of the home, and have no dependent children.

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 39,712 (raw), 40,287 (weighted).

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Note: Controls for Regions were also used. (See Appendix 2)

<sup>®</sup> Married includes cohabiting couples.

In the model, the coefficients can be used to indicate whether each factor leads to a rise or fall in the odds of employment. For example, being female reduces the odds of being employed (all else being equal). Three asterisks indicate high statistical significance. Another example is that the odds of being employed go up if a person is divorced – but for men, they go up much more whilst among women there is no significant effect.

The results shown in Figure 4.5 are typical of the UK. For instance, for men, having a child under the age of 2 years is associated with *higher* odds of being employed, but for women this is reversed.

Having more than one child, measured here by the number of dependent children in total, has another (independent) effect which can be added on. Thus after the first child, there is some tendency for men to not be employed. The 'effect' on men of having children is smaller than among women. Since the men's and women's models are similar, we can combine them in the 'all' regression.

For age, the odds rise with each 'year' of age. A humped curve of employment by age is shown through the positive, and then negative, coefficients on age and its square. No other factor in this model can be curved. For gender being female, renting the house, having a young child aged 0-2, and other dichotomous factors, the odds fall with the presence of the factor. A series of these factors can be added up when a logistic model is used.



Typically in an employment participation model of this kind, married men are shown to have high odds of working, whilst married women with children and babies at home have the lowest odds of working. In Figure 4.5, marriage has a 'positive effect' among men but not women.

In the model the demographic and child-care related factors are handled first. Having a baby aged 0-2 years inversely affect the odds of working. So does the number of dependent children in the household. Women are in general less likely to have a job. Marital status affects the odds of working differently for men than for women. Housing tenure is placed in the equation as a proxy for the wealth of the household overall. As other studies have shown (e.g. Olsen and Walby, 2004) the spouse's earnings negatively affect the odds of a person working. Since most men work, this effect strongly influences women. In this equation only housing status and marital status are inserted as proxies for this household-level structural factor. An accurate measure of household income is not provided by the LFS.

Having allowed for the household structure, the impact of qualifications is larger for women than for men. Having any qualification, e.g. Level 2 and level 3, makes a woman much more likely to have a job. Among men, those with Level 2 qualifications are more likely to work than men with Level 3 qualifications. Finally, those with a degree level qualification are again much more likely to work than those without. To put this differently, labour-market inactivity is far less likely among those with educational qualifications than among those without, even after controlling for age.

An additional factor is placed in the model to show the interacting effect of being female and having some qualifications. The interaction effect helps to differentiate the women's and men's tendencies to work. The interaction effect is only relevant when men and women are mixed in one sample, as seen in the first column. The four 'levels' of qualification are here coded in years, and for each level there is an additional boost to the probability of women working.

The interaction variable has a positive coefficient for all levels of education. Since the base case is 'below Level 2' we can conclude that higher levels of education among women are associated with a stronger likelihood of employment. This effect is strong for women getting Level 2 and 3 qualifications, but there is no additional effect for the level above that (i.e. degree level). In other words the gender difference in employment participation is noticeably female-biased when we allow for the impact of qualifications. The employment participation rises more quickly for women than for men.

In Figure 4.6 we measure the impact of qualifications on the earnings per hour of men and women. Here the region is controlled for and is often highly significant, e.g. in Inner and Outer London the 'London weighting' is likely to be applied so the wages are higher. Another control is introduced for the industry of the worker. Thus factors affecting the productivity of workers, such as the technology and the institutional structure of an industry, are partly controlled for overall. Energy and water supply, and the banking, financial and insurance industry are the most high-paid industrial sectors.

In Figure 4.6, the data source has again shifted from the LFS to the British Household Panel Survey. In this survey the industrial sectors were described in a more concise way than in the LFS. We use Standard Industrial Classification (SIC) 1992 categories here. Thus we do not see the health industry as a named industrial sector. Health is an interesting area in which specific occupational scarcities exist, but wages are less responsive to these scarcities because of the large National Health Service with its institutionalised wage system. Various minor differences between the LFS and the BHPS are described in the last Appendix.

Having made these allowances we look at the impact of qualifications on earnings. Again, we allow for age so that the composition effects of the labour force are controlled for. Age and its squared value also act as a proxy for work experience, and the remaining gender differences (which are likely to be work-experience) fall into the gender effect. The gender residual effect is 18 percent. This is the gender difference in wages that is unexplained after allowing for all the other factors available. If detailed work history data are used, measuring each interruption to the work career, the gender pay residual falls to 9 percent (Olsen and Walby, 2004). Apart from this difference, the wage results are consistent with earlier research.

**Figure 4.6 Factors Influencing Wages of Men and Women**

Log of Hourly Pay	Co-efficient	Size of Effect
Sex Female	-0.18***	18% Lower wages if female
Age	0.06***	Humped Association
Age <sup>2</sup>	-0.0007***	
Sex Segregation (Male Ratio)	0.0017***	6.8% rise/fall in wage for a 40% rise/fall in the male percentage by changing occupation
<b>Industry</b>		
Agriculture, Forestry & Fishing	-0.06	Like base case
Energy & Water Supply	0.25***	25% higher
Minerals, Chemicals	0.21***	21% higher
Metal Goods, Engineering, Vehicles	0.14***	14% higher
Other Manufacturing	0.01	Like base case
Construction	0.08*	8% higher
Distribution, Hotels, Catering	-0.06*	6% lower
Banking, Financial & Insurance	0.32***	32% higher
Other Services	0.16***	16% higher
<b>Level of Qualification</b>		
Level 2	0.01	Like base case
Level 3	0.16***	16% higher
> Level 3	0.37***	37% higher than base case
Tenure in the Present Job (Years)	0.0015	Like base case
<b>Firm size</b>		
50-99 employees	0.06***	6% higher
100-499 employees	0.13***	13% higher than small firms
>500 employees	0.17***	17% than small firms
Constant	0.35***	
<b>R-squared = 0.35</b>		

Linear Regression of the log of the hourly gross wage.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

F statistic 60.7 The male percentage in the occupational group is calculated as the male proportion times 100.

Base: 7235 (raw), 6973 (weighted)

Base cases are engaged in the Transport and Communications industry and have 8 years of qualification.

Source: British Household Panel Survey 2001/2.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Note: Controls for Regions were also used. (See Appendix 2)

The regression in Figure 4.6 is a linear regression with an R-squared value of .35 implying that 35 percent of the variation in wages has been explained. This is an acceptable (and highly statistically significant) level of explanatory power but it obviously leaves many individual variations unexplained. The linear regression is not like the logistic regression of Figure 4.5 (where odds were being explained). Instead it is the scale of wages that is being explained. Therefore, each coefficient implies a rise in wages, such as 0.06 for firms of 50-99 employees, 0.13 for larger firms, and 0.17 for the largest firms. The scale used is a logarithmic scale so that we can read these as percentage changes (6 percent, 13 percent,

and 17 percent) above the base-case. The base case for firm size is those firms with less than 50 employees.

As seen in the descriptive data above, having a Level 2 qualification does not push the wage upward. The impact of qualifications is positive (16 percent) when the Level 3 qualifications are achieved. The log wage is the dependent variable, and a 16 percent rise in this logarithm corresponds to a 16 percent rise (approximately) in the wage in Pounds/hour. In other words, for hourly earnings to respond, an A-level qualification or similar level of NVQ appears to be needed. In money terms, the rise of 16 percent is about £1.26/hour for women and £1.64/hour for men. In other words, percentage changes affect each sex from that sex's mean wage.

When someone arrives at the degree level qualifications another large jump in wages occurs. The total increase in hourly wages for degree holders, vs. those with no education, is 37 percent.

The estimates in Figure 4.6 are a cross-section of employees in Great Britain in 2001/2. Unemployed and inactive people have not been taken into account so this is a direct wage comparison. When observing that there is not a wage reward for having Level 2 qualifications, we need to take into account the type of people who have these qualifications. One typical group that falls into Level 2 are those from the generation who got CSE passes through secondary modern schools. Younger workers with GCSE passes are also in this group. These workers may be relatively low-paid due to their occupational location in manual or semi-skilled work, and their age will be mixed. On the other hand, successful managers of older age cohorts will appear here in the 'having no qualifications' group (i.e. below Level 2), but will have reached a higher rate of pay. Therefore the use of educational qualifications in the model without details of the socio-economic group may be masking the productivity benefits of having a Level 2 qualification.

In this wage model a selectivity bias could also exist. The people actually employed are not a random sample of the people who could be employed. There is a selective tendency for more qualified people to be employed and for less qualified people to be outside the labour market. Typically, studies of wage levels adjust for this selectivity bias by attributing part of the predicted wage to the labour-supply factors. We have provided comparable measures in Appendix 3. A simple model describing the actual differentials in wages among those who do have jobs gives relatively similar coefficients for all factors, except the 'constant term' which is unexplained. Even the gender residual is not changed much. The selectivity adjusted wage equation shows that the people *not* employed would have lower wages than those who are employed by a substantial (but varying) margin. Detailed studies of the wages that *could be earned* by non-employed workers tend to show that the diversity of inactive people makes the observer hesitate before predicting what would happen if a group 'joined the labour market'. The group is likely to be a self-selecting biased subset of the inactive potential returners. Their wages, in turn, will on average tend to be higher than those who remain inactive.

The reason for this is that some inactive people have illness or other limitations, household work constraints (e.g. they lack transport), or otherwise are unable to get a well-paying job. Others are inactive for very different reasons, such as redundancy or migration to a new region. These latter workers tend to re-enter the labour market relatively quickly.

The wage model in Figure 4.6 shows a well-established institutional differentiation in wages. The larger the firm, the higher the wage. It is likely that the firm-size effect is partly due to the training and on-the-job learning that takes place in large firms. It may also relate to the longer careers people have within such a firm, although there is differentiation both within industries and by occupational group in turnover rates. The Sector Skills Development Agency (SSDA) implicitly recognises that the small and large firms co-exist in each industry

and that this differentiation makes it difficult to resolve skills shortages. In construction, for instance, the target of the Sector Skills Council for Construction to 'provide starter jobs to provide entry points for talented apprentices' is clearly going to make a differential cost impact for small sub-contractors as opposed to large firms that already employ workers as well as apprentices. (See [www.constructionskills.net](http://www.constructionskills.net) for further discussion).

Finally, having made the above allowances, there is only a tiny association of wages with a person's tenure in their present job. It is not statistically significant. The BHPS data source is likely to be highly accurate since the data arise from a longitudinal study, yet there is no additional rise in wages with long tenure in a single job. Similar findings reported in Olsen and Walby (2004) were augmented by a more exhaustive study of the person's whole work career both before and after career interruptions. In that study, the total length worked *full-time* did affect the wage-rate of the person in later years, but years worked *part-time* had a nil or even negative impact. When men and women are put together, and those with part-time hours of work become a large section of the labour force, the impact of tenure in the current job becomes non-significant.

Another important institutional factor is the male percent in the occupation. Here, gender segregation was measured for each occupation in LFS, using the SOC 2-digit measure for 1992. Both low and high values indicate gender segregation. There are 77 such occupations and the index was then matched onto the BHPS data using the same SOC indicator for BHPS respondents' jobs. The sex segregation variable has a strong positive impact and it is highly significant. For a 10 point rise in the male-percent in their occupation, the worker would get a 1.7 percent rise in pay. Thus if one moved from a nursing job at 33 percent male to a management job at 73 percent male, say, then the rise in pay according to that change would be 6.8 percent. That measure could be capturing other effects, as well.

Among the industries, the banking industry stands out with the largest impact on wages, with an approximately 32% wage premium. Energy and Water Supplies and Minerals and Chemicals are also associated with relatively large gains (25% and 21% respectively).

#### **4.4 Qualifications, Employment and Wages**

In this section so far, regression analysis has been used to tease out qualification effects on employment participation and on wages. The two are closely related, and in similar works the wage equation would be adjusted so as to give estimated wages for non-employed women. The 'selectivity-adjusted' equations both here and elsewhere also show a rise in wages for each level of qualifications (e.g. Olsen and Walby, 2004). Valid estimates can be derived from an unadjusted equation. In Appendix 3 we present the selectivity-adjusted variant of the wage equation for 2001. Reporting findings very similar to our results, Davies (1997) showed that the differences between the simple and the selectivity-adjusted estimates of the wage equation were not statistically significant for the UK. Dale and Egerton (1997: 74-75) showed that the impact of qualifications was always positive on wages, except for the nursing subject heading within vocational-level qualifications, where it was unexpectedly negative. Dale and Egerton's (1997) research supports our finding that certain occupational groups of women tend to be over-qualified but underpaid for the work that they do.

However, over-qualification is just one of the factors contributing to wage levels.

## 4.5 Analysis of Occupational Mobility, Occupational Downgrading and Over-Qualification

Over-qualification implies that movement out of the current occupation would be part of a strategy to use the person's human capital more effectively. In developing an over-qualification argument, it is important to specify the counter-factual case against which an actual wage is going to be compared. Here an empirical comparison of the upward and downward mobility of people's socio-economic groups is made in which the recent returners' experiences over time are compared with all mothers, all women aged 40-50, and all men. These comparator groups act as counterfactuals. Occupational downgrading has already been quantified through a measure of over-qualification. The net effect of skills-shortage and education and work experience were teased out using regression. Now the relationships between gender segregation, wage rates, and skills-shortages will be explored.

First it is convenient to denote the market wage for a given occupation as  $w_j$ . The mean wage across all workers in an occupation would be a good estimate of  $w_j$ . Secondly we denote the person's actual wage as  $w_i$ . The subscript  $j$  indicates an occupation, and the subscript  $i$  indicates a person. Finally, the wage which a person *would get* if they worked in a job that utilized all their qualifications can be denoted  $w_i^*$ . The  $*$  indicates an optimal outcome for both the person and the economy.

Because there is over-qualification in certain occupations, for certain people, we may observe them earning less than their optimal personal wage. In notation:

$$w_i^* > w_i$$

In addition their personal actual wage may, in turn, be higher than the average wage in that particular occupation.

$$w_i > w_j$$

Another theory that could explain the same observed wage gaps is the theory of compensating differentials (Kilbourne, et al., 1994; Barrett and Doiron, 2001). The person who enters the labour market might accept a job whose mean wage is much lower than they normally expect to earn if that job had advantages that made it more beneficial (in non-money terms) compared with other jobs. For instance, working close to home, having flexible hours, being able to arrange work-life balance better, and working part-time all contribute to compensating differentials. For these to apply to women, more than to men, women's and men's roles in child-care must be acting as a constraint which limits women's ability to earn in the labour market. The compensating differentials literature sees market wage differences as an outcome that results from such situations.

The compensating differentials for dangerous and unpleasant jobs, or for working away from home for long periods, are positive. The compensating differentials for pleasant jobs or those which allow the worker extra flexibility or freedom are negative. It can be seen that a mixture of subjective and objective factors can combine to create compensating differentials. A woman's choice might match her decision to take a job close to home in which,

$$w_i^* > w_i > w_j$$

(Her optimal wage > the actual wage > the usual wage)

The situation could even arise in which,

$$W_i^* > W_j > W_i$$

(The optimal wage > the usual wage > the actual wage)

In such cases, the woman's earnings in practice are lower than the average wage in her occupation. If she works among people who have different constraints, and therefore different (smaller) negative compensating differentials, her wage may be much lower.

The assumption that the market wage is the correct reward for human capital can be questioned. The market wage  $w_j$  could be questioned as perhaps not being well specified. The actual wages include a variety of compensating differentials for the people in the jobs in that occupation. It is difficult to measure compensating differentials since they vary for each and every person. Wages as measured in surveys are likely, therefore, to be imperfect measures of human capital for each person. For women the net bias is a measurement error that may be positive if they are experiencing over-qualification. For men this bias is likely to be negative if they have a positive compensating differential, e.g. workers in protective industries that experience danger at work.

Furthermore the women's actual wages may be lower than they should be, and thus biased downwards, due to discrimination or other institutional factors. Other research shows institutional factors and systematic discrimination to have large effects on the gender pay gap (Olsen and Walby, 2004).

This discussion opens up questions of economic theory and difficulties with the empirical measurement of the phenomena that populate the theory of human capital. Market wages, returns to qualifications, returns to experience, and gender discrimination are all rather difficult to measure with accurate or perfect indicators. Instead we have a rough idea of how the economy actually looks, with outcomes reflecting a balance of various causal processes. In other words great complexity underlies the outcomes described in these findings.

The areas in which women returners are over-qualified are highly job-specific. There are also many jobs in which women are under-qualified for the work they do. The scale of over- and under-qualification measured in section three was rather small on average (typically just 0.5 to 1.5 years). It is possible that over-qualification would be a temporary situation for individuals who later make efforts to change jobs to maximize their wage. However, this empirical question merits further research.

## **4.6 Occupational Mobility 1991-2002**

In 2001, a nationwide survey of returners' 'best previous full-time job' and their current job after returning from doing family care showed considerable mobility (Walby and Olsen, 2002, section 4). Many women had downward mobility after returning to work. A few women also showed upward mobility. The women with downward mobility were, typically, those with the highest status occupations before starting a family.

More research on women's trajectories is required. As a brief contribution to this literature we have analysed the BHPS over the period 1990/91 to 2001/2 in terms of mobility patterns for different types of worker. Our methodology was to compare movement across socio-economic groups over time, making adjustments as necessary to allow for gaps in the data due to inactivity as well as missing data in particular years. To avoid attrition, the BHPS uses proxy data from other household members if a person is not available for a particular year. The people are then chased up again the following year in order to maximise long-term retention in the survey. We have data on the socio-economic group (SEG) both by interview and by proxy data for most employed respondents.

We use the phrase 'socio-economic mobility' to refer to how each person has moved between different socio-economic groups (SEGs) in the last 11 years. The 8 SEGs we use are ranked in status and have been arrived at by collapsing the usual SEG variable from 19 categories down to eight. The eight categories are employers (large firms), professionals, employers (small firms), intermediate, junior non-manual, manual skilled and 'foremen', own-account workers and others, and finally manual semi- and un-skilled workers. The own-account workers group includes those self-employed people who have no employees.

The ordinal ranking of SEG categories can be questioned. It might be better to look at wage rates to pursue the mobility issue further. However, taking this ranking as a given, we can create a table of transitions over a ten-year period. For a base-line we have used women and men aged 40-50 first of all. Their transitions are similar to the transitions of all women, and of all men. For instance, 32 percent of women moved 'upward' in the table, 51 percent stayed at the same level, and 17 percent moved downward. In Figure 4.7 the comparable figures for men and for those aged 40-50 can be seen.

**Figure 4.7 Occupational Mobility 1991-2002**

POPULATION	Change in the Socio-Economic Group of the Person's Occupation Between 1991 and 2001/2			No of cases
	Socio-Econ Group Shifted UPWARD	Stayed the SAME	Socio-Economic Group Shifted DOWNWARD	
ALL Women Employed in 2001/2	32%	51%	17%	1716
ALL Men Employed in 2001/2	31%	48%	21%	1916
Mothers Employed Full-Time in 2001/2	37%	46%	17%	487
Mothers Employed Part-Time in 2001/2	24%	58%	18%	566
Recent Returners Employed Full-Time in 2001/2	44%	31%	25%	47
Recent Returners Employed Part-Time in 2001/2	18%	62%	20%	157
ALL Recent Returners	25%	53%	22%	204
Females, Employed and Aged 40-50 in 2001	34%	50%	16%	636
Males, Employed and Aged 40-50 in 2001	31%	50%	19%	742

Key: Grey = less upward mobility

Source: BHPS 1990/91 to 2001/2, waves A to K. The starting point for each transition of a worker from one job to another is a ten-year gap. However, in the case of returners, variants on this base case are used. If the person did not have a job in the starting year, then a more recent year is taken. For mothers who were employed in 2001, we take the year furthest back from 2001 for which there is data. For returners who re-joined the labour market in the last five years, who had done family care work during that five-year period 1995-2000, we took the year most recent other than 2000 or 2001. The year 2000 would have the year of the family-care work in the shortest case of a 2-year gap. By taking gaps of varying lengths we ensured that as many women as possible would be retained in the transition matrix. Each transition matrix was then reduced so that its diagonal is the proportion 'staying the same' in this table, and cases above and below the diagonal faced upward or downward mobility, respectively.  
Base: 10,543 (raw), 9365 (weighted)

Using Figure 4.7 to examine women returners we begin with those who are mothers in the year 2001/2. The employed mothers did not suffer worse mobility than other workers. However, the mothers who worked part-time suffered more downward mobility, and notably less upward mobility, than all women in 2001/2.

The starting point for measuring the mothers' transition from one job to another was an eleven-year gap 1990/91 to 2001/2. However, if she was not employed in 1990/91, then variants on this base were examined. Each more recent year was examined, until a mobility record could be obtained. In other words, for mothers who were employed in 2001, we take the year furthest back from 2001 for which there is data. On this basis, 37 percent of full-time employed mothers were upwardly mobile, but only 24 percent of part-time employed mothers were upwardly mobile.

Next we examined the recent returners, who are a subset of mothers but who in a few cases no longer have their children with them at home. These recent returners were even more differentiated. For those working full-time, 44 percent had upward mobility, compared with 32 percent for women overall. Yet only 18 percent had upward mobility among the recent returners working part-time. This is far below the mean.

The mobility of recent returners was calculated over the lost family-care years rather than over the full eleven-year period. In other words, we measured the mobility over the shortest



(rather than longest) period available. The job just before the family care break was the starting point (from 2 to 9 years before 2001/2), and the job in 2001/2 was the ending point. We would not expect such high mobility but it has occurred. The proportion who shifted downward in this group was 25 percent (if now working fulltime) or 20 percent if now working part-time. There was greater downward mobility in general, but it is the part-time workers who are most affected by worsened socio-economic mobility.

Women returners who are employed part-time are concentrated in certain types of jobs, notably those which are characterised as 'junior non-manual and personal service'. 49 percent of the part-time returners were in these jobs, with another 15 percent of the women in 'intermediate' jobs and 19 percent in 'manual, semi-skilled and un-skilled' jobs. Some of the socio-economic group titles are now considered out-of-date because of the negative value judgements involved in labelling any job as 'un-skilled'. However these categories are available over the career path period, and allow women to be traced over time. Two Figures illustrate the movement of particular women.

First, in Figure 4.8 the mobility of the women returners who are employed part-time in each major socio-economic group is shown along with the proportion who rose in socio-economic group and the percent who fell in socio-economic group. The table shows where they started before doing child-care and what proportion ended up rising or falling after doing child-care.

**Figure 4.8 Mobility of Recent Women Returners Employed Part-time: Summary**

<b>Socio-Economic Group in Her Previous Work Approx. 1996:</b>	<b>(% of this row's women)</b>			<b>(% of column)</b>
	Percent Who Moved Upward	Percent Who Stayed the Same	Percent Who Moved Downward	<b>Percent of the Women in Starting Year</b>
<b>Employers, Large</b>			100%	3%
<b>Professionals</b>		100%		1%
<b>Employers, Small</b>	14%	14%	71%	5%
<b>Intermediate</b>	4%	43%	52%	15%
<b>Junior Non manual and Personal Service</b>	8%	81%	11%	49%
<b>Manual, Skilled and Foreman</b>	40%	60%		3%
<b>Own Account and Others (i.e. Self-Employed)</b>	86%		14%	5%
<b>Manual, Semi-skilled and Unskilled</b>	38%	62%		19%
<b>Total</b>	<b>18%</b>	<b>62%</b>	<b>20%</b>	<b>100%</b>

In this table the last column shows how concentrated the women were in particular groups. The table overall shows considerable mobility.

The breakdown of men into occupations showing their downward and upward mobility gave rather different results. As with women, it also showed high levels of gross mobility overall. For instance, 46 percent of men in intermediate occupations had moved upward over a ten-year period, and 54 percent of men in junior non-manual and personal service occupations. Overall 39 percent of men in all categories moved upward (excepting large employers, from which it is not possible to move upwards). For the women recent returners, just 18 percent had moved upward overall.

The men were also far less concentrated in the intermediate occupations than were women. The men used for this comparison were in the age group 40-50 in 2001 in order to control for age.

To trace particular women through, and see their jobs before and after their child-care interval, we can examine the underlying data in more detail. Figure 4.9 illustrates the kind of trajectories that are found. For those who had intermediate jobs, there was practically no upward mobility. Among the comparator group of men aged 40-50, 43 percent had upward mobility out of the 'intermediate' occupation group.

**Figure 4.9: Mobility of Recent Women Returners Employed Part-time: Selected Details**

<i>Socio-Economic Group in Her Previous Employment Before the Caring Interval:</i>	<b>Socio-Economic Group of Woman Returner's Employment After The Caring Interval</b>							Total Number of Women (Raw Cases)	Percent of the Column Total	
	Employers, Large	Professionals	Employers, Small	Intermediate	Junior Non manual and Personal Service	Manual, Skilled and Foreman	Own Account and Others (i.e. Self-Employed)			Manual, Semi-skilled and Unskilled
Intermediate			1	10	11			1	23	15%
Junior Non manual and Personal Service	1			5	60	1		7	74	49%
Other (above and below the groups shown)	1	2	2	4	18	6		20	53	36%
<b>Total</b>	2	2	3	19	89	7	0	28	150	100 %
<b>% TOTAL</b>	1%	1%	2%	13%	59%	5%	0%	19 %		

The highlighted cell in the first row shows only one case where an 'intermediate' woman moved up to being a small employer. By way of contrast, among men overall 6 percent moved upward from being in an 'intermediate' job held in 1991, and among women overall 8 percent moved upward from an 'intermediate' job held in 1991.

The seven women highlighted in the second row have had downward mobility. In these cases the woman was in a junior job before having a caring interval, but after the interval her job had changed to manual, semi-skilled, or un-skilled work. For instance, one might change from hairdressing to bar work. Another change which is found in this category is from clerk/receptionist to cleaner. The implications for the future career of the worker are likely to be a continuing underperformance relative to where she might otherwise have ended up. Among women in general, and men in general, such moves are almost unknown over the ten-year period studied. This is the case both for the age group 40-50 (in 2001) and for all people in the working age range.

A caveat on these results arises from the small numbers of recent returners found in the BHPS sample data. There are only 47 cases of full-time employed recent returners. The sample of 157 part-time recent returners is rather better for generating estimates. Of these, the socio-economic group of the earlier job was unknown for 7 cases. Thus 150 cases are shown in Figure 4.9 above.

Overall the mobility results suggest that occupational downgrading occurs mainly via part-time work in the Great Britain regions. If a woman is now working full-time the odds of her having experienced occupational downgrading are much lower.

## **4.7 Gender Segregation and Wage-Rates**

When they join in male-dominated occupations, certain women obtain higher wages through a combination of higher productivity and reduced discrimination. The wage regression reinforces the lesson that male-dominated jobs are more highly paid.

When the regression was presented above, the response of wages to formal training was shown to be strong. Below in Figure 4.10 revised analysis shows the relative importance of qualifications, tenure in the current job, skills shortages in that occupation and other factors across England, Wales and Scotland. Here the ESS skill-shortage data has been matched onto BHPS 2000/1 data including the two regions not covered by ESS, i.e. Scotland and Wales.

**Figure 4.10 Factors Including Skills Shortage that Influence the Wages of Men and Women**

Log of Hourly Pay	Co-efficient	Size Of Effect
Sex Female	-0.19***	16% Lower wages if female
Age	0.06***	Humped Association
Age <sup>2</sup>	-0.0007***	
Segregation Point (Male Percent)	0.0017***	6.7% rise/fall in wage for a 40% rise/fall in the male percentage by changing occupation
<b>Industry</b>		
Agriculture, Forestry & Fishing	-0.06	Like base case
Energy & Water Supply	0.25***	25% higher
Minerals, Chemicals	0.21***	21% higher
Metal Goods, Engineering, Vehicles	0.14***	14% higher
Other Manufacturing	0.01	Like base case
Construction	0.10**	10% higher
Distribution, Hotels, Catering	-0.06*	6% lower
Banking, Financial & Insurance	0.32***	32% higher
Other Services	0.16***	16% higher
<b>Level of Qualification</b>		
Level 2	0.01	Like base case
Level 3	0.16***	16% higher
> Level 3	0.36***	36% higher than base case
Tenure in Present Job (Years)	0.0015	No effect
<b>Firm size</b>		
50-99 employees	0.06***	6% higher
100-499 employees	0.13***	13% higher than small firms
>500 employees	0.17***	17% than small firms
Skill Shortage Index $\tau$	-0.03***	3% lower for a one-point rise in the Skills-Shortage Index
Constant	0.39***	
		<b>R-squared = 35%</b> F statistic= 59 N: 7164 (raw), 6918 (weighted)

The index is derived at the SOC 2-digit level of analysis for use here.

Linear regression of the log of the hourly gross wage.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

Segregation point is defined as male proportion times 100.

Source: British Household Panel Survey 2001/2.

Base: 7164 (raw), 6918 (weighted)

Base cases reside in the West Midlands region; are engaged in the Transport and Communication industry; and have 8 years of qualification

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Note: Controls for regions were also used (see Appendix 3).

The model above is a log wage model showing the percentage change in wages with a unit rise in each variable. The approximate sizes of effects are shown. There is a significant relationship between skills shortages and wage-rates and it is negative, as suggested also in research by Green *et al.* (1998: 181). In Green *et al.*'s study, the wage paid by the firm was nearly the only statistically significant factor associated with skills shortages, and the association was negative. The sectors which pay their workers higher wages, on average, have been found to experience less skills shortages (defined both in terms of qualifications, as here, and of other skills measured directly). The research in this area carefully

distinguishes experience from job-relevant skills and transferable skills. Qualifications are a poor substitute for other skills' measurement.

Wages are an important proxy indicator of women's human capital because they tend to incorporate a payment for skills learned on-the-job for both men and women. One may enter an occupation with a given level of qualifications, but then go on to develop job-specific human capital over time. This human capital is harder to measure than qualifications. The wage model below indicates the net returns to women's qualifications through explicit coefficients, as well as inter-firm variation due to firm size and other institutional factors. It must be noted that regression does not map simply onto a causal interpretation. Thus for instance the apparent returns to 'qualifications' may incorporate the average on-the-job skills of people in each educational category.

Estimates of the predicted women's wage emerging from the model are shown below. An interaction of skills-shortage with gender has been allowed for in making estimates but its size is not large (see appendix). A rapid rise of predicted wage-rates by qualification level is visible for both men and women. The rapid rise is a more accurate measure than the average gross wages shown earlier in the report.

The pay gap between male and female predicted wages is large (18 percent for those without qualifications and 22 percent for those with a degree). In Figure 4.11 the recent returners' predicted wages are highlighted. They are a small group; there were just 204 cases in total of which 47 worked full-time. A steep gradient for the returns to educational qualifications is evident for this small sub-group of returners.

**Figure 4.11 Predicted Wages (£/Hour) for Population Groups by Qualification**

POPULATION	Qualification			
	< Level 2	Level 2	Level 3	>Level 3
Men	6.85	6.42	7.84	10.92
Women	5.49	5.13	6.16	8.42
N: 7164 (raw), 6918 (weighted)				
Mothers Employed Part-time	5.10	5.35	6.34	8.19
Mothers Employed Full-time	6.02	5.63	6.62	9.31
N: 1397 (raw), 1134 (weighted)				
Recent Returners Part-time	4.91	5.58	6.13	7.60
Recent Returners Full-time	4.27	4.50	7.42	8.07
N: 156 (raw), 194 (weighted)				

Source: British Household Panel Survey 2001/2002.

Population: All women and men in Great Britain, except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Units: Rate of pay in gross pounds per hour. Predictions were made for each individual using the regression in Figure 4.10, and then averaged for existing groups within the BHPS survey.

The predictions in Figure 4.11 are based on the regression in Figure 4.10. These results are very similar to those reported earlier in Figure 4.6. The inclusion of a skills-shortage variable did not significantly affect any of the main model's coefficients. The individuals in the sub-groups in Figure 4.11, such as 'men', have taken account of their actual levels of all variables including firm size, age etc. before working out a prediction. Then we break up the men into four groups to find the mean predicted wage for each group's men (<Level 2, Level 2, Level 3, and >Level 3 education). The same is then done for women, and so on. This

methodology gives accurate measures of predicted wages in £/hour. We have converted the results from the original logarithmic scaling that was used. Women's individual predicted wages are consistently lower than men's, leading to the patterns observed in this table for groups.

The results above show that both types of women returners (mothers and recent returners) have a steep curve of increasing rewards to formal education. Their predicted wages are lower than all men's wages, for a given level of education. The hours worked per week were not taken into account in these predictions.

Statistically one can take this further. The estimates can be re-run to allow for particular sub-groups who having varying work-hours per week. We look first (in Figure 4.12) at women who are currently mothers, working part-time vs. full-time. Then we make predictions for recent returners.

We have found that there is a significantly lower wage for recent returners, relative to the average case. By inserting each type of returner into the equation as an additional indicator variable, one by one, the statistical results show that the most substantial detriment is experienced by returners who work part-time.

**Figure 4.12 Additional Loss of Wages (£ Per Hour) of Returners Relative to All Workers**

Raw Number in Test Group	Factor Inserted	% Loss on Hourly Wage	T-statistic	Significance Level
517	Mothers Who Work Full-Time	0	0.1	Not significant
632	Mothers Who Work Part-Time	-16%	-5.7	<1%, highly significant
45	Recent Returners Employed Full-Time	-12%	-2.2	<3%, highly significant
153	Recent Returners Employed Part-Time	-22%	-3.1	<1%, highly significant

Note: The regression shown in Figure 4.10 is adapted by adding a single indicator variable to get each row's result. E.g. in row 2, because the log wage falls by -.16, approximately a 16% fall in the predicted hourly wage is predicted. Source: British Household Panel Survey 2001/2002. Base: 10,543 (raw), 9,365 (weighted) Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men. Units: Rate of pay in gross pounds per hour.

The results shown above were checked for selectivity bias. Those not currently working in the labour market are available for work and would, if employed, obtain wages on average rather different from those in the market. In the present case, the non-employed people would obtain relatively lower wages. The Heckman selectivity adjustment was carried out (see Appendix 3).

The underlying probability of having a job is influenced downward by having caring responsibilities, children under age 2, more children in the home than average, having a long-term limiting illness that limits your ability to work. Similar results were reported in Olsen and Walby (2004: 61). The coefficients on the variables in the wage equation were not substantially changed. The results show that those who have a low probability of being employed would earn, on average, a lower wage than those who have a high probability of being employed. The result is intuitively plausible and coincides with our sense that potential returners would have joined the labour market if their market wage was already rather high. The Heckman selectivity adjusted results provided in the appendix show that the people with

higher spousal income are less likely to work, but that household income has curved and complex effects. In the UK, these effects are likely to interact with the age cohort.

#### **4.8 Women Returners and Skills Shortages in Gender-Segregated Occupations**

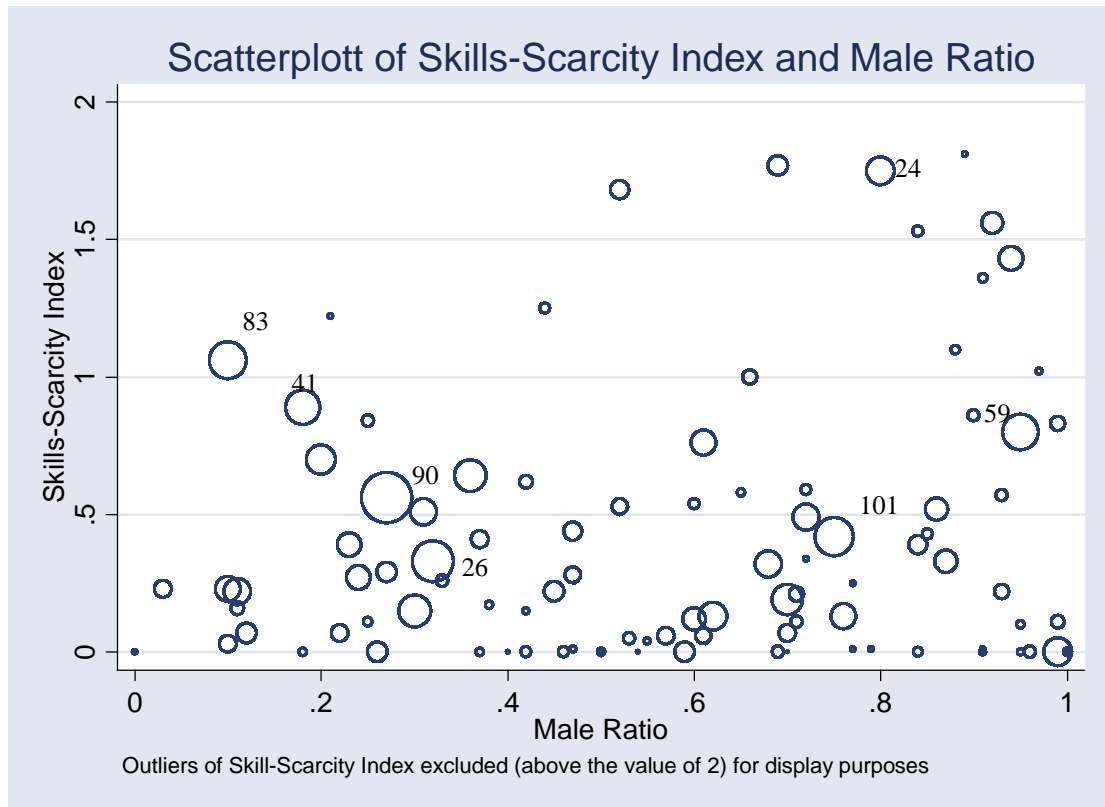
More highly gender-segregated jobs are associated with skills shortages. In Appendix 2 a set of correlation coefficients is provided across the whole range of wage-related factors. A separate set of correlation coefficients for the Labour Force Survey also shows that male-dominance of occupations is only weakly associated with qualification levels. In other words there are both female-dominated and male-dominated occupations with high levels of average qualifications.

A wide range of occupations can be examined, especially if 125 occupations are listed instead of the standard 25 occupations groups that are defined by the SOC 2-digit categories. We have combined the SOC 1-digit categories for occupations with the SIC industrial categories, and dropped un-used combinations, giving 125 occupations at a higher level of detail. These occupations were defined both in LFS and in BHPS. The skills-shortage ratio was matched to each person's occupation at this high level of detail.

In Figure 4.13 the pattern of skills shortage across all LFS respondents is shown, with the size of the dot corresponding to the number of weighted people working in that occupational group.

The male segregation of the occupations is shown on the horizontal axis and the skills-shortage index on the vertical axis.

**Figure 4.13 Skills-Shortage for 126 Main Occupations (Within Industries)**



SICSOC	Industry	Occupation (SOC1)
83	Health & Social Work	Personal Service Occupations
41	Health & Social Work	Associate Professional & Technical Occupations
90	Wholesale & Retail	Sales & Customer Service Occupations
26	Education	Professional Occupations
24	Business Services	Professional Occupations
101	Manufacturing	Process, Plant and Machine Operatives
59	Manufacturing	Skilled Trades Occupations

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004. See Figure 6.3

Key: The units plotted here are occupations defined by the Standard Occupational Classification within a one-digit sector of the Standard Industrial Classification. This two-way classification gives 126 occupational groups of varying sizes.

The size of each symbol corresponds to the number of workers in a one-digit occupational group. The horizontal axis measures the sex segregation of the occupational group with female-dominated occupations at the left and male-dominated occupations at the right.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men. Seven cases with exceptionally high skills shortage index levels have been excluded from the diagram as outliers but these cases are included in other tables in this report. See Figure 4.1.4 for the highest-ranking occupations, some of which are small in size. The larger dots near the top of the diagram are labelled using their SICSOC occupational group number, as shown:

The worst cases of skills shortage can be seen higher up the vertical scale; all of these are in highly gender segregated occupations (male ratio  $<.25$  or  $>.75$ ). They lie at the left-hand or right-hand side of the diagram. There are significant skills shortages in several female-dominated occupations. In the Appendix, tables showing skills-shortages and male ratios for each occupation in detail are provided.

The most interesting cases are the eleven occupational groups which lie in the top right corner of Figure 4.13. See Figure 2.3 (page 20) for the full list of the high-skills-shortage occupations. There is even one which is outside the range of the scattergram. (It is an outlier whose value is very high due to a low number of jobs in that specific occupational group. See also Figures A3.1 and A3.2 in the Appendix for details.



In Part A of Figure 2.3 we listed the male-dominated jobs with the highest skills-shortages. The main such occupations were skilled trades, professional occupations, and process, plant and machine operatives. The specific sectors in which these shortages occurred are various and are listed in Figure 2.3. This important finding has not emerged before, since most research on skills shortages has tended to be gender-blind.

## **4.9 Summary**

Additional education targeted at women returners could improve their capacity to earn in the labour market.

The educational qualifications of women returners and recent returners is diverse. Recent returners have the highest level of qualifications. Full time working is also associated with higher qualifications than part time working. 70 percent of mothers employed full time have a recognised qualification, with 36 percent of mothers employed full time having an education level higher than Level 3. The potential returners who are mothers and do caring work have virtually the lowest educational qualifications of any group listed. 61 percent have no Level 2 qualification, and just 12 percent have a qualification level higher than Level 3.

The odds of having a job go up with the level of educational qualifications, as do wages. Having a Level 3 qualification equates to a 16 percent increase in hourly wages compared to those with no qualifications; a qualification above Level 3 equates to a 37 percent increase. Working in a male-dominated sector is also linked to higher wages. Returners who work part time experience an extra 16 percent loss of wages (per hour).

A large number of women returners experience downwards occupational mobility and this is particularly true for part-time work And results in lower rates of pay.

Women returners lower rate of pay is likely to reflect three factors: oversupply of labour, poorer opportunities for training and support, and choosing an employer close to home.

## **5. ORGANISATIONAL CULTURES IN AREAS OF HIGH GENDER SEGREGATION**

### **5.1 Introduction**

It has been argued that the under-representation of women in SET sector employment can be tackled through taking into account factors operating at attitudinal, cultural and organisational practice levels – thus providing an integrated and coordinated approach (Peters et al. 2003: 23).

Organisational culture is said to be deeply imbedded within an institution or organisation's operational history. When mobilising the concept of organisational culture, commentators often refer to the practices that operate unconsciously and maintain the organisational status quo. They are taken for granted as assumptions that are played out in the work environment through workplace policies and, more often, informal workplace practices. Organisational cultures can be reproduced through social interactions within workplaces and can only be changed if the basic values of the organisation and the assumptions underlying these values are questioned and renegotiated (Hofstede 1980).

### **5.2 Barriers to Women Returners**

How is this relevant to occupational sex segregation and maximising the potential of women returners? Organisational psychologists highlight that organisational cultures and firms' processes of selection of employees for career development restrict women from accessing top positions when they work part-time. Cooper Jackson (2001) suggests that organisational cultures still form barriers preventing women from reaching senior positions. For instance, women with caring responsibilities find it difficult to engage in after-hour activities and network with decision-makers. This is particularly important in occupational areas that are male dominated and are based on a long-hours culture, where time spent at work is used as a proxy for commitment to organisations and careers.

Findings from the Greenfield Report state that women's perceptions of problems in these working environments include:

- Few role models and mentors to facilitate women's progression
- Lack of information about employment and training in these occupational areas
- Lack of transparency regarding training, promotion and pay
- Gender imbalance in decision-making within these occupational areas
- Lack of commitment to work-life balance initiatives and policies, institutional sexism, perceptions of a glass ceiling and old boys' networks (adapted from Peters et al. 2003)

Whether the introduction of equal opportunities policies can change organisational cultures, particularly where 'masculine' work ethics are present, is a matter of contention. Liff and Cameron (1997) argue that conventional equality measures have made little impact on women's positions in the workforce. This is not simply the result of measures being inadequately pursued, but rather it is due to the ways that family friendly policies are positioned as 'women's problems' and not the concerns of the wider organisation and workforce. Liff and Cameron (1997) suggest that organisations ought to recognise that work-life balance is important to both women and men. Diversity is a positive and desirable attribute, which has the potential to improve workplace relations (Hogarth et al. 2001) and workplace productivity (Perotin and Robinson 2001).

Lewis (1997) states that for women, and particularly women with care commitments, there are two major barriers in organisational cultures in the UK:

**1. Individuals' subjective sense of entitlement.** Men tend to have a higher sense of entitlement within many workplaces, and women a lower sense of entitlement, which is something that is maintained by organisational cultures in their practices and presentation of policies. For example, if family friendly policies are conceptualised as 'perks' for women, these policies are perceived as benefits rather than entitlements or rights. Consequently women can be positioned by employees and managers as less deserving of other resources within organisations, for example, the same access to training, skill acquisition and career development opportunities as men.

**2. Expectations about "time", work-hours, and productivity.** Discourses involving time – i.e. habits and norms that implicitly surround how people talk about time management - can act as another barrier for women. Some women cannot work long full-time hours but are expected to. In many organisations, *time orientation* rather than *task orientation* is seen as central to productivity. This is irrespective of whether the actual extra hours worked is productive time. Time is perceived as a commodity in 'long-hours' organisational cultures. The time orientation found in some UK firms can be likened to a male model of working, and therefore if women cannot conform to long-hours cultures, they might be thought of as lacking commitment to work careers and to the organisation in general.

Pertinent questions are then, first, to what degree are these practices evident in areas of high occupational sex segregation? And second, what are the implications of these practices for women's employment participation within these occupational areas?

*Labour Market Trends* data from June 2004, shows that occupational areas of SET and Construction are much more likely to operate long hours than female dominated ones. While 38 percent of workers in public administration work less than 30 hours, just 9 percent of construction workers and 10 percent of manufacturing workers do. In addition, 19 percent – (almost one in five), working in construction, work in excess of 45 hours. Clearly the occupational areas of SET and Construction are not leading the way forward in the drive for introducing and implementing flexible working-time patterns, part-time work and work-life balance. However, these are crucial requirements for many women returning to work following maternity and are key determinants for women making these decisions.

Organisational barriers, such as inflexible career paths and long working-hours contribute to women feeling unable to maintain a SET career following maternity (Dainty et al. 2000, 2001). Case study research of organisations in SET, by Dainty et al (2000), suggests that women's career progression is restricted after maternity in these occupational areas. Singh and Vinnicombe (2000) present research which suggests that women's career progression in engineering is slower in the earlier part of their working lives. This implies that, potentially, women face barriers in career progression both prior to and after maternity while working in these occupational areas. Indeed, Dainty et al' (2001) found that just 25 percent of women working in construction thought they could reach the top of their profession often due to the lack of transparency in career paths and promotion processes.

Dainty et al (2000) suggest that the very low numbers of minority ethnic workers and women working in this industry is due, in part, to an 'exclusionary and discriminatory culture' within construction organisations (2000: 239). They concluded by commenting:

"Women were found to have progressed at slower rates, and to have confronted a greater number of obstacles to their development. This had contributed to a higher turnover of women managers and professionals...This suggests that construction companies are likely to remain difficult working environments for women, unless there are fundamental attitudinal changes towards non-standard entrants... attempts

to attract more women ought to be moderated until the structure and culture of its organizations have been developed to become more accepting of [women's] employment." (Daintey et al 2000: 248)

Similarly, Mackenzie et al (2000), researching large construction companies and their responses to skill shortages, report that construction employers often did not think that attracting women and minority ethnic workers was an appealing strategy for reducing skill shortages. Mackenzie et al. (2000) discussed with employers a total of eleven possible approaches aimed at reducing skill shortage problems. The majority of respondents identified greater economic stability within the industry as the most important solution in reducing skill gaps, followed by long-term industry wide training plans and a return to direct recruitment. Recruiting women and minority ethnic groups was the ninth favourable strategy that construction managers thought was worth supporting as a response to skill gaps, a strategy considered only more favourable than employing unemployed individuals and moving towards a robotics strategy of replacing human labour! (The latter strategy of automating construction sites being one which has already been rejected by many within the industry as being unworkable in relation to skill shortages (CITB 1991; Boch 1998 both cited in Mackenzie et al 2000)). In conclusion, Mackenzie et al suggest:

"If the construction industry hopes to sustain or increase the number of people entering the industry in future years, construction employers must be actively encouraged to reconsider their current approach to alternative labour sources. The construction industry must draw from all labour sources irrespective of construction-related experience, age, gender, ethnic or social background." (2000: 861)

While the Greenfield report highlights that some improvements have been made in terms of women achieving SET qualifications and their proportion of employment, the authors state that:

"despite efforts over the last 20 years to increase the number of women working in SET there has not been a marked improvement. Efforts to involve more women in SET policy-making are only slowly being realised." (2003: 29)

In 1993 the Government White Paper *Realising Our Potential* recognised that women are the UK's single most undervalued human resource, and that more women should be targeted as a potential resource for SET occupations. Following the report, a string of other papers have presented data and policy recommendations regarding women in SET including the Science and Innovation White Paper (2000) and the Greenfield Report (2003).

Monitoring of strategies and initiatives to encourage women into SET have been the focus of recent government policy agenda. The report *Women and Science: Review of the situation in the United Kingdom* by the Helsinki group (2002) outlines the aims of the Promoting SET for Women Unit (PSETW Unit) which are to promote the greater participation for women into SET and improve the recruitment, retention and progression of women. In this report there are some examples of good practice in UK organisations.

Two of the key aims of the PSETW Unit were to: improve and facilitate UK infrastructure for women in the SET community so that more women choose SET careers, take up SET occupations and are able to return after career breaks and develop and encourage national and international good practice in the field of women in SET. These and other aims were set out as targets to track the UK's effective contribution, at an EU level, to dialogue on women in SET. One of the core concerns at an EU level is that if the EU is to achieve its targets on science and innovation, then tens of thousands of scientists and research professionals are needed, many more than can be provided through universities. Women's skills and resources, and the retention of these resources over the life course, is recognised as increasingly important in this context. Consequently the Helsinki Group's report for the

European Commission reviews good practice in each nation-state. Examples of good practice UK industry include:

- Rank Xerox - for their long term strategy towards equality and diversity. They have developed and implemented initiatives which include improved maternity benefits and 'phasing in' women, by allowing women returning to work following maternity to reduce their working hours.
- Glaxo Wellcome - for their development of retention strategies so that they do not lose valuable resources to competitors. Analysis carried out regarding reasons for staff leaving and maternity and childcare support, or lack of, were two issues raised. They now offer a childcare allowance, advice and guidance, and fund a community nursery scheme and a parents' network.
- ESSO UK Ltd – has been recognised for good practice due to their work towards ensuring gender and diversity balance throughout recruitment processes. They also have a good mix of women and men 'role models' (Helsinki Group 2002: 15-16).
- IBM UK - has also been highlighted in the *Women in industrial Research Report* (2003) for having an excellent scheme aimed at retaining women following maternity – women who had worked for IBM UK for five years before taking maternity, receive, upon return to work, an additional monthly payment equal to 25 percent of their salary for a period of two years to help with the costs of childcare.

This report also highlights good practice elsewhere that would be relevant to women returning to SET, construction and ICT in the UK. For instance, 'cross-mentoring systems' evident in Germany, where women in one company might be about to network and provide guidance and support women in other organisations (Rubsamen-Waigmann et al. 2003: 28-29). Some of these practices are certainly moving in the right direction and mirror some of the issues women identify as being central to their views of SET, Construction and ICT occupations, yet progress is limited.

### **5.3 Transitions to Part Time Work**

As a consequence of negative attitudes towards part-time working and inflexible organisational structures which often prevent part-timers from accessing career paths (Tomlinson 2003), certain women experience occupational downgrading when they need to make a transition to part-time hours. Changes to grading, job and occupation to accommodate part-time work has been documented (Macran et al. 1996) which can often lead to the under-utilisation of women's skills (Gallie 1996). As Dex and Joshi explain:

"...part-time openings have been mostly in low level occupations. Many women trade down, accepting a convenient job with reduced hours but lower status, as a way of combining family responsibilities with income-generating employment" (1999: 649)

In the case of women returning to the labour market after maternity, occupational downgrading or 'downward occupational mobility' is more common among women employed in working class occupations (McRae 1993) or among those with shorter labour market experience prior to maternity and less likely among women with high educationally specific qualifications and women who have been in employment for a longer period prior to maternity (Elliot et al 2001).

Much evidence on occupational downgrading is anecdotal, and set alongside research on part-time work and returns to employment among mothers, without actually being central in the research analysis presented (McRae 1993, 1994; Jenkins 2004; Tomlinson 2003; Walters 2005). Difficulties occur when trying to establish occupational downgrading for

several reasons. First, it may occur at different times in women's employment trajectories. Some may experience downgrading following a return from maternity after their first child, others later, after a period of activity, or after a second or third child. It is also the case that, over their life course, women may eventually regain an occupational status commensurate to their position prior to maternity. Thus establishing and measuring this phenomenon over the life course is problematic, though exceptions to this is the innovative and unusual survey research by McRae (1991) and Macran et al. (1996) although this research is now a little dated considering the new rights for working parents and right to request flexible working (DTI 2002, 2003).

A more recent small-scale qualitative study of women returning to work following maternity in the hospitality sector (Tomlinson 2003), illustrates the prevalence of women's under-utilisation of skills when they need flexible working hours. Out of a sample of 62 women returners, 41 women, when asked, stated that catering and hospitality work was an 'after child occupation' in that they had moved from other occupational areas of the labour market to accommodate work and family life, particularly due to inflexible working hours and the cost and availability of childcare services. These women worked in a range of occupations prior to maternity, including administrative, managerial, technical and manufacturing occupations. Some women spoke of barriers preventing return to work in traditionally masculine occupations such as manufacturing while others spoke of difficulties faced when they wanted to return to administrative and managerial jobs, particularly if part-time work was not available or not deemed appropriate to the position in question. These inflexibilities in job design meant that, in order to reconcile work and family life, women made transitions to low skilled, low paid service sector work, where part-time and flexible working patterns are commonplace. Most of the women in the sample stated a preference for their previous jobs and said that their current jobs were lower in status and skill level than their jobs prior to maternity (Tomlinson 2003: 235-7).

While establishing under-utilisation of skills is difficult to ascertain, over-qualification or difference in qualifications or credentials, between men and women when they work in the same positions, may be more easily established. For example, Singh and Vinnicombe (2004) reported on the FTSE 100 companies and the gendered composition of board members. They note that while women are making inroads into executive positions – there were 101 women directors in the FTSE 100 companies in 2003 – when women achieve these positions they are much more likely than their male peers to have one of the titles Sir, Lord, Lady, Baroness, Professor or Doctor – the proportions being one-third and one-fifth respectively. This suggests women still have to prove themselves more than their male counterparts if they are to achieve senior appointments and gain access to career paths that lead to decision-making roles.

## **5.4 Summary**

The work-life balance that is achieved in mixed-sex occupations will be difficult to achieve for women returners in male-dominated occupations. Qualitative and expert evidence shows that in male-dominated occupations in the UK there are significant barriers to prevent women from reaching their full potential. These barriers include workplace cultures such as systems of working overtime, working away from home occasionally, and working fixed hours without allowing part-time work.

## **6. AN OVERVIEW OF INITIATIVES FOR FACILITATING WOMEN RETURNERS' EMPLOYMENT IN AREAS OF OCCUPATIONAL SEGREGATION**

### **6.1 Introduction**

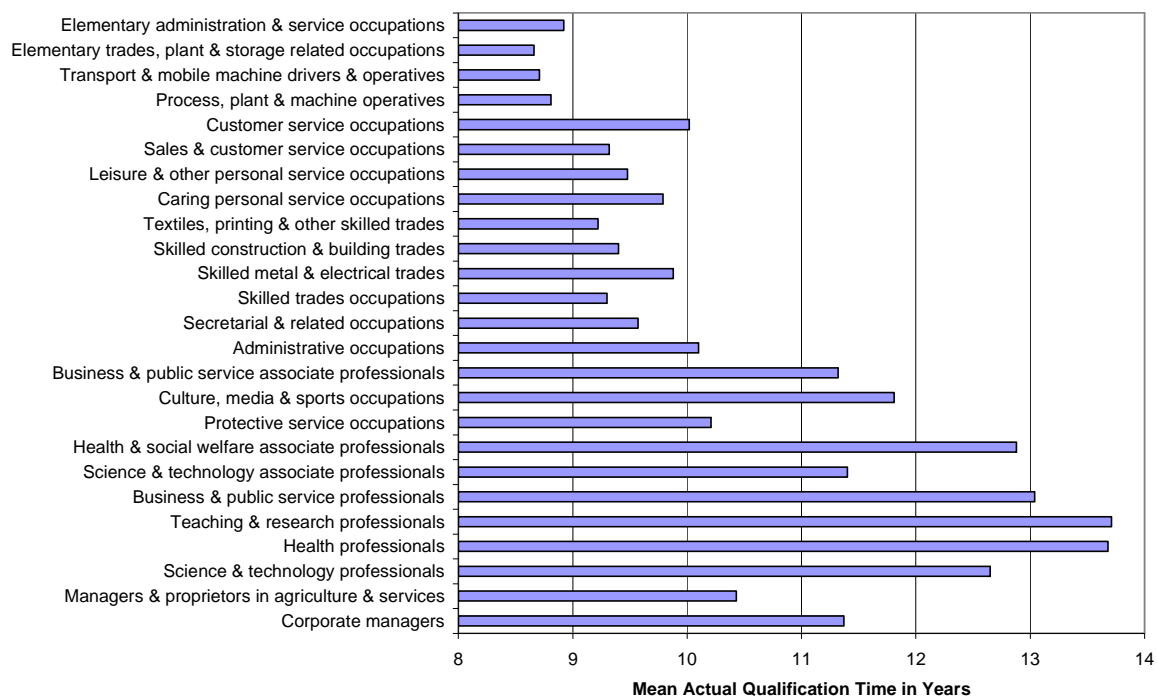
In this section we examine the training and educational opportunities available to women returners. We look at the policy position on skills and training and summarise current training opportunities for women entering male-dominated SET occupations. The section uses a mixture of evidence and sources: policy documents; statements by expert informants and statistical evidence. We begin with a review of training opportunities.

### **6.2 Qualification Levels and Occupations**

There is certainly debate over what skills employers favour, and it is important to disaggregate employers' skill and qualification requirements by occupation to understand variations between them.

Occupations can be ranked by the mean years of formal education of typical job-holders, as seen in Figure 6.1 Here data from the Employers Skills Survey 2001 allowed each occupation to be assigned the mean years of its typical post-holder's education (see also Appendices for details). The SOC occupations at 2-digit level using the list from the year 2000 are in a falling rank by typical level of educational qualification, e.g. corporate managers have over 11 years whilst transport operators have less than 9 years of education, though the most pronounced differences lie between teaching and research professionals (14 years education) compared with elementary trades (under 9 years education).

**Figure 6.1 Mean Qualification Time by Occupation<sup>5</sup>**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 39,906 (raw), 32,253,439 (weighted).

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

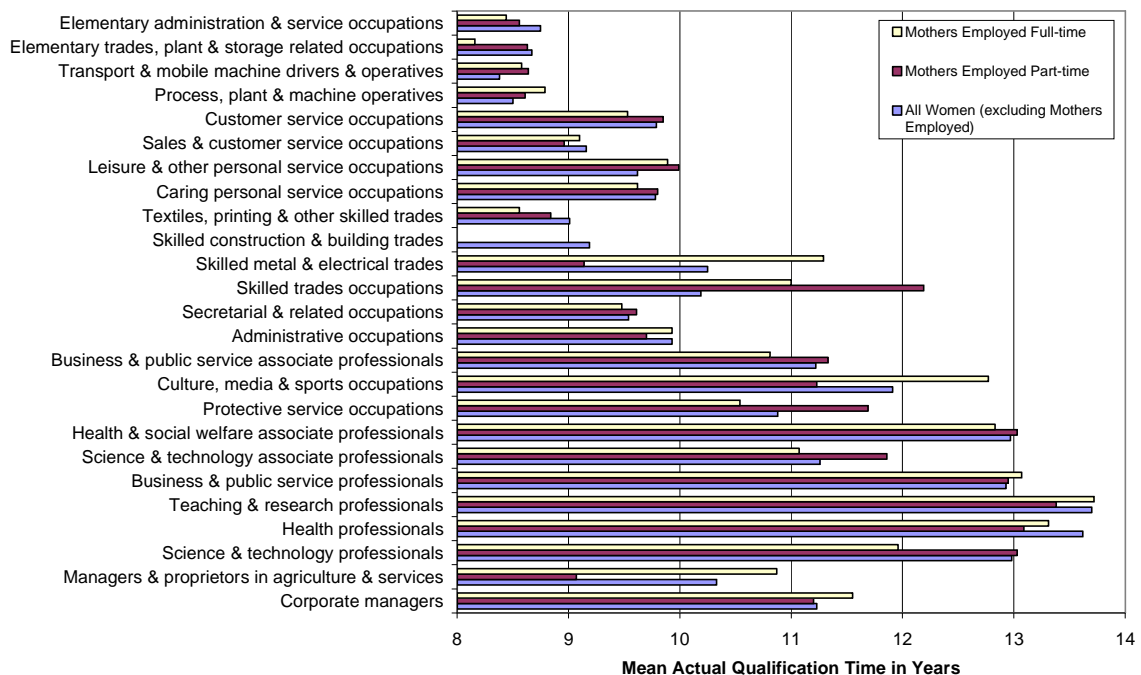
Occupations as classified under the Standard Occupational Classification-2 digit code. Mean Typical Qualification time: This was calculated by recoding the variable containing the level of qualification (<level2 means they left at 16; level 2 means they have GCSE level qualifications; level 3 means they have A-Level qualifications; >level3 means they have a degree) into years and then calculating a mean. Education below level 2 was defined as 8 years of schooling, level 2 was defined as 9 years of schooling, level 3 was defined as 11 years of schooling, and above level 3 was defined as 14 years of schooling.

In Figure 6.2, similar details for women, including mothers who are employed full-time and part-time, are provided. These are actual averages using Labour Force Survey data. People with Level 2 qualifications are assigned 9 years of schooling. Level 3 is assigned 11 years and any qualification above Level 3 is assigned 14 years. At this time, 14 years can be taken as the default for higher degrees since a Bachelor's Degree requires 3 years more study. In future more detail will be needed here to allow for Foundation Degrees and other higher degrees.

<sup>5</sup> The following 'typical qualification' levels are obtained from ESS 2001. In the survey each respondent was asked: 'thinking about your current workforce, what is the most common level of qualification amongst your ... '(occupation group at standard occupational classification 2000). 'Would you say that they typically have: Higher level of qualification such as degree or equivalent (e.g. NVQ level 4/ Nursing/ HND/ HNC/ Higher diploma); Intermediate level of qualification such as A levels or equivalent (e.g. NVQ level 3/ BTEC National/ OND/ City and Guilds Advanced Craft); Basic level of qualification such as GCSEs or equivalent (NVQ level 2/ O levels/ BTEC first or general diploma/ Intermediate GNQ/ City and Guilds Craft; Lower level of qualification such as NVQ level 1 or equivalent (BTEC first or general certificate/ basic vocational training / RSA /Foundation GNVQ); Other qualifications; None'.



**Figure 6.2 Mean Qualification Time for Women, Mothers Employed Full-time and Mothers Employed Part-time by Occupation**



Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 14,448 (raw), 11,011,291 (weighted).

Population: All employed mothers working part- and full-time in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Occupations as classified under the Standard Occupational Classification-2 digit code.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

Mean Typical Qualification time: This was calculated by recoding the variable containing the level of qualification (< Level 2 means they left at 16; Level 2 means they have GCSE level qualifications; Level 3 means they have A-Level or similar qualifications; > level 3 means they have a degree) into years and then calculating a mean. Education below Level 2 was defined as 8 years of schooling, Level 2 was defined as 9 years of schooling, Level 3 was defined as 11 years of schooling, and above Level 3 was defined as 14 years of schooling.

### 6.3 Recent Training Provision and Skills Shortages

In the Equal Opportunities Commission (EOC) Working Paper on skills gaps and gender segregation, Miller et al (2004) state that since September 2003 there has been little financial support for those over 24 years old wishing to study. This potentially constitutes a major barrier for women returners who are wishing to return to work if they need to retrain or up date previous skills.

Adult Learning Grants, piloted in ten Learning and Skills Council areas, offer grants up to £30 per week. However, these grants are only available to individuals on low incomes who are studying full-time towards a first full level 2 or 3 qualification (Miller 2004: 15). This excludes women who wish to retrain in a different subject area for one of these qualifications if they are already qualified to that level and particularly women returners who would prefer to study part-time towards such a vocational qualification, in addition to women on middle and higher incomes.

The government White Paper *21<sup>st</sup> Century Skills, Realising Our Potential* (DfES 2003) recognises potential problems regarding deficits in intermediary skills, particularly skill gaps and deficits in technician, apprenticeship and higher craft level occupations. At the same time, there is arguably low-level and restrictive funding of individuals who want to work towards and achieve intermediary (level 2 and 3) qualifications. This policy situation is changing, as described below. Both the EOC report (Miller et al. 2004) and the Greenfield Report (Peters et al. 2003) state that one central problem is that many training schemes which could potentially plug the skills gap in SET sectors, are only available to those under

25. This obviously prevents many women returners wishing to refresh skills and women wishing to retrain and change to a career in SET from being able to access the relevant training. Indeed in the White Paper the DfES recognise this inconsistency (though not in respect to women returners particularly) and states that it aims to reform the qualifications framework, lifting the current age cap on the Modern Apprenticeships, so that adults over the age of twenty-five can also benefit from this type of training.

There is a growth in qualifications generally, but there is still over 30 percent of those in employment qualified below NVQ level 2. In the most recent DfES White paper (2005) *Skills: Getting on in Business, Getting on at Work*, the government now state that all individuals are entitled to funding to work towards a first level 2 qualification. However, women may still be restricted in terms of accessing funding and carrying out training when they are provided on a full-time basis - which is usually the case with the Apprenticeships.

Incentives, funding and resources to address the UK's intermediary skill gaps, especially those reported in occupational areas reporting high gender segregation, might benefit from ensuring that training and studying for these qualifications are inclusive. Particularly in terms of those wishing to study within atypical occupations and for those wishing to study part-time. Explicit and formal recognition of gender segregation and skill gaps will enable policy makers to establish ways in which to make skill acquisition of intermediary qualifications more accessible for women returners.

Individuals are not equally placed to access resources which lead to skill acquisition. We have not reached a point at which there is either equality of opportunity or equality of outcome. The *Skills in England* report identifies that there are distinct groups that are thought of as 'socially excluded' from training and skill acquisition compared to the gains made in wide society. Unfortunately, the report doesn't recognise that these groups are potentially gendered and should be recognised as such. Six groups are distinguished: men and women without partners (particularly lone parents); disabled people; those with low qualifications and skills; those over 50; those living in areas of weak labour demand and 'certain' minority ethnic groups (DfES 2003). Women returners, however, are not included as a 'group' recognised as being in need of further help via training and skill acquisition. Women returners, by definition, have been absent from the labour market, and thus receive no opportunity to receive any on-the-job training while inactive.

Hillage and Miller (2005) suggested that in order for employers to want to recruit women returners into SET, Construction and ICT, women need to appear to be more attractive in employment terms than men. Employers need to be able to establish a business incentive for attracting women returners to their organisations. They suggest that, in the occupational areas of SET, Construction and ICT, skills can become out-dated quickly and therefore, women returners would probably need both relevant level 2 and 3 qualifications and recent employment experience in these employment areas to be seen by employers as individuals that they would want to recruit and retain. While the new training entitlement makes individuals aged over 24 entitled to funding to enable them to gain a level 2 qualification, any individuals who already hold a level 2 qualification are not eligible for this. Therefore, if women returners already have a level 2 qualification in subjects unrelated to SET, Construction or ICT, they would be obliged to self-fund any training within these occupational areas.

It is only recently that women have achieved higher rates of entrance to, and participation in Higher education. This means that older cohorts of women returners at an aggregate level do not have the same qualifications as their male peers. This is less of a concern for younger women, as they are achieving higher qualifications than their male peers (ONS 2004). Thus older women returners may have additional skill gaps when compared with men of similar age and younger women. Walby (1997) illustrates this well and shows that there is a qualification polarisation between women of different age groups, the distinction between

women aged under 25 and women over 50 being stark. Thus, while women's improved participation in Higher Education is encouraging, older women's qualifications and skills gaps need particular attention.

As the EOC report (Miller et al 2004) states, recently, policy has focused on 'Active Labour Market Policy', looking at developing the skills of those already in the labour market. Locating women returners as a potential skill gap resource to be targeted would require a rethinking of focus, to encompass those not in employment and those who are unemployed or temporarily inactive, e.g. on a caring break. While there is a perception that non-employed individuals are a less attractive resource in plugging skill gaps than employed individuals, this may need qualifying when referring to women who have taken a break to look after children or for other reasons associated with familial care.

Hillage and Miller also note that partnered women returners are less likely to be the focus of training initiatives compared with lone parents as they are not the focus of welfare to work programmes. Therefore, they are unlikely to be a funding priority in terms of training. They will only be a priority for a first level 2 qualifications but not for training through Apprenticeships, (which have replaced Modern Apprenticeships) as they do not fall within the 14-19 age group, marked out by the LSC as the priority target ages for the Apprenticeship schemes.

Hillage stated that often strategies focus on encouraging younger individuals into occupational areas with high skill gaps and gender segregation, rather than women returners:

"Computer clubs for girls is one example – it is relevant for diversity but it is not relevant to the women returner issue. I think a large part of the emphasis is on the earlier end of the pipeline rather than the later part, [for example] older workers and women returners."

Another concern that Hillage and Miller both raised, was one of the perceived returns to investments made in different groups of workers:

"There is a belief amongst employers that it is better to invest money in training younger people, as with these there is potentially a longer period of employment over which to recoup training spend. However, examination of data on typical lengths of employment show that this is a fallacy. In broad terms, younger workers typically stay for much shorter periods of employment than older workers. So in fact older workers can be a better 'pay-off' in terms of money invested in training. However, the difficulty is in persuading employers to see this, and this may be particularly the case in 'high-cost' sectors such as SET." (Hillage and Miller 2005)

Therefore there is a strong case for funds to be set aside for re-training women returners into these occupational areas by recognising them as a priority group.

Miller suggests that alongside recognising widening participation and broadening recruitment, it should be recognised that once women are recruited, it is also important to ask "what are the fellow workers like and what will the jobs that women occupy be like?" Both Hillage and Miller highlighted that factors, such as unplanned working hours, working away from home, and male employees' attitudes towards women will be important, in women's decision making processes. This is in addition to them having a general interest in the work and possession of appropriate technical and generic skills.

Hillage and Miller (2005) further recommend that both employers and women returners need better information and advice. This could include, for example, "taster days" for women to see what these work environments are like. As well as accurate information about

employment in these sectors, which could be supplied through networks for women, such as the UK Resource Centre for Women into SET and the Women Returners' Network. For employers, information could be provided through agencies like the Job Centre Plus and other intermediary organisations. Funding and support for these organisations and initiatives would be crucial for their operation, maintenance and success.

Within ICT, as skill gaps have declined relative to earlier growth periods, such as the dot.com era, it is possible that strategies aimed at encouraging women into these occupational areas are no longer as effective as they once were. Miller stated that:

“The ICT sector was one that had been (relatively) successful in persuading women to enter this specific occupational area. They are still fairly active in trying to address the diversity issue, but this now has to be set against the backdrop of (initially) falling and then (currently) stabilising/increasing employment figures. If there is a decline in the demand for these skills, this would render more difficult any attempts to encourage any particular groups to consider that sector.”

If this is the case, initiatives aimed at maintaining or improving women's participation in certain occupational areas need to be part of a long-term strategy to combat occupational sex segregation and achieve greater gender equality in the labour market, rather than the emphasis being placed on plugging short-term skill gaps within certain sectors.

In the DfES (2005) White Paper *“Skills: Getting on in Business, Getting on at Work”* the government sets out how they intend to improve the national skills performance in Britain. Reforms to training include: full financial support for all adults who wish to achieve a first Level 2 qualification, as mentioned earlier. Although the primary policy objective in this paper appears to be the development and training of young workers through Apprenticeships and other Level 2 qualifications. Targets are to be achieved through new skills strategies, which are designed to give employers a stronger voice in the design and delivery of training through Sector Skills Agreements and Sector Skills Councils. This implies that if women returners are to make inroads into areas of high occupational segregation and acquire the necessary Level 2 and 3 qualifications, the attitudes of employers will be important. Again it appears in the White Paper that, though there are priority groups including minority ethnic groups, prisoners and those in receipt of welfare benefits, women returners are not directly targeted as a group where training policy initiatives are to be focused. These groups are the focus of different and often specifically tailored training agendas, but recent women returners, who may benefit from re-training and potential women returners, who are neither in work and covered by employer training initiatives, (but also may not be in receipt of benefits, and therefore not eligible for New Deal training) appear to miss out on the skills and training agendas.

Recommendations and policy initiatives have however, been set out in the Greenfield Report regarding women's returns to SET and areas of high gender segregation. These state that a combination of initiatives and targets may enable a comprehensive, mutually reinforcing strategy to improve women's employment and retention. These recommendations are one of few reports that provide specific initiatives for women returners. They include: funds specifically for women returners; new mobility training packages to allow for career progression; part-time and job share schemes for flexible training and bursary schemes for women speakers (promoting role models for women).

## **6.4 Current Training and Initiatives for Women Returning to SET**

Jane Butcher (2005), the Women Returner Manager of the UK SET Resource Centre, has summarized the position as:

“The key persistent barriers are formed by the interplay of psychological, economic, and domestic issues for women and the work culture, expectations, prejudices and inflexible job requirements and recruitment practices on the part of employers. The cost of childcare and women’s continued role as primary carers in a context of lower lifetime earnings potential remains at the heart of most women’s ability to negotiate and plan a career path. With only 25 percent of female SET graduates working in the SET sectors, there is potentially huge under-utilisation of the talents of SET-qualified women. Many of these women have chosen to pursue careers in areas where flexible and part-time work opportunities are more widely available. Out of around 24,000 SET qualified women returning to work each year, only a third will return to SET occupations.”

Other persistent problems that the UK SET Resource Centre highlighted as significant issues were that: women returning to work after a break for caring face significant challenges in terms of loss of confidence, loss of contacts and networks and concerns about the currency of their technical skills and abilities. SET employers may feel that economic and contract pressures prevent flexibility in work organization and limit investment in mature women when younger and cheaper new entrants are still available. This is further exacerbated by a lack of information on services and available support with an opportunity to reassess skills which can leave women isolated and lacking in aspiration.

Ongoing training and initiatives include the work at the UK Resource Centre for Women in SET ([www.setwomenresource.org.uk](http://www.setwomenresource.org.uk)), which is a centre of excellence improving the participation and progression of women in SET. They have a scheme entitled “Return” which offers skilled women the opportunity to return to a career in science, engineering, technology or the built environment. It offers free career services and their aim over the next two years is to support one thousand women through their strategy and enable at least three hundred of these women to return to a SET career. The course they are offering is available nationally through the Open University. The course is designed to offer career advice, networks, and mentoring as well as links with employers. The course is aimed at women with Level 4 qualifications, which is the equivalent of a degree level qualification. In the future it is hoped that the courses offered by this new resource centre will target women with level 2 and 3 qualifications.

Other initiatives include members of the Resource Centre working directly with employers, to develop a kite mark for “best practice” employers within the sector, as well as documentation on work-life balance from a SET perspective which is set out in a “Directory of Good Practice.” Wider targets for helping women into SET careers which are not specifically designed for women returners, are also part of the Resource Centre’s broader initiatives.

Butcher (2005) suggests that some of these issues could be tackled in the following ways:

- Provide opportunities for refreshing general work skills as well as industry contacts and mentors who can assist women to take the first steps back to work
- Provide technical skills updating on a part-time basis, which can assist women to return to an equivalent or higher level position reflecting their age and experience, rather than being forced to return at a more junior level
- Provide opportunities for work-trials or placements for mature returners to help overcome the resistance and prejudicial attitudes on the part of employers

Such opportunities could help in selling the positive benefits of women returners in terms of their maturity, loyalty, community knowledge and extensive people, team and time management skills. Indeed research by Green et al. (1998) on skill gaps revealed that, in

construction particularly, customer service and communication skills were amongst the most commonly reported skill shortage by employers. These missing skills could be a way of recognizing the immediate contributions women could make to organizations in these occupational areas.

Employers may be open to negotiating more flexible working if they could recognize the value of improving work-life balance for both male and female employees and the improvements a better work-life balance can forge in terms of worker satisfaction and emotional and physical health of employees (Hogarth et al 2001).

In summary, the UKSET Resource Centre has devised a package of initiatives aimed at improving work-life balance in SET and Construction. This package could improve the returns to working in these occupational areas among women. As Butcher states

“The UKRC has the advantage at this point of significant government backing to catalyse change. We are bringing together other initiatives to support women in SET and encouraging greater collaboration, as well as supporting further research and evaluation and providing a focal point for dissemination and policy leverage. The main focus of the UKRC is to work with employers to overcome the limitations of short term initiatives and schemes and move away from a deficit model to focus on the business benefits of a more diverse and inclusive workforce.” (Butcher 2005).

## **6.5 Summary**

Although there is a growth in qualifications generally, it is evident that women returners are not recognized as a specific group that is likely to be socially excluded from mainstream training agendas and initiatives. The focus on under 25s and the development of Apprenticeships as a means for achieving a Level 2 training qualification exacerbate the problem since these are typically full-time placements, which might marginalise women who cannot commit to a full-time training course. While the SSCs appear to recognize diversity and a better gender balance are positive goals, some initiatives in the SSC documentation seem to focus on encouraging young women into the sectors following education, but less so older women. If women have already achieved a level 2 qualification related to an occupational area such as health or customer service, where women usually work, they will have to self-fund any further qualifications and training, such as for example, if they wish to move to an occupational area non-gender typical such as SET.

The barriers to women working in SET have been recognized and there are ongoing incentives and initiatives for women returning to jobs in these occupational areas, such as those of the UK Resource Centre for Women in SET. As well as addressing training provision, other key aspects identified include: employers establishing a business incentive for attracting women; better information and advice for both employers and potential returners; and recognising the need for these initiatives to be part of a long-term strategy.

## 7. CONCLUSIONS

In this report we have reviewed the literature and evidence on the employment, qualifications and earnings potential of women returners to undertake work in areas of occupational gender segregation and skill gaps. We have reviewed several aspects of the causal factors leading to the part-time pay gap among women returners. These aspects included skills and qualifications, skills shortages, factors affecting wages, sex-segregation, and the industrial structure.

Women who are currently mothers and have jobs, i.e. 'returners', make up a quarter of the female labour force in the UK. In 2005 mothers returning to work part-time were heavily concentrated in four occupations: elementary administration; sales and customer services; caring personal services; and administration. These occupations are female dominated and have lower rates of pay in the UK compared with male-dominated occupations.

Skills shortages in the UK are concentrated within particular occupations. Important areas facing skills-shortages include science and technology professionals, skilled construction and building trades, and skilled metal and electrical trades. In addition to these male-dominated occupations there are also skills shortages in some female-dominated jobs, notably in the health professions. Qualifications scarcities and a lack of experience were identified as components of the skills-shortage index which can be separated out for separate analysis. Regional differences in the absolute numbers of vacancies were evident out once the industrial structure was allowed for. Finance, including banking and insurance, was the sector with the highest skills shortages. Construction was second highest, and health and social work had the third highest skills-shortages overall in 2001. These estimates based on statistical analysis are an improvement upon looking at gross averages of the skills index because we have allowed for other factors that influence the level of skills shortage.

The claim that many returners are over-qualified for their current job was supported for the following occupations: customer services occupations; caring personal services and health and social welfare associate professionals. These had significant over-qualification and also had high percentages of mothers employed part-time. Among full-time mothers who were employed, the only measurable problems of over-qualification were among health and social welfare professionals and among the caring personal service occupations.

The qualifications gap between men and women has been largely eroded over time, but qualifications are still an important factor explaining the lower wages among older women. A wage regression which controlled for age and qualifications showed that skills shortages had a negative but small correspondence with wages. High-qualification jobs were shown to have skills shortage, but after allowing for this, the main factor associated with skills shortage was male-dominated sex-segregation. A third factor was the worker in the job being female, so that both male- and female-dominated sex segregation were associated with high skills shortages. Male-dominated jobs also had significantly higher wages.

Our analysis suggests that if more women were to join a male-dominated occupation, then skills shortages would be reduced. Thus the mixing of the sexes and the resultant doubling of the available people who compete for jobs appears to help in reducing skills shortages. Cross-sectional data were used to generate these findings.

Having identified two types of recent returners, who had returned to work after doing family care, we found that their wages deviated substantially from what would be expected of women of their age, characteristics and occupation. Part-time recent returners tend to earn 22 percent less, and full-time recent returners tend to earn 12 percent less than other workers overall. Among mothers working part-time there was wage penalty of 16 percent after all explanatory factors were considered. However, among mothers employed full-time

there was no wage penalty other than the general female residual (-18 percent) that applies to all women.

As described in other literature, the factors affecting wages detrimentally for working women are human capital-related and may include training (or a lack of it) on the job. In this research the worker's tenure in a given job appeared to have a small but positive effect on their wage. Separate research showed that full-time work experience has a positive effect on the wage, whilst part-time work has a negative effect on the wage (Olsen and Walby, 2004). Therefore the factors leading to sex-segregation of occupations must be explored. Ways of changing the sex segregation of specific occupations and jobs will be needed to change the systematic set of causes that have led to the women returners' difficulties.

To draw all the themes of this report together, it is worth noting the various ways in which human subjectivities underlie the economic patterns which have been described. At the most visible level we have wages and annual incomes as the economic outcome. Maximising these outcomes is an important aim for government, at least in so far as waste can be avoided and an optimal allocation of labour resources can be achieved. People's labour force participation and their hours of work are, in turn, an important economic determinant of household incomes.

Five main factors contribute to earnings and productivity and labour market outputs:

- Wage bargaining
- Aggregate labour supply
- Technology and competition
- Human capital and the demand for labour
- Occupational segregation by gender

In this report wage outcomes have been shown to have strongly gendered elements, notably working through part-time jobs and gender-specific segregation. We showed that male-gendered jobs paid more, even to women who got into them, and that part-time jobs were not only low-paid in the short run, but were also a destination that downwardly mobile mothers fell into.

In an interdisciplinary context, wage bargaining is underpinned not only by human capital but also by the social context in which people form their notional ideas of what will be accepted as a reasonable wage (for a given set of terms and conditions). This social context is at one and the same time cultural and psychological. In this report we have noted some of these psychological elements: a sense of propriety about men working among other men; barriers formed by men against women joining into construction jobs; stereotypes held by women which limit their occupational expectations.

In similar ways, each main factor in the above list has social and cultural assumptions lying behind it. For competition, there is admission that many small firms do not satisfy the same minimum regulations as large firms. For occupational segregation, there are workplace cultures which exist over decades and are passed on through the employees' socializing both inside and outside of the workplace. For the choice of occupation to which a person offers their 'labour supply', there are assumptions and social norms about what is appropriate work for males, and what is suitable for females. Making an exception to these norms can be either stressful or creative, depending on the surrounding environment. Examples from organizational psychology studies of male-dominated workplaces indicated that for women to break barriers individually is difficult.

The neoclassical approach tends to assume that women choose outcomes which are optimal for them. These choices, it is often assumed, cannot do them detriment because they are (by definition) the best available choices. The institutionalist approaches (e.g.



Fagan, 2001) are better at noticing that the choice basket available is constrained by the beliefs of other people – parents, husbands, employers and children – so the woman cannot simply act as an optimizing individual.

In this report a number of institutionalist factors were examined alongside the neoclassical theory of human capital. The human capital theory still has strong evidence behind it, and tells us that most work careers generally involve the accumulation of skills (including educational attainment).

The concentration of skills in certain occupational categories is associated with high inequality of wages. There is no guarantee from economic theory that this overall outcome is optimal if we are not sure that individuals within the system are making optimal choices. Firms, too, seem to behave in institutionally differentiated ways. Small firms pay lower wages; firms in the banking industry paying higher wages. Many enterprises in the London area pay the London weighting. The institutional differences are not temporary or incidental, nor are they fixed in stone.

Thus the context of returners' occupational downgrading, when it occurs, is both economic and social at the same time. The context of women's over-qualification, when it occurs in the specific jobs in which women are stereotypically placed after becoming a mother, is institutionalized as normal. Yet at the same time this 'normal' situation leads to underpayment of the woman.

Expert evidence suggests that that training initiatives aimed at labour-market inactive people have been insufficiently sensitive to gender issues. Mothers are not recognized as a specific group that is likely to be socially excluded from mainstream training agendas and initiatives. These issues are partly economic, partly social and partly institutional. A lack of a sense of entitlement has perhaps stopped women returners from demanding more training. Re-entrants to the labour market from the pool of mothers appear to be mainly the most productive of all the potential returners, leaving the UK with the problem that it could become more and more difficult to promote further re-entry beyond the 78 percent of women that now have jobs. Indeed, there is the chance that instead of promoting the entry of the most productive women, policy changes could promote the re-entry of low-paid returners who would tend to increase the gender pay gap in the UK. Since this gender pay gap is already the largest in the European Union, the diversity and range of skills of potential returners is a pressing issue.

If women do not return to their previous (skilled) jobs due to organisational cultural barriers and inflexibilities such as lack of part-time working and work-life balance policies, then it is difficult to see how else they can utilise the skills, work experience and qualifications previously obtained. In such scenarios, a likely outcome is the under-utilisation of women's skills and qualifications as they transfer to other occupational areas within the labour market that are more accommodating of women's domestic responsibilities. These are likely to be occupational areas of high gender segregation in areas of the labour market where women already predominate.

These circumstances and inflexibilities in the labour market have negative implications for women, employers and the economy in three ways. The inflexibilities compound and reinforce existing gender segregation, which leads to women being crowded into occupational areas that tolerate part-time work but are ultimately low paid and low skilled jobs. Women remain an untapped resource and are partially marginalised from some of the most financially and creatively rewarding areas of work in the new knowledge economy, for example, ICT and scientific research. Finally, employers, who are not flexible and accommodating of work-life balance issues may be unable to retain women's skills, labour market experience and education.

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# APPENDICES

## Appendix 1

**Figure A1.1 Total numbers (raw) of people in key groups**

	<b>Total numbers</b>	
Total	39906	
Total employed *	28969	
All men in sample	18927	
All women in sample	20979	
Mothers Employed, Full-time	2060	
Mothers Employed, Part-time	3448	
Potential Returners 1	2115	
Potential Returners 2	1192	
Potential Returners 3	3224	
<b>Labour Force Participation</b>		
	<b>Women</b>	<b>Men</b>
Active <sup>@</sup>	14448	14474
Inactive	6204	3639
Actual Returners, Full-time	2060	-
Actual Returners, Part-time	3448	-
Unemployed	545	814

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men. The weighted numbers shown above have adjustments for non-response and provide the average size of each group during the period of the pooled data set, 2001-4. If only one year were used, the raw sample would be too small for this study.

Notes: \*Employed people here include those with jobs, those on maternity leave, and those on sick leave but holding a job. The information on Standard Occupational Classification (SOC) was provided in all these cases and this is used here as the determining factor. Thus out of 31.4K adult cases, 22.8K cases had a job or similarly had labour-market status of 'employed'.

<sup>@</sup>The number of labour-market 'active' women includes women who were unemployed at the time of the survey.

**Figure A1.2. Population Groups by Occupation**

Standard Occupational Classification 2000	SOC2	Total	Men - total	Women - Total	Male-Ratio	Mothers Employed Part-time	Mothers Employed Full-time
Corporate managers	11	2658656	1872937	785719	0.70	64738	169483
Managers & proprietors in agriculture & services	12	437885	261922	175963	0.60	12920	36674
Science & technology professionals	21	869394	742506	126888	0.85	18762	18957
Health professionals	22	135750	74260	61490	0.55	13932	8609
Teaching & research professionals	23	1114448	370833	743616	0.33	107773	131375
Business & public service professionals	24	597266	372636	224630	0.62	32836	32059
Science & technology associate professionals	31	526586	418012	108574	0.79	13356	14695
Health & social welfare associate professionals	32	813370	139723	673647	0.17	162526	110442
Protective service occupations	33	308323	267805	40518	0.87	4369	13299
Culture, media & sports occupations	34	293083	171428	121654	0.58	21169	7916
Business & public service associate professionals	35	1191783	662085	529698	0.56	66372	65934
Administrative occupations	41	2626811	759829	1866982	0.29	348507	219137
Secretarial & related occupations	42	791959	18244	773715	0.02	139573	75953
Skilled trades occupations	51	153556	144338	9218	0.94	1916	2118
Skilled metal & electrical trades	52	1138453	1123830	14624	0.99	2425	1218
Skilled construction & building trades	53	453208	449677	3531	0.99	0	0
Textiles, printing & other skilled trades	54	466438	307789	158649	0.66	27200	16859
Caring personal service occupations	61	1387626	126350	1261276	0.09	341359	142609
Leisure & other personal service occupations	62	380756	153796	226960	0.40	46960	12254
Sales & customer service occupations	71	1703694	484441	1219253	0.28	278408	50663
Customer service occupations	72	354519	115492	239027	0.33	47365	27788
Process, plant & machine operatives	81	1076370	796816	279555	0.74	36805	42603
Transport & mobile machine drivers & operatives	82	729206	695543	33663	0.95	5549	6735
Elementary trades, plant & storage related occupations	91	905871	756297	149574	0.83	27290	23594
Elementary administration & service occupations	92	2103474	897380	1206093	0.43	352200	52615

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 39,906 (raw), 32,253,439 (weighted).

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

Occupations as classified under the Standard Occupational Classification-2 digit code.

Mothers Employed Part-time: Women who work part-time (up to 30.4 hours a week) and have at least one child aged 0-16.

Mothers Employed Full-time: Women who work full-time (more than 30.4 hours a week) and have at least one child aged 0-16.

## Appendix 2.

**Figure A 2.1 Logistic Regression of the Odds of Being Employed, Including an Interaction Term**

Factors Affecting Whether The Person is Employed	Coefficient		
	All	Men	Women
Child < 2 years	-0.34***	0.45***	-0.73***
Number of Dependent Children	-0.32***	-0.12***	-0.46***
Age	0.28***	0.32***	0.25***
Age <sup>2</sup>	-0.00***	-0.00***	-0.00***
<b>Region</b>			
Tyne & Wear	0.03	-0.34**	0.38**
Rest of Northern Region	-0.08	-0.14	0.01
South Yorkshire	0.09	0.05	0.22*
West Yorkshire	0.23**	0.32**	0.20*
Rest of Yorks & Humberside	0.41***	0.44***	0.44***
East Midlands	0.23***	0.29**	0.23**
East Anglia	0.46***	0.54***	0.43***
Inner London	-0.21**	-0.20	-0.21*
Outer London	0.02	0.29**	-0.14
Rest of South East	0.40***	0.62***	0.30***
South West	0.47***	0.55***	0.46***
Rest of West Midlands	0.30***	0.44***	0.24**
Greater Manchester	0.10	0.01	0.23*
Merseyside	-0.17	-0.21	-0.10
Rest of North West	0.26***	0.20	0.33***
Wales	-0.08	-0.17	0.02
Strathclyde	0.07	-0.13	0.26**
Rest of Scotland	0.28***	0.37***	0.26**
<b>Level of Qualification</b>			
Level 2	0.46***	0.50***	0.61***
Level 3	0.41***	0.45***	0.64***
> Level 3	0.72***	0.68***	1.04***
Renting	-1.08***	-1.16***	-1.08***
<b>Marital Status</b>			
Married and Living with Husband/ Wife	0.29***	0.73***	-0.04
Married and Separated from Husband/ Wife	0.06	0.27*	-0.00
Divorced	0.11*	0.26***	-0.01
Widowed	-0.16	0.05	-0.43***
Constant	-3.21***	-4.01***	-3.05***
Gender Female	-0.70***		
Interaction Indicator (Level 2 & Female)	0.17**		
Interaction Indicator (Level 3 & Female)	0.29***		
Interaction Indicator (> Level 3 & Female)	0.29***		
	F(34, 39,678) N: 39,712 (raw), 40,287 (weighted)	F(30, 18,793) N: 18823 (raw), 19844 (weighted)	F(30, 20,859) N: 20,889 (raw), 20,443 (weighted)

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

Base cases have ownership of the home, and have no dependent children.

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

**Figure A 2.2. Factors Influencing Wages of Men and Women**

Log of Hourly Pay	Co-efficient
Sex	-0.18***
Age	0.07***
Age <sup>2</sup>	-0.0007***
Segregation Point	0.0017***
<b>Industry</b>	
Agriculture, Forestry & Fishing	-0.06
Energy & Water Supply	0.25***
Minerals, Chemicals	0.21***
Metal Goods, Engineering, Vehicles	0.14***
Other Manufacturing	0.01
Construction	0.08*
Distribution, Hotels, Catering	-0.06*
Banking, Financial & Insurance	0.32***
Other Services	0.16***
<b>Region</b>	
Inner London	0.18***
Outer London	0.14***
Rest of South East	0.09**
South West	-0.07*
East Anglia	-0.09*
East Midlands	-0.07*
West Midlands Conurbation	-0.17***
Greater Manchester	0.01
Merseyside	-0.05
Rest of North West	-0.05
South Yorkshire	-0.11**
West Yorkshire	-0.02
Rest of Yorks & Humberside	-0.06
Tyne & Wear	-0.04
Rest of North	-0.10**
Wales	-0.11***
Scotland	-0.05
<b>Level of Qualification</b>	
Level 2	0.01
Level 3	0.16***
> Level 3	0.37***
Tenure in Present Job (Years)	0.0015
<b>Firm size</b>	
50-99 employees	0.06***
100-499 employees	0.13***
>500 employees	0.17***
Constant	0.35***
<b>R-squared = 0.35</b>	

Linear regression of the log of the hourly gross wage.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

F statistic 60.7

Segregation Point is defined as male proportion times 100.

Base: 7,235 (raw), 6,973 (weighted)

Base cases are engaged in the Transport and Communications industry; and have 8 years of qualification.

Source: British Household Panel Survey 2001/2.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.



**Figure A 2.3 Correlation matrix of selected variables**

	Has a Child of 0-2 years	No. of kids	Age	Age <sup>2</sup>	Qualification Level 2	Qualification Level 3	Qualification > Level 3	Tenure Renting Home	Sex	Actual Returners Full-time	Actual Returners Part-time	Mothers doing caring work	Mothers not doing caring work	Other inactive women	Skill-shortage index	Male Ratio
<b>Has a Child of 0-2 years</b>	1.00															
<b>No. of kids</b>	0.32	1.00														
<b>Age</b>	-0.18	-0.26	1.00													
<b>Age<sup>2</sup></b>	-0.19	-0.31	0.99	1.00												
<b>Qualification Level 2</b>	-0.01	0.01	-0.07	-0.06	1.00											
<b>Qualification Level 3</b>	0.01	-0.01	-0.11	-0.10	-0.21	1.00										
<b>Qualification &gt; Level 3</b>	0.04	0.00	0.05	0.02	-0.31	-0.22	1.00									
<b>Tenure Renting</b>	0.03	0.08	-0.09	-0.09	-0.04	-0.06	-0.15	1.00								
<b>Sex</b>	0.02	0.08	-0.07	-0.09	-0.03	-0.09	-0.02	0.04	1.00							
<b>Actual Returners Full-time</b>	0.07	0.25	-0.05	-0.08	-0.01	0.02	0.11	-0.05	.	1.00						
<b>Actual Returners Part-time</b>	0.11	0.42	-0.09	-0.14	0.04	-0.00	0.02	-0.05	.	-0.15	1.00					
<b>Mothers doing caring work</b>	0.29	0.41	-0.15	-0.18	-0.01	-0.02	-0.08	0.20	.	-0.11	-0.15	1.00				
<b>Mothers not doing caring work</b>	0.01	0.22	-0.18	-0.17	0.02	-0.00	-0.07	0.14	.	-0.08	-0.11	-0.08	1.00			
<b>Other inactive women</b>	-0.12	-0.32	0.24	0.29	-0.05	-0.05	-0.11	0.08	.	-0.14	-0.19	-0.14	-0.10	1.00		
<b>Skill-shortage index</b>	0.02	-0.00	-0.04	-0.04	0.01	0.04	0.07	-0.02	-0.17	-0.01	0.02	.	.	-	1.00	-
<b>Male Ratio</b>	0.03	-0.01	0.04	0.04	0.02	0.05	-0.03	-0.01	-0.57	0.07	-0.10	.	.	.	0.28	1.00

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: LFS: 39,712 (raw), 40,287 (weighted).

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

## Appendix 3

**Figure A3.1. Total Number of Vacancies and Skill-shortage Vacancies for England by SOC2-level**

	Standard Occupational Classification 2000	Percentage of Employment	Skills-Shortage Vacancies	Skills-Shortage Index	Male Ratio
11	Corporate managers	9.8%	6577	0.28	0.70
12	Managers & proprietors in agriculture & services	3.5%	1408	0.37	0.60
21	Science & technology professionals	2.7%	16326	2.13	0.85
22	Health professionals	0.7%	469	0.40	0.55
23	Teaching & research professionals	4.3%	3233	0.34	0.33
24	Business & public service professionals	2.2%	4968	0.95	0.62
31	Science & technology associate professionals	1.8%	12289	2.65	0.79
32	Health & social welfare associate professionals	3.2%	10478	1.52	0.17
33	Protective service occupations	1.1%	21	0.01	0.87
34	Culture, media & sports occupations	1.8%	1526	0.58	0.58
35	Business & public service associate professionals	4.5%	11473	1.10	0.56
41	Administrative occupations	9.7%	10822	0.48	0.29
42	Secretarial & related occupations	3.8%	2069	0.30	0.02
51	Skilled trades occupations	1.1%	510	0.38	0.94
52	Skilled metal & electrical trades	4.4%	10260	1.07	0.99
53	Skilled construction & building trades	3.4%	11444	2.93	0.99
54	Textiles, printing & other skilled trades	2.4%	3913	1.00	0.66
61	Caring personal service occupations	5.3%	8436	0.72	0.09
62	Leisure & other personal service occupations	2.0%	6073	1.88	0.40
71	Sales & customer service occupations	7.4%	13729	0.95	0.28
72	Customer service occupations	1.2%	784	0.26	0.33
81	Process, plant & machine operatives	5.7%	6113	0.67	0.74
82	Transport & mobile machine drivers & operatives	3.6%	6072	0.96	0.95
91	Elementary trades, plant & storage related occupations	4.8%	2874	0.37	0.83
92	Elementary administration & service occupations	9.5%	5720	0.32	0.43

Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment).

Notes : Occupations were classified under the Standard Occupational Classification 2-digit code.

Skills-shortage vacancies are 'hard-to-fill vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands'.

The intensity of skills-shortage vacancies is the ratio of the number of skills-shortage vacancies to jobs in that occupation.

**Figure A3.2 Total Number of Vacancies and Skill-shortage Vacancies for England by Detailed Occupational Groups, Ranked by Skills-Shortage Index**

SICSOC	Standard Occupational Classification	Industry Sector	Percentage of Total Employment	Total number of Skill-shortage Vacancies	Skills-Shortage Index@
23	Professional occupations	Finance	0.4%	49	11.43
37	Associate professional & technical occupations	Finance	1.0%	61	5.51
94	Sales & customer service occupations	Business services	0.3%	10258	4.16
91	Sales & customer service occupations	Hotels & restaurants	0.2%	3772	2.99
61	Skilled trades occupations	Construction	2.0%	197	2.72
66	Skilled trades occupations	Business services	0.4%	655	2.67
84	Personal service occupations	Other community & services	1.0%	2289	2.64
24	Professional occupations	Business services	2.2%	90	1.71
9	Managerial & senior official occupations	Finance	1.1%	5430	1.70
34	Associate professional & technical occupations	Wholesale & retail	0.9%	3041	1.63
99	Process, plant & machine operatives	Agriculture & fishing	0.1%	123	1.58
62	Skilled trades occupations	Wholesale, retail	1.1%	818	1.53
33	Associate professional & technical occupations	Construction	0.3%	841	1.45
106	Process, plant & machine operatives	Transport & communication	1.5%	7866	1.36
57	Skilled trades occupations	Agriculture & fishing	0.2%	228	1.31
87	Sales & customer service occupations	Manufacturing	0.3%	694	1.23
97	Sales & customer service occupations	Health & social work	0.1%	1475	1.22
108	Process, plant & machine operatives	Business services	0.2%	5587	1.10
83	Personal service occupations	Health & social work	3.5%	1269	1.00
63	Skilled trades occupations	Hotels & restaurants	0.5%	626	0.99
18	Professional occupations	Electricity & water supply	0.1%	7412	0.97
41	Associate professional & technical occupations	Health & social work	3.1%	216	0.85
19	Professional occupations	Construction	0.4%	3625	0.80
59	Skilled trades occupations	Manufacturing	3.4%	2864	0.77
103	Process, plant & machine operatives	Construction	0.5%	1860	0.76
93	Sales & customer service occupations	Finance	0.4%	1209	0.76
38	Associate professional & technical occupations	Business services	1.7%	5556	0.75
52	Administrative & secretarial occupations	Business services	2.3%	673	0.67
119	Elementary occupations	Hotels & restaurants	2.5%	245	0.62

92	Sales & customer service occupations	Transport & communication	0.4%	2966	0.59
113	Elementary occupations	Agriculture & fishing	0.3%	840	0.6
20	Professional occupations	Wholesale, retail	0.2%	878	0.6
70	Skilled trades occupations	Other community and services	0.3%	4168	0.5
90	Sales and customer service occupations	Wholesale, retail	6.6%	129	0.5
40	Associate professional & technical occupations	Education	0.6%	438	0.5
69	Skilled trades occupations	Health and social work	0.3%	3348	0.5
17	Professional occupations	Manufacturing	1.4%	3191	0.5
51	Administrative and secretarial occupations	Finance	1.8%	164	0.5
31	Associate professional & technical occupations	Manufacturing	1.9%	985	0.5
98	Sales and customer service occupations	Other community and services	0.2%	304	0.5
22	Professional occupations	Transport and communication	0.3%	1065	0.4
126	Elementary occupations	Other community and services	0.9%	378	0.4
101	Process, plant and machine operatives	Manufacturing	3.9%	193	0.4
50	Administrative and secretarial occupations	Transport and communication	0.8%	731	0.4
48	Administrative and secretarial occupations	Wholesale, retail	1.6%	1252	0.4
104	Process, plant and machine operatives	Wholesale, retail	0.9%	78	0.4
121	Elementary occupations	Finance	0.1%	56	0.3
120	Elementary occupations	Transport and communication	1.4%	7324	0.3
26	Professional occupations	Education	4.5%	439	0.3
10	Managerial and senior official occupations	Business services	2.0%	394	0.3
13	Managerial and senior official occupations	Health and social work	1.0%	119	0.3
42	Associate professional & technical occupations	Other community and services	0.7%	204	0.3
45	Administrative and secretarial occupations	Manufacturing	1.5%	509	0.3
78	Personal service occupations	Transport and communication	0.4%	1813	0.2
32	Associate professional & technical occupations	Electricity and water supply	0.1%	807	0.2
49	Administrative and secretarial occupations	Hotels and restaurants	0.2%	629	0.2
55	Administrative and secretarial occupations	Health and social work	1.7%	234	0.2
125	Elementary occupations	Health and social work	0.7%	2730	0.2
27	Professional occupations	Health and social work	1.0%	640	0.2

82	Personal service occupations	Education	2.0%	925	0.2
117	Elementary occupations	Construction	0.5%	30	0.2
36	Associate professional & technical occupations	Transport and communication	0.6%	244	0.2
7	Managerial and senior official occupations	Hotels and restaurants	0.6%	38	0.2
39	Associate professional & technical occupations	Public administration	2.7%	834	0.2
47	Administrative and secretarial occupations	Construction	0.4%	8	0.2
80	Personal service occupations	Business services	0.2%	595	0.2
53	Administrative and secretarial occupations	Public administration	2.5%	3234	0.1
46	Administrative and secretarial occupations	Electricity and water supply	0.1%	533	0.1
115	Elementary occupations	Manufacturing	1.6%	11	0.1
118	Elementary occupations	Wholesale, retail	2.1%	823	0.1
122	Elementary occupations	Business services	1.3%	85	0.1
6	Managerial and senior official occupations	Wholesale, retail	2.6%	742	0.1
5	Managerial and senior official occupations	Construction	0.7%	169	0.1
64	Skilled trades occupations	Transport and communication	0.5%	8	0.1
28	Professional occupations	Other community and services	0.4%	327	0.1
81	Personal service occupations	Public administration	0.2%	411	0.1
112	Process, plant and machine operatives	Other community and services	0.2%	103	0.1
3	Managerial and senior official occupations	Manufacturing	2.7%	164	0.1
124	Elementary occupations	Education	1.1%	112	0.1
56	Administrative and secretarial occupations	Other community and services	0.9%	331	0.1
11	Managerial and senior official occupations	Public administration	0.8%	10	0.1
25	Professional occupations	Public administration	0.7%	615	0.1
14	Managerial and senior official occupations	Other community and services	0.7%	4	0.1
123	Elementary occupations	Public administration	0.3%	519	0.0
77	Personal service occupations	Hotels and restaurants	0.1%	38	0.0
54	Administrative and secretarial occupations	Education	0.8%	50	0.0
4	Managerial and senior official occupations	Electricity and water supply	0.1%	98	0.0
8	Managerial and senior official occupations	Transport and communication	1.0%	31	0.0
16	Professional occupations	Mining and quarrying	0.0%	106	0.0
105	Process, plant and machine operatives	Hotels and restaurants	0.0%	88	0.0

43	Administrative and secretarial occupations	Agriculture & fishing	0.1%	54	0.0
111	Process, plant and machine operatives	Health and social work	0.1%	149	0.0
88	Sales and customer service occupations	Electricity and water supply	0.1%	23	0.0
95	Sales and customer service occupations	Public administration	0.1%	118	0.0
68	Skilled trades occupations	Education	0.2%	323	0.0
60	Skilled trades occupations	Electricity and water supply	0.2%	51	0.0
96	Sales and customer service occupations	Education	0.0%	28	0.0
89	Sales and customer service occupations	Construction	0.0%	7	0.0
65	Skilled trades occupations	Finance	0.0%	58	0.0
29	Associate professional & technical occupations	Agriculture & fishing	0.0%	11	0.0
76	Personal service occupations	Wholesale, retail	0.0%	12	0.0
1	Managerial and senior official occupations	Agriculture & fishing	0.1%	0	0.0
2	Managerial and senior official occupations	Mining and quarrying	0.0%	0	0.0
12	Managerial and senior official occupations	Education	0.3%	0	0.0
15	Professional occupations	Agriculture & fishing	0.0%	0	0.0
21	Professional occupations	Hotels and restaurants	0.0%	0	0.0
30	Associate professional & technical occupations	Mining and quarrying	0.0%	0	0.0
35	Associate professional & technical occupations	Hotels and restaurants	0.0%	0	0.0
44	Administrative and secretarial occupations	Mining and quarrying	0.0%	0	0.0
58	Skilled trades occupations	Mining and quarrying	0.0%	0	0.0
67	Skilled trades occupations	Public administration	0.2%	0	0.0
71	Personal service occupations	Agriculture & fishing	0.1%	0	0.0
72	Personal service occupations	Mining and quarrying	0.0%	0	0.0
73	Personal service occupations	Manufacturing	0.0%	0	0.0
74	Personal service occupations	Electricity and water supply	0.0%	0	0.0
75	Personal service occupations	Construction	0.0%	0	0.0
79	Personal service occupations	Finance	0.0%	0	0.0
85	Sales and customer service occupations	Agriculture & fishing	0.0%	0	0.0
86	Sales and customer service occupations	Mining and quarrying	0.0%	0	0.0
100	Process, plant and machine operatives	Mining and quarrying	0.1%	0	0.0
102	Process, plant and machine operatives	Electricity and water supply	0.1%	0	0.0
107	Process, plant and machine operatives	Finance	0.0%	0	0.0
109	Process, plant and machine operatives	Public administration	0.1%	0	0.0
110	Process, plant and machine operatives	Education	0.0%	0	0.0

114	Elementary occupations	Mining and quarrying	0.0%	0	0.0
116	Elementary occupations	Electricity and water supply	0.0%	0	0.0

Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Base: 24,753 (raw), 20,027,919 (weighted).

Sample: All establishments in England with 1 or more employees. All business sectors covered, public and private. All occupations in which vacancies were reported within an establishment (up to a maximum of 6 per establishment).

Note : Here, occupational groups are classified under the Standard Occupational Classification 1-digit code combined with the Standard Industrial Classification scheme at one-digit level. The result is 126 occupational groups.

SSV (Skill-shortage vacancies): These are 'hard-to-fill' vacancies which are skill related where at least one of the following causes has been cited by the respondent: low number of applicants with the required skills, lack of work experience the company demands, or lack of qualifications the company demands.

@The skills-shortage index is defined as the ratio of the number of skills-shortage vacancies to the number of jobs in that occupational group.

**Figure A3.3. Factors Influencing Wages of Men and Women Including Skill-Shortage Vacancies and Interaction Variables**

Log of Hourly Pay	Co-efficient Model 2	Co-efficient Model 3
Sex	-0.19***	-0.21***
Age	0.06***	0.06***
Age <sup>2</sup>	-0.0007***	-0.0007***
Male Ratio	0.0017***	0.0018***
<b>Industry</b>		
Agriculture, Forestry & Fishing	-0.06	-0.07
Energy & Water Supply	0.25***	0.26***
Minerals, Chemicals	0.21***	0.21***
Metal Goods, Engineering, Vehicles	0.14***	0.14***
Other Manufacturing	0.01	0.01
Construction	0.10**	0.10**
Distribution, Hotels, Catering	-0.06*	-0.06*
Banking, Financial & Insurance	0.32***	0.33***
Other Services	0.16***	0.16***
<b>Region</b>		
Inner London	0.18***	0.18***
Outer London	0.13***	0.14***
Rest of South East	0.08**	0.08**
South West	-0.07*	-0.07*
East Anglia	-0.10**	-0.09*
East Midlands	-0.07*	-0.07*
West Midlands Conurbation	-0.17***	-0.17***
Greater Manchester	-0.0042	0.0039
Merseyside	-0.05	-0.05
Rest of North West	-0.05	-0.05
South Yorkshire	-0.11**	-0.11**
West Yorkshire	-0.02	-0.02
Rest of Yorks & Humberside	-0.07	-0.07
Tyne & Wear	-0.05	-0.05
Rest of North	-0.11**	-0.11**
Wales	-0.12***	-0.12***
Scotland	-0.05**	-0.05
<b>Level of Qualification</b>		
Level 2	0.01	0.01
Level 3	0.16***	0.16***
> Level 3	0.36***	0.36***
Tenure in Present Job (Years)	0.0015	0.0014
<b>Firm size</b>		
50-99 employees	0.06***	0.06***
100-499 employees	0.13***	0.13***
>500 employees	0.17***	0.17***
Skills-Shortage Intensity	-0.03***	-0.04***
Interaction variable (Sex Female & Skills-Shortage Intensity)		0.04
Constant	0.39***	0.40***
	<b>R-squared = 0.3495</b> F(38, 7,126) = 58.61 N: 7,164 (raw), 6,918 (weighted)	<b>R-squared = 0.3498</b> F(39, 7,125) = 57.61 N: 7,164 (raw), 6,918 (weighted)

Linear regression of the log of the hourly gross wage.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

The male ratio is defined as the male percentage in that occupation.

Base cases reside in the West Midlands region; are engaged in the Transport and Communication industry; and have 8 years of qualification.

Source: British Household Panel Survey 2001/2002.

Base:10,543 (raw), 9365 (weighted)

Population: All women and men in Great Britain except those who are Self-Employed, in the age group 16-59 for women, and 16-64 for men.

Please note that Model 1 was presented in the main text of the Report and does not include either the skills-shortage index or the interaction effect. Predictions made in the report for specific groups of women returners are based upon Model 3 above as augmented to provide a *ceteris paribus* estimate for each group separately.



**Figure A3.4. Heckman Equation for Factors Influencing Wages of Men and Women (including Skill-shortage vacancies and interaction variables)**

<b>Log of Hourly Pay by Heckman Method</b>	<b>Co-efficient</b>
Sex	-0.20***
Age	0.05**
Age <sup>2</sup>	-0.0006***
Male Ratio	0.0015***
<b>Industry</b>	
Agriculture, Forestry & Fishing	-0.03
Energy & Water Supply	0.24***
Minerals, Chemicals	0.18***
Metal Goods, Engineering, Vehicles	0.13***
Other Manufacturing	0.01
Construction	0.09**
Distribution, Hotels, Catering	-0.05
Banking, Financial & Insurance	0.29***
Other Services	0.15***
<b>Region</b>	
Inner London	0.16***
Outer London	0.11**
Rest of South East	0.06
South West	-0.07
East Anglia	-0.09*
East Midlands	-0.07*
West Midlands Conurbation	-0.15***
Greater Manchester	0.01
Merseyside	-0.07
Rest of North West	-0.04
South Yorkshire	-0.10**
West Yorkshire	-0.03
Rest of Yorks & Humberside	-0.06
Tyne & Wear	-0.04
Rest of North	-0.10**
Wales	-0.10***
Scotland	-0.05
<b>Level of Qualification</b>	
Level 2	0.0030
Level 3	0.15***
> Level 3	0.33***
Tenure in Present Job (Years)	0.0005
<b>Firm size</b>	
50-99 employees	0.05**
100-499 employees	0.11***
>500 employees	0.16***
Skills-Shortage Intensity	-0.04***
Interaction variable (Sex Female & Skills-Shortage Intensity)	0.04*
Coefficient on the Inverse Mills Ratio (Lambda)	-0.35***
Constant	0.82***
<b>Heckman Probit Equation Co-efficients</b>	
(The dependent variable here is the scaled probability of being employed in waged work)	
Person does unremunerated caring	-0.04
Has children aged 0-2 years	-0.09**
Number of children aged 0-16 years	-0.19***
Age	0.11***
Age <sup>2</sup>	-0.0015***
Has a limiting long-term illness	-0.68***

Household income (#/year)	0.00004***
Household income <sup>2</sup>	-1.64***
Spouse's earnings (gross £/month)	-0.0001***
Spouse's earnings <sup>2</sup>	1.28
Constant in the probit equation	-2.10***
Rho	-0.68
Sigma	0.51
	F(41, 7123) = 49.00
	N: 7164 (raw), 6918 (weighted)

Heckman selectivity adjusted linear regression of the log of the hourly gross wage.

Note: the two equations were simultaneously optimally estimated using STATA svyheckman procedure.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

The male ratio is defined as the male percentage in that occupation.

Base cases reside in the West Midlands region; are engaged in the Transport and Communication industry; and have 8 years of qualification.

Source: British Household Panel Survey 2001/2002.

Base: 10,543 (raw), 9,365 (weighted)

Population: All women and men in Great Britain except those who are Self-Employed, in the age group 16-59 for women, and 16-64 for men.

**Figure A3.5. Factors Associated with Skills-Shortage of Occupations including Interaction Variable**

<b>Factors Associated with Skills-Shortage Intensity</b>	<b>Coefficient</b>
Male Ratio	1.02***
Age	-0.01***
Age <sup>2</sup>	0.0001***
Sex Female	0.25***
<b>Industry</b>	
Agriculture & fishing	0.25***
Mining and quarrying	-0.55***
Manufacturing	-0.88***
Electricity and water supply	-0.37***
Construction	0.84***
Wholesale, retail	0.23***
Hotels and restaurants	0.42***
Finance	2.63***
Business services	0.59***
Public administration	-0.19***
Education	0.13***
Health and social work	0.60***
Other community and services	0.44 ***
<b>Region</b>	
Tyne & Wear	0.02
Rest of Northern Region	-0.06*
South Yorkshire	-0.01
West Yorkshire	-0.01
Rest of Yorks & Humberside	-0.01
East Midlands	0.0018
East Anglia	0.0014
Inner London	-0.04
Outer London	0.03
Rest of South East	-0.02
South West	-0.0032
Rest of West Midlands	-0.02
Greater Manchester	-0.02
Merseyside	-0.04
Rest of North West	-0.0037
<b>Qualification Years</b>	
9 years	0.03
11 years	0.02
14 years	0.05***
Constant	-0.47***
Interaction Variable (Sex Female and Male Ratio)	-0.48***
<b>R-squared</b>	0.31

Linear regression of the skills-shortage index of the occupation in which each person was located.

\*\*\* 1% significance, \*\* 5% significance, \* 10% significance

F statistic 270

Number of observations = 24742 (raw), 25106 (weighted)

Base cases reside in the West Midlands region; and are engaged in the Transport and Communication industry.

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

**Figure A3.6. Correlation Matrix of Factors Associated with Skills-shortage**

	<b>Skills-Shortage Index</b>	<b>Male Ratio (% Male Within Their Occupation)</b>	<b>Education (Years)</b>	<b>Age</b>	<b>Sex Female (Indicator; 0=Male; 1=Female)</b>
<b>Skills-Shortage Index</b>	1.00				
<b>Male Ratio</b>	0.13***	1.00			
<b>Education (Years)</b>	0.02***	-0.0032	1.00		
<b>Age</b>	-0.08***	0.04***	-0.01*	1.00	
<b>Sex Female</b>	-0.07***	-0.58***	-0.06***	-0.07***	1.00

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004.

Base: 39,906 (raw), 32,253,439 (weighted).

Population: All women and men in Great Britain except those who are self-employed, in the age group 16-59 for women, and 16-64 for men.

In each correlation, weights are applied, and the number of cases is adjusted to allow only those appropriate for that pair of variables, e.g. Skills-shortage index exists only for those with employment.

**Figure A3.7. Qualification Differences by Occupation**

Standard Occupational Classification 2000	All		Men		Women		Mothers Employed Part-time		Mothers Employed Full-time	
	UQ/OQ	Difference	UQ/OQ	Difference	UQ/OQ	Difference	UQ/OQ	Difference	UQ/OQ	Difference
Corporate managers	UQ	0.37***	UQ	0.30***	UQ	0.53***	n.s.	1.47**	n.s.	0.29
Managers & proprietors in agriculture & services	UQ	1.71***	UQ	1.27***	UQ	2.21***	UQ	3.83***	n.s.	1.01
Science & technology professionals	UQ	1.26***	UQ	1.30***	UQ	1.02***	n.s.c	-	n.s.c	-
Health professionals	n.s.	-0.15	n.s.	-0.15	n.s.	-0.15	n.s.	-0.15	n.s.c.	-
Teaching & research professionals	n.s.	0.17	n.s.	0.01	n.s.	.002	n.s.	0.21	n.s.	0.09
Business & public service professionals	UQ	0.81***	UQ	0.49**	UQ	1.35***	n.s.c.	-	UQ	1.35*
Science & technology associate professionals	UQ	1.29***	UQ	1.05***	UQ	1.78***	n.s.c.	-	UQ	1.84**
Health & social welfare associate professionals	n.s.	-0.20	n.s.	0.40	OQ	-0.27***	n.s.	-0.34	n.s.	-0.34
Protective service occupations	UQ	1.36***	UQ	1.45***	n.s.c.	0.50	n.s.c.	-	n.s.	1.03
Culture, media & sports occupations	UQ	1.65***	UQ	1.68***	UQ	1.61***	n.s.c	-	n.s.c.	-
Business & public service associate professionals	UQ	0.76***	UQ	0.57***	UQ	1.00***	n.s.	0.22	UQ	1.42**
Administrative occupations	n.s.	.04	OQ	-0.55***	UQ	0.24***	UQ	0.39**	n.s.	0.28
Secretarial & related occupations	UQ	0.48***	OQ	-2.04**	UQ	0.57***	UQ	0.63***	n.s.	0.35
Skilled trades occupations	n.s.	-0.12	n.s.	-0.12	n.s.c.	-0.28	n.s.c	-	n.s.c.	-
Skilled metal & electrical trades	OQ	-0.36***	OQ	-0.35***	n.s.c.	-0.96	n.s.c.	-	n.s.c.	-
Skilled construction & building trades	n.s.	-0.10	n.s.	-0.10	n.s.c.	-	n.s.c.	-	n.s.c.	-
Textiles, printing & other skilled trades	n.s.	-0.01	n.s.	-0.20**	UQ	0.32*	UQ	0.97***	n.s.c	-
Caring personal service occupations	OQ	-0.36***	OQ	-0.67*	OQ	-0.33**	OQ	-0.31*	OQ	-0.78**
Leisure & other personal service occupations	n.s.	-0.14	n.s.	-0.33	n.s.	-0.04	n.s.	0.14	n.s.c.	-
Sales & customer service occupations	UQ	0.39***	n.s.	0.04	UQ	0.53***	n.s.	0.25	UQ	0.97***
Customer service occupations	OQ	-0.68***	OQ	-0.99**	OQ	-0.54**	n.s.	-0.23	n.s.c.	-
Process, plant & machine operatives	UQ	0.35***	UQ	0.25***	UQ	0.79***	n.s.	0.03	UQ	0.62***
Transport & mobile machine drivers & operatives	UQ	0.38***	UQ	0.35***	n.s.c	0.66***	n.s.	0.54	n.s.c.	-

Elementary trades, plant & storage related occupations	UQ	0.40***	UQ	0.40***	UQ	0.28***	n.s.	0.32	n.s.c	-
Elementary administration & service occupations	UQ	-0.68**	OQ	-0.28***	UQ	0.28***	UQ	0.47***	UQ	0.57**
<b>Average Qualification Difference</b>	<b>UQ</b>	<b>0.18***</b>	<b>UQ</b>	<b>0.13***</b>	<b>UQ</b>	<b>0.23***</b>	<b>UQ</b>	<b>0.27***</b>	<b>UQ</b>	<b>0.32***</b>

Source: Labour Force Survey data March 2001 (Wave 1 - Study Number 4661), Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Base: 39906 (raw), 32253439 (weighted).

\*\*\* refers to 1% significance; \*\* refers to 5% significance

Qualification index = 'Typical' Qualification Level – Actual Qualification Level. Hence over-qualified (OQ) will have values less than 0 and under-qualified (UQ) will have values greater than 0.

n.s. : Not Significant; n.s.c. : Not Sufficient Cases

**Figure A3.8. Qualification Differences for Women Recent Returners by Occupation**

Standard Occupational Classification 2000	Recent Returners Part-time		Recent Returners Full-time	
	UQ/OQ	Difference	UQ/OQ	Difference
Corporate managers	n.s.	-1.60	n.s.c	-
Managers & proprietors in agriculture & services	n.s.c.	-	n.s.	0.41
Science & technology professionals	n.s.	2.29	n.s.c.	-
Health professionals	n.s.c.	-	n.s.c.	-
Teaching & research professionals	n.s.	-0.32	n.s.c.	-0.32
Business & public service professionals	n.s.c.	-	n.s.c.	-
Science & technology associate professionals	n.s.c.	-	n.s.c.	-1.66
Health & social welfare associate professionals	n.s.c	-	n.s.c.	-
Protective service occupations	n.s.c	-	n.s.c.	-
Culture, media & sports occupations	n.s.c	-	n.s.c.	-
Business & public service associate professionals	n.s.	0.90	n.s.	-0.1
Administrative occupations	OQ	-2.04***	OQ	-3.16***
Secretarial & related occupations	OQ	-1.91***	n.s.	-2.41
Skilled trades occupations	n.s.c.	-	n.s.c.	-
Skilled metal & electrical trades	n.s.c.	-	n.s.c.	-
Skilled construction & building trades	n.s.c	-	n.s.c.	-
Textiles, printing & other skilled trades	n.s.	-1.89	n.s.c.	-
Caring personal service occupations	OQ	-3.32***	n.s.c.	-
Leisure & other personal service occupations	n.s.	0.55	n.s.c.	
Sales & customer service occupations	OQ	-1.28***	OQ	-1.28**
Customer service occupations	n.s.c.	-	n.s.c.	-
Process, plant & machine operatives	n.s.	-0.55	n.s.	-0.55
Transport & mobile machine drivers & operatives	n.s.c.	-	n.s.c.	-
Elementary trades, plant & storage related occupations	n.s.c.	-	n.s.	-0.38
Elementary administration & service occupations	OQ	-2.12***	n.s.	-1.64

Source: Employers Skills Survey Study Number 4731 November 2000 - April 2001, British Household Panel Survey 2001/2.

\*\*\* refers to 1% significance; \*\* refers to 5% significance

Base for BHPS:10,543 (raw), 9365 (weighted).

Qualification index = 'Typical' Qualification Level – Actual Qualification Level. Hence over-qualified (OQ) will have values less than 0 and under-qualified (UQ) will have values greater than 0.

n.s.: Not Significant; n.s.c.: Not Sufficient Cas

### Figure A3.9. Qualification Differences between Men and Women by Occupation

A t-test of the difference of means is presented here. The women's mean is subtracted from the men's mean, and the asterisks reflect whether this difference is significantly different from zero.

Standard Occupational Classification 2000	Mean Qualification in Years		Qualification Difference
	Men	Women	
Corporate managers	11.43	11.23	0.20***
Managers & proprietors in agriculture & services	10.50	10.33	0.17
Science & technology professionals	12.59	12.98	-0.39**
Health professionals	13.74	13.62	0.12
Teaching & research professionals	13.71	13.70	-0.01
Business & public service professionals	13.11	12.93	0.18
Science & technology associate professionals	11.43	11.26	0.17
Health & social welfare associate professionals	12.44	12.97	-0.53***
Protective service occupations	10.11	10.88	-0.77**
Culture, media & sports occupations	11.75	11.91	-0.16
Business & public service associate professionals	11.39	11.22	0.17
Administrative occupations	10.52	9.93	0.59***
Secretarial & related occupations	11.21	9.54	1.67***
Skilled trades occupations	9.24	10.19	-0.95*
Skilled metal & electrical trades	9.88	10.25	-0.37
Skilled construction & building trades	9.40	9.19	0.21
Textiles, printing & other skilled trades	9.33	9.01	0.32***
Caring personal service occupations	9.88	9.78	0.10
Leisure & other personal service occupations	9.27	9.62	-0.35
Sales & customer service occupations	9.73	9.16	0.57***
Customer service occupations	10.48	9.79	0.69***
Process, plant & machine operatives	8.92	8.50	0.42***
Transport & mobile machine drivers & operatives	8.73	8.38	0.35*
Elementary trades, plant & storage related occupations	8.66	8.67	-0.01
Elementary administration & service occupations	9.14	8.75	0.39***

Source: Pooled Longitudinal Labour Force Survey data March 2001 – May 2004, Employers Skills Survey Study Number 4731 November 2000 - April 2001.

Base: 39906 (raw), 32253439 (weighted).

\*\*\* refers to 1% significance; \*\* refers to 5% significance; \* refers to 10% significance

Qualification difference refers to the difference between the mean qualification in years for men and mean qualification in years for women.



## Appendix 4

### Description of the Data sets and Selected Variables

The data used in this study come from four different sources, the Employers Skills Survey (ESS), the Labour Force Survey (LFS), the British Household Panel Survey (BHPS) and the Census 2001.

#### Employers' Skills Survey

At the time the report was written, the NESS data for 2003 were not publicly available. Therefore only the ESS 2001 data were used for statistical purposes. Nevertheless the findings of the ESS 2001 and NESS 2003 are integrated into the textual parts of the report.

The ESS 2001 survey involved 27,031 telephone interviews from November 2000 to April 2001 sampled from all business establishments or local units in England with one or more employees.

The ESS was used to get information about current vacancies and skills-shortages. The ESS occupational dataset was used, which contains 14,470 occupations in which a vacancy was reported within the 27,031 occupations (whereby there was a maximum of 6 occupations per establishment) (ESS 2001<sup>6</sup>). The data was weighted using the weights provided in the dataset. These are called vacancy-based weights, because after asking about vacancies of a certain type, the number of such vacancies was also recorded. This is an efficient way of storing the information. The ESS weights also adjust for non-response and create a report on vacancies which is nationally representative for England. When the ESS data is incorporated into other surveys, the details about vacancies of each type were then weighted using a further weighting factor which creates nationally representative samples. For England, this is unproblematic since England was the scope of the ESS. However, for Scotland and Wales there is no ESS 2001 data. Therefore the statistics in this study have matched the England-based ESS results onto the Scotland and Wales cases and thus makes the assumption that the types and frequency of vacancies is spread across industries in similar ways in the three countries. This assumption may need to be tested in future research. It applies in the results that match ESS with LFS as well as in the results that match ESS with BHPS.

#### Labour Force Survey

In order to obtain a larger sample the waves of four different Longitudinal LFS datasets were pooled in order to obtain a larger sample to avoid low number problems as a result of narrow definitions of Actual Returners i.e. mothers who are employed at present. The pooling was done the following way: From the four datasets the spring quarters (March-May) were extracted and then matched according to the existing variables whereby non-matching variables were dropped. Then the datasets were merged, i.e. the cases of each wave were added up to one pooled dataset. Each quarter consisted of around

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<sup>6</sup> Conducted by the Research Centre on Skills, Knowledge and Occupational Performance (SKOPE) at Oxford University. Report authored by Jon Hales, Andrew Shaw and Stephen Woodland.

eight thousand respondents leading to a pooled dataset with around forty thousand cases. The result is therefore not a longitudinal dataset tracing the same individuals over time but a dataset with one observation per respondent. The datasets used for the pooling are the Five-Quarter Longitudinal Survey from December 2001 – February 2003 (2<sup>nd</sup> wave; SN4670), from June 2002 – August 2003 (4<sup>th</sup> wave; SN4768), from September 2002 – August 2003 (3<sup>rd</sup> wave; SN 4807) and from June 2003 – February 2003 (4<sup>th</sup> wave; SN 5045).

### **British Household Panel Survey**

The BHPS is a longitudinal survey. All the waves from A to K have been used, covering the years 1990/1 to 2001/2. The sample for 2001/2 consists of 4850 men of the age of 16-64 and 5693 women of the age of 16-59. We excluded at the outset those who were self-employed in 2001/2 to simplify the labour-force participation estimates. Thus our estimates are primarily for employment participation. However the inactive and unemployed were not excluded. The data set was weighted to adjust for non-response. This weighting allowed us to make use of the Scottish and Welsh booster samples which were introduced in 1999. The weighting also adjusts for non-response. Attrition in the survey has been described in the BHPS documentation. Attrition affects this study only in so far as the operationalisation of 'recent returners' requires information about the woman's previous years in the survey. If she was not available in a particular year, but returned to the survey, her non-response would create a gap in our records. If she had dropped out altogether, however, she would not be in Wave K and would therefore not even be part of this study. Thus the results are representative for 2001/2. Finally, note that the routine used to work out which women were 'recent returners' used as much information as possible about their histories, so if they were unavailable in one year we would be looking at all the nearby years from Wave A to Wave J to find out about their past work history.

This study has utilised the BHPS Work-Life History Data Set to measure the duration of the entire work career. In this data set, months of part-time work and months of full-time work are both available, and these were compiled into summary figures in a previous research project (Olsen and Walby, 2004). Using these figures for each woman, average work-history durations were obtained for the women of specific returners sub-groups in this report. Note that the work-history covers the entire career of the woman if she was in the BHPS in 1990/1 or 1991/2, but for more recent entrants it covers the segment of the career represented by that Wave plus the job she had just as she entered that wave, going back to the date when she started that job. Entrants to the BHPS include younger women (who enter upon reaching age 16) and women who move into BHPS households. Their ages are various and one could argue that these entrants create a weakness in the work-life history estimates used in the study. The effect of this weakness falls on certain means in tables within the report. They do not affect any regression results used here.

### **Census 2001 of England, Wales and Scotland**

The Census 2001 is available online from the Office for National Statistics. Data from the Census tables are Crown Copyright.