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ESSAYS ON JOB SATISFACTION IN GREAT BRITAIN

Thesis submitted in accordance with the requirements of
Swansea University for the degree of Doctor in Philosophy

by

Richard John Jones

March 2011

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ABSTRACT

In this thesis, I present three studies that add to the literature on job satisfaction in Great Britain.

In the first study, I use data from the British 2004 Workplace Employee Relations Survey (WERS) to examine the relationship between job related training and job satisfaction. I use a random effects ordinal regression model that exploits the matching of workplace information to employee information to control for unobserved heterogeneity at the workplace level. Using this technique, I find clear evidence that job related training is positively associated with all the dimensions of job satisfaction considered. I also find evidence that the impact of training on workers' satisfaction varies for different groups of workers and depends on the amount of training individuals have relative to colleagues in the same workplace

In the second study, I also make use of the 2004 WERS data, including the new financial performance questionnaire, to examine the relationship between job satisfaction and workplace performance. I find that average job satisfaction is positively associated with subjective assessments of financial performance and labour productivity and that these associations are statistically significant at conventional test levels. I find that measures of job satisfaction are negatively related to rates of absenteeism and voluntary employee turnover. I also find that job satisfaction is positively related to gross value added per full-time equivalent employee but this association is not statistically significant when measures of absenteeism and voluntary employee turnover are included in the model as explanatory variables. Finally, I find no statistically significant relationship between measures of satisfaction and profitability.

In the third study, I use the first six waves of the Welsh boosts to the British Household Panel Survey to explain the determinants of overall job satisfaction and four facets of job satisfaction in Wales. My results show that low-paid workers in Wales do not report lower job satisfaction than their higher paid counterparts. Moreover, I find that despite there being disproportionately more low-paid workers in Wales than in either England or Scotland, job satisfaction is higher in Wales than in the other countries.

DECLARATIONS AND STATEMENTS

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed.....

Date..... 30/3/2011

STATEMENT 1

This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

Signed.....

Date..... 30/3/2011

STATEMENT 2

I hereby give my consent for my dissertation, if relevant and accepted, to be available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organisations.

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Date..... 30/3/2011

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ABBREVIATIONS

ABI. Annual Business Inquiry

APEC. Asia-Pacific Economic Cooperation

ASHE. Annual Survey of Hours and Earnings

BHPS. British Household Panel Survey

CMEPSP. Commission on the Measurement of Economic Performance and Social Progress

DRM. Day Reconstruction Method

ERG. Existence, Relatedness and Growth

EU. European Union

G20. The Group of Twenty

GLLAMM. Generalized Linear Latent and Mixed Models

JCM. Job Characteristics Model

JDI. Job Descriptive Index

JSS. Job Satisfaction Survey

LFS. Labour Force Survey

MSQ. Minnesota Satisfaction Questionnaire

NES. New Earnings Survey

OECD. Organisation for Economic Co-operation and Development

ONS. Office for National Statistics

PAYE. Pay As You Earn

SDT. Self Determination Theory

SSDA. Sector Skills Development Agency

VAT. Value Added Tax

VIE. Valence, Instrumentality and Expectancy Theory

WAG. Welsh Assembly Government

WERS. Workplace Employment Relations Survey

CHAPTER 1

Introduction

1. Background

In recent years, the study of job satisfaction and of well-being in general, has enjoyed a renaissance in economics. Increasing acceptance of the limitations of income as a measure of well-being has prompted a search for better indicators of well-being and for a fuller understanding of the determinants of well-being. One of the most fruitful areas of research has been that examining job satisfaction. This work has not just been an exercise for academics, as policy-makers have also become increasingly interested in this topic. The European Union, the Asia-Pacific Economic Cooperation, the G20 and the Welsh Assembly Government have adopted the goal of 'more and better jobs,' with subjective job satisfaction being used as one measure of progress towards this goal. The Organisation for Economic Co-operation and Development has adopted satisfaction with work as one of its headline measures of social well-being. The report of the Commission on the Measurement of Economic Performance and Social Progress ('the Stiglitz Report') (CEMEPSP, 2009) also highlighted subjective assessments of the quality of working life as being an important indicator of society's well-being.

Interest in job satisfaction is not a new phenomenon, however. Writings prompted by the onset of the industrial revolution contained references to constructs such as 'worker morale.' These studies, however, tended to be vague about what these constructs meant and were generally focused more on determining what maximizes worker productivity rather than what improves the well-being of workers. One of the earliest papers to explicitly examine the link between work and satisfaction was written by Thorndike in 1917, who examined productivity and 'satisfyingness' amongst 29 adults

who graded ten printed compositions for two hours on two days. He found that whilst the quality and quantity of work remained the same during the two-hour period, 'satisfyingness', measured on a scale from one to ten, decreased steadily over time.

Mayo (1933) conducted some of the most influential pieces of research in the social sciences. He studied the effect of lighting, and later other factors such as temperature, fatigue, breaks, and working hours on worker productivity at the Hawthorne Works in Chicago. Initially, the main finding of these studies was that changes in work conditions temporarily increased productivity. Subsequent work concluded that this increase resulted, not from the new conditions, but from an awareness of being observed, the Hawthorne Effect. Mayo's work provided early evidence that individuals are motivated to work for purposes other than pay and that studying workers and providing them with more attention increased their motivation and productivity. These findings stimulated researchers to investigate other aspects of motivation and job satisfaction.

Since these early studies, a vast body of literature examining job satisfaction has emerged. A search in the Business Source Database in September 2010 produced a list of 5,885 articles on the topic of job satisfaction that have appeared in academic journals since 1919. Two main strands have emerged in this literature. The first strand examines the determinants of job satisfaction and has identified a range of factors that influence job satisfaction. The second strand investigates how job satisfaction influences economic variables such as productivity, work effort, employee absenteeism etc and non-economic variables such as overall well-being, health etc.

2. Purpose and Significance of this Thesis

This thesis adds to both strands of the job satisfaction literature. Chapters three and five focus on the determinants of job satisfaction whilst chapter

four examines one of the consequences of job satisfaction. More specifically, the structure of this thesis is as follows.

Chapter two contains a review of the literature on job satisfaction; examining the definition of job satisfaction, how it is measured, theories of how it is determined, empirical evidence on how job satisfaction is determined and evidence on the outcomes that follow from job satisfaction.

Chapter three examines the relationship between job related training and job satisfaction. This chapter builds on work commissioned by the Sector Skills Development Agency (SSDA), the UK-wide body that, at the time the work was commissioned, was overseeing the UK Government's drive to increase skills and productivity in industry and business¹. The full report is available on-line² and work derived from this published in Jones et al., (2009). The chapter addresses the following research questions:

Research Question 1:

What effect does job related training have on different aspects of workers' job satisfaction?

Research Question 2:

Does this effect differ between different groups of workers?

Research Question 3:

What are the mechanisms through which training influences job satisfaction?

¹ As part of a reorganisation the Sector Skills Development Agency is now part of the UK Commission for Employment and Skills.

² <http://www.ukces.org.uk/upload/pdf/070531-r-research-report-22.pdf>. Last accessed on 26/09/2010.

This study also adds to the training evaluation literature. Most of the literature on training evaluation has focused on the effects of training on earnings, employment or firm performance. By examining the effects of training on job satisfaction on training, this chapter recognises the non-pecuniary benefits of training. HM Treasury's Green Book (HM Treasury, 2003) recommends including all benefits, pecuniary and non-pecuniary, in the evaluation of policy interventions including training. Thus, any changes in job satisfaction, and well-being more generally, resulting from training should be considered when evaluating publicly funded training programmes. To contribute to the development of such measures, the Sector Skills Development Agency commissioned the research on which chapter three is based.

Chapter four revisits the one of the main research issues in human resource management by examining the relationship between work job satisfaction and workplace performance. In particular:

Research Question 1:

Do establishments where job satisfaction is higher 'perform better' than those where job satisfaction is lower?

Research Question 2:

Does satisfaction with different aspects of job satisfaction have different effects on workplace performance?

These are important questions because if a positive relationship between job satisfaction and workplace performance cannot be established then there is little economic incentive for firms to engage in activities to increase employee satisfaction.

Chapter 5 explores the link between job satisfaction and low-paid employment in Wales building on work published in Jones and Sloane

(2007) and Jones and Sloane (2009). The chapter poses the following research questions:

Research Question 1:

Are low-paid workers less satisfied with their job than their higher paid counterparts are?

Research Question 2:

Do low-paid workers and their higher paid counterparts place different values on the different dimensions of their jobs?

As noted in the introductory paragraph, policy-makers have also become increasingly interested in the determinants of individuals' overall well-being and job satisfaction. The G20, the European Union (European Commission 2001; 2002) and the Welsh Assembly Government (Welsh Assembly Government, 2005) have adopted the pursuit of 'more and better jobs,' as a strategic goal. Studying job satisfaction can help to clarify the concept of a 'better job', to measure progress towards this goal and contribute towards the development of policies to create 'better jobs'.

The chapter considers the relationship between low-paid jobs and job satisfaction and suggests that it would be presumptuous to equate lower average incomes with lower subjective well-being, in particular, low job satisfaction. Earnings alone may not provide a complete indication of what constitutes a 'better job', at least, from a worker's subjective well-being perspective.

CHAPTER 2

Review of the Literature

In this chapter, I review the job satisfaction literature. I divide the survey into several sections. In the first section, I present some of the different definitions of job satisfaction presented in the literature. In the second section, I discuss some of the ways in which researchers have tried to measure job satisfaction and some of the issues involved in their implementation. In the third section, I summarise some of the notable theories of job satisfaction. I then present current views on the factors that determine job satisfaction before moving on to the effects of job satisfaction on other variables of interest.

1. The Definition of Job Satisfaction

One of the earliest definitions of job satisfaction was given by Hoppock (1935) who described the construct as being, “any number of psychological, physiological, and environmental circumstances which leads a person to express satisfaction with their job.”

Smith et al., (1969) defined job satisfaction as, “the feeling an individual has about his or her job.” Locke (1969) stated that job satisfaction was “a positive or pleasurable reaction resulting from the appraisal of one’s job, job achievement, or job experiences.” Vroom (1982) defined job satisfaction as “workers’ emotional orientation toward their current job roles.” Similarly, Schultz (1982) stated that job satisfaction is “essentially the psychological disposition of people toward their work.” Siegal and Lance (1987) suggested that job satisfaction is, “an emotional response defining the degree to which people like their job.”

Hulin and Judge (2003) proposed that job satisfaction includes multidimensional psychological responses to one’s job, and that such

responses have cognitive (evaluative), affective (emotional), and behavioural components.

Spector (1997) defined job satisfaction as, “how people feel about their jobs and different aspects of their jobs. It is the extent to which people like or dislike their jobs.” Spector’s definition highlights two approaches taken toward the study of job satisfaction - the global and facet approach. The global approach focuses on individuals’ attitude to the job as a whole whilst the facet approach concentrates on attitudes towards various aspects of the job. The most commonly identified facets are pay, promotions, co-workers, supervision, the work itself, recognition, working conditions, and company and management.

Another commonly made distinction is between intrinsic and extrinsic satisfaction. Intrinsic sources of satisfaction depend on the characteristics of the individual, such as the ability to use initiative, relations with supervisors, or the work that the person actually performs; these are symbolic or qualitative facets of the job. Extrinsic sources of satisfaction are situational and depend on environmental factors, such as pay, promotion, or job security; these are financial and other material rewards or advantages of a job.

Levy-Garboua and Montmarquette (2004) viewed job satisfaction as an evaluation of experience and the probability that the current job will also be the best in the future. Thus, an employee’s reported job satisfaction does not proxy utility but rather gives the individual’s judgement about doing the same job if he or she could choose again.

2. Measuring Job Satisfaction

Measuring job satisfaction is a difficult task since it is an abstract personal cognition that exists only in an individual’s mind. Wanous and Lawler (1972) argued that there is also no consensus on the best way to measure job

satisfaction because there is no agreed definition of job satisfaction and no widely accepted theory to explain it. Despite these difficulties, psychologists have developed several methods for measuring job satisfaction and life satisfaction³. The most commonly used method has been to ask people using questionnaire based methods.

Questionnaire Based Methods

The most commonly used questionnaire based method is the Likert scale (Likert, 1932). This requires respondents to select from five, seven, or nine responses to questions/statements on surveys, with the highest and lowest score indicating extreme degrees of either agreement or disagreement, and with the middle score showing neutrality. Sometimes an even number of options is used to force respondents into making a positive or negative choice. For example, the British Household Panel Study (discussed in more detail in section four of chapter five) contains the question, "All things considered, how satisfied or dissatisfied are you with your present job overall?" Individuals respond using a one to seven scale, where one represents 'not satisfied at all'; four represents 'neither satisfied nor dissatisfied' and seven represents completely satisfied'. Other less common methods for gauging job satisfaction include Yes/No questions, True/False questions, point systems, checklists, and forced choice answers.

The Job Descriptive Index (JDI), created by Smith et al., (1969), is a questionnaire that measures workers' satisfaction in five facets: pay, promotions and promotion opportunities, co-workers, supervision, and the work itself. Participants answer either yes, no, or cannot decide, in response to whether given statements accurately describes their job. The Job in General Index is an overall measurement of job satisfaction and was considered an improvement on the Job Descriptive Index because the JDI

³ Diener et al., (1999) provides a comprehensive review of the development of these measures.

focused too much on individual facets and not enough on work satisfaction in general.

Other job satisfaction questionnaires include the Minnesota Satisfaction Questionnaire (MSQ), the Job Satisfaction Survey (JSS), and the Faces Scale. The MSQ measures job satisfaction in twenty facets and has a long form with one-hundred questions (five items from each facet) and a short form with twenty questions (one item from each facet). The JSS is a thirty-six item questionnaire that measures nine facets of job satisfaction. Finally, the Faces Scale of Job Satisfaction, one of the first scales used widely, measures overall job satisfaction with just one item that participants respond to by choosing a face that corresponds to the individual's emotions towards his or her job.

Difficulties in Measuring Job Satisfaction using Questionnaire Based Methods

Several authors have pointed out the possibility of bias when answering a series of questions about job satisfaction. Rose (2005) suggested that following a series of other questions about job satisfaction, individuals might treat any summary question as another enquiry relating primarily to intrinsic job aspects. This is less likely to be the case in the British Household Panel Survey where the question about overall job satisfaction is asked first. Rose also highlighted the possibility of bias arising from individuals following a cultural norm that favours 'putting up with it' and not complaining about their job. Similarly, some psychologists claim that the answers to the satisfaction questions can be clustered around the top categories since respondents tend to report greater satisfaction levels than the real one in an effort to present themselves more favourably - social desirability bias (Konow and Early, 2002).

As noted above, Hulin and Judge (2003) view job satisfaction as being made up of multidimensional psychological responses to one's job, and that

such responses have cognitive (evaluative), affective (emotional), and behavioural components. This multidimensional perspective provides an additional complication for the measurement of job satisfaction. Questionnaire based methods will fail to capture the transitory nature of affective components. For example, it is easy to imagine someone who has just had a disagreement with a colleague reporting lower job satisfaction than they would have had that disagreement not just occurred. Similarly, psychologists report that the weather affects replies to surveys, with people reporting that they are happier or more satisfied when it is sunny. This highlights the distinction made by Kahneman et al., (2004) between instantaneous utility and remembered utility.

Interpretation of Satisfaction Measures

There is a debate about the cardinality and interpersonal comparability of subjective well-being measures. One view is that satisfaction measures are only ordinally comparable i.e. that it is unknown what the relative difference between satisfaction answers is but that all individuals share the same interpretation of each possible answer. The other view is that they are cardinal measures of the underlying subjective states. This implies that the numerical difference between any two categories has meaning by itself and this meaning is the same for all individuals.

The distinction is important since some empirical work, e.g. Blanchflower and Oswald (1999) and Hamermesh (2001), has suggested that job satisfaction has been declining in some countries. For example, Green and Tsitsianis (2005) reported that there was a small downward trend in average job satisfaction in Britain between 1972 and 1983; though Green qualified this by noting that the decline was only statistically significant between 1980 and 1983. A lack of data means it is difficult to examine the trends in job satisfaction during the 1980's. Green used data from the BHPS to examine trends in job satisfaction between 1991 and 2002. He concluded that job satisfaction generally fell between 1991 and 1999 and then followed

no significant pattern. Green's analysis of the International Social Survey Programme, the 2001 Skills Survey and the Employment in Britain Survey confirmed these patterns.

If assumption of cardinality is correct then a downward trend in job satisfaction signifies a decline in the well-being of workers, other things being equal. If the alternative view is correct and satisfaction is not the same as utility, then the reported declines in job satisfaction are of less significance, and maybe less important than the increasing inequality of job satisfaction reported in these studies.

These difficulties mean that some researchers remain sceptical as to whether self-rated well-being data is valid and reliable. Advocates of subjective well-being measures point to evidence that the measures are significantly correlated with other indicators of well-being. For instance, self-rated happiness has been found to be correlated with:

- assessments of the person's happiness by friends and family (Diener, 1984; Pavot and Diener, 1993; Sandvik et al., 1993),
- reports by spouses (Costa and McCrae, 1988),
- reports from clinical experts (Goldings, 1954),
- with memory measures, in which people must remember good versus bad events from their lives (Balatsky and Diener, 1993),
- various physical measures such as the "Duchenne" smile (Eckman et al., 1990),
- measures of stress such as heart rate and blood pressure (Shedler et al., 1993),
- life expectancy (Palmore, 1969),

- the risk of coronary heart disease (Sales and House, 1971); and
- epidemiological measures (Green and Gallie, 2002).

Alternatives to Questionnaire Based Methods

Researchers have developed several methods in an attempt to overcome the potential biases associated with questionnaire based methods. The Experience Sampling Method (ESM) collects real-time measures of well-being by requiring participants to carry a handheld computer that prompts them several times during the course of the day (or days) to answer a set of questions immediately. This may contain questions about the participant's current assessment of their job satisfaction, as well as questions about what they were doing and the people with whom they were interacting. This method has the advantage of reducing some of the cognitive biases in the reported well-being (e.g., memory bias about past well-being) normally obtained in surveys. This method is relatively expensive, however. A cheaper alternative is the Day Reconstruction Method (DRM) that asks participants to fill out a diary summarising episodes of the preceding day and to report the intensity of their feelings during each of those episodes (Kahneman et al., 2004).

3. Theories of the Antecedents of Job Satisfaction

Several theories have been proposed to explain how job satisfaction is determined. There is substantial overlap between these theories and theories of motivation. Whilst satisfaction is not the same as motivation, the majority of theorists argue that there is a very close link between the two constructs. Theories of job satisfaction and motivation can be broadly categorised into four groups: content theories, process theories, situational theories and dispositional theories. I discuss each of these in turn.

Content Theories

Content theories suggest that job satisfaction occurs when individuals have a 'need' that is met by the individual's job. Maslow (1943) presented an important early example of this type of theory. His 'Hierarchy of Needs' theory suggested people seek to satisfy five specific needs in life – physiological needs, safety needs, social needs, esteem needs, and self-actualization, in that order. Several writers have built on Maslow's work. Handy's (1981) motivation calculus addressed cognitive and external reference points that the original 'Hierarchy of Needs' model did not. Handy's model consists of three parameters:

- Needs - These include the factors identified by Maslow, personality characteristics and environmental forces.
- Results - Motivation is a measure of how much additional effort will produce an additional result.
- Effectiveness - Individuals' subjective assessment of whether the achieved results meet their needs.

Alderfer (1969) developed Maslow's theory by grouping the hierarchy into three groups: Existence, Relatedness and Growth (ERG). According to Alderfer, existence needs are those on the first two levels of Maslow's hierarchy (physiological and safety needs). Relatedness needs are social and external esteem needs such as involvement with family, friends, co-workers and employers; Maslow's third and fourth levels. Finally, growth needs are internal esteem and self-actualization (desires to be creative, productive and to complete meaningful tasks) and these correspond to the highest levels in Maslow's hierarchy.

Alderfer diverged from Maslow's work by suggesting that access to the higher levels of the hierarchy does not require satisfaction in the lower level needs. ERG theory recognizes that the relative importance of the three

categories may vary for individuals. Applied to job satisfaction, this implies that managers must recognize that an employee has multiple needs to satisfy simultaneously. According to the ERG theory, focusing exclusively on one need at a time will not effectively satisfy workers. In addition, the ERG theory acknowledges that if one of Maslow's higher-level needs remains unfulfilled, the person may regress to lower level needs that appear easier to satisfy. This is the frustration-regression principle that can affect workplace motivation. For example, if employees do not have growth opportunities then they may regress to relatedness needs and socialize more with co-workers.

Self-determination theory (SDT), developed by Deci and Ryan (1985 and 2000), focuses on the importance of intrinsic motivation in driving people's behaviour. Like Maslow's hierarchical theory and others that built on it, SDT posits a natural tendency toward growth and development. Unlike these other theories, however, SDT does not include any sort of "autopilot" for achievement, but instead requires active encouragement from the environment. The primary factors that encourage motivation and development are autonomy, competence feedback, and relatedness.

In the late 1950's, Herzberg et al., (1959) presented their 'Two Factor Theory' or 'Motivator-Hygiene Theory'. They argued that satisfaction and dissatisfaction are driven by different factors – motivation and hygiene. Motivators are, "aspects of the job that make people want to perform and provide people with satisfaction". Examples of these would be challenging work, recognition, responsibility etc. Hygiene factors are aspects of a job that do not make people satisfied, but their absence would cause dissatisfaction. Examples of these would be things such as status, job security, salary and fringe benefits. The authors further distinguish between actions individuals perform because they have to, classed as movement, and actions individuals perform because they want to, classed as motivation.

McClelland's need based theory proposes that an individual's specific needs are acquired over time and are shaped by one's life experiences. Most of these needs can be classed as achievement, affiliation, or power. A person's motivation and effectiveness in certain job functions are influenced by these three needs.

- Achievement. This is the need to be successful e.g. meeting deadlines, coming up with new ideas etc.
- Affiliation. This is the need for harmonious relationships with other people and need to feel accepted by other people.
- Power. This can be divided into personal power, the want to direct others, and institutional power (also known as social power), the want to organize the efforts of others to further the goals of the organization.

McGregor (1960) set out two contrasting attitudes toward workforce motivation called Theory X and Theory Y. Theory X is that employees inherently dislike work and will avoid it if possible. In contrast, Theory Y is based on the assumption that employees see work as a natural part of their lives, and will not only accept responsibility, but will seek out additional work and responsibility when they can. McGregor's work was based on Maslow's hierarchy of needs. He grouped Maslow's hierarchy into 'lower order' (Theory X) needs and 'higher order' (Theory Y) needs. He suggested that management could use either set of needs to motivate employees. Ouchi (1981) developed this idea in his 'Theory Z' that suggests that employees not only view work as natural, but for most people it is an important part of their lives. He believes that workers obtain feelings of self worth by doing a good job at work. Ouchi also suggested that if managers trust employees and make them feel like they are an important part of the organization, workers will respond with increased effort.

Process Theories

Process theories emphasize the cognitive processes determining an individual's job satisfaction. Within this set of theories, equity theories postulate that one important cognitive process involves individuals observing what inputs other people are putting into their work, such as effort, skill, personal sacrifice etc, and what they receive from it e.g. pay, recognition, reputation. Adam's equity theory (Adams, 1963) is based on the idea that employees seek to maintain equity between the inputs that they bring to a job and the outcomes that they receive.

Vroom's (1964) valence, instrumentality and expectancy (VIE) theory holds that satisfaction is determined by the perceived link between effort and reward. When thinking about this link, individuals are thought to calculate first whether there is a connection between effort and reward and then the probability (valences) would follow from high performance (instrumentality.)

Both theories suggest that if workers put in more effort and perform better at work, then they will expect to be compensated accordingly. The compensation does not have to be monetary, but pay is typically the most visible and most easily modified element of outcome. Discrepancies that occur between expected compensation and actual compensation lead to dissatisfaction. If employees receive less than they expect or otherwise feel as if they have been treated unfairly, then dissatisfaction may occur. Conversely, over-compensation may also lead to dissatisfaction and the employee may experience feelings of guilt. Individuals establish expectations of what is a fair reward for their inputs through a process of comparison between themselves and a social referent. The referent can be either internal or external to the organization, and sometimes themselves in another time or setting.

This theory has a number of implications. First, people measure the totals of their inputs and outcomes, rather than individual components. For example, a working parent may accept lower monetary compensation in return for more flexible working hours. Different employees ascribe personal values to inputs and outcomes. Thus, two employees of equal experience and qualifications performing the same work for the same pay may have different perceptions of the fairness of the deal. The Cornell model (Hulin et al., 1991) suggests that employees adjust their valuations to reflect purchasing power and local market conditions. For example, in times of high unemployment workers may perceive their inputs as being less valuable.

These models also imply that although it may be acceptable for more senior staff to receive higher compensation, there are limits. Thus, employees can find excessive pay to senior staff de-motivating. Staff perceptions of inputs and outcomes of themselves and others may be incorrect. An employee who believes he is under-compensated may withdraw goodwill and reduce effort. An employee who believes he is over-compensated may increase his effort. He or she may also adjust the values that he ascribes to his own personal inputs. It may be that he or she internalises a sense of superiority and actually decrease his or her efforts. The double-demotivation hypothesis implies that pay discrepancies decrease work motivation among both lower and higher paid individuals who essentially perform the same task (Carr et al., 1996 and Carr and McLoughlin, 1997).

Situational Theories

Situational theories suggest that the nature of an individual's job or other aspects of the environment determine job satisfaction. For example, Hackman and Oldham's (1976) Job Characteristics Model holds that jobs contain intrinsically motivating characteristics that lead to higher levels of job satisfaction. They argued that high satisfaction is related to experiencing three psychological states whilst working:

- Meaningfulness of work i.e. that the work has some meaning to the individuals so that it is something that the worker can relate to. This is fundamental to intrinsic motivation, i.e. that work is motivating in an end in itself rather than motivating only as a means to an end.
- Responsibility i.e. that individuals have been given the opportunity to be a success or failure at their job because sufficient freedom of action has been given to them.
- Knowledge of outcomes i.e. have an awareness of how successful their work has been.

These psychological states are derived from certain characteristics of the job:

- Meaningfulness which is derived from:
 - Skill variety i.e. the extent that an individual's job allows them to do different tasks.
 - Task identity i.e. the extent that individuals can view their job from beginning to end.
 - Task significance i.e. the individual being able to identify the task as contributing to something wider, to society or a group over and beyond the self.
- Responsibility, which is derived from the degree to which individuals have control and discretion over how to do their job.
- Knowledge of outcomes, which is derived from feedback e.g. through production figures, customer satisfaction scores, etc. According to the Job Characteristics Model, jobs that provide these

core characteristics are likely to be more satisfying and motivating than jobs that do not.

Dispositional Theory

Dispositional theory suggests that people have innate dispositions that cause them to have tendencies resulting from the personality psychology toward a certain level of satisfaction; independent of the job they have (Arvey et al., 1989; Ilies and Judge, 2003; Staw and Ross, 1985). This approach became a prominent explanation of job satisfaction in light of evidence that job satisfaction tends to be stable over time and across careers and jobs. Research also indicates that identical twins have similar levels of job satisfaction. A notable example of a model of job satisfaction based on Dispositional Theory was the 'Core Self-evaluations Model', proposed by Judge et al., (1998). They argued there are four core self-evaluations that determine one's disposition towards job satisfaction: self-esteem, general self-efficacy, locus of control, and neuroticism. This model predicts that higher levels of self-esteem (an individual's subjective appraisal of himself or herself) and general self-efficacy (the belief that one has the capabilities to execute the courses of actions required to manage prospective situations) lead to higher work satisfaction. Similarly, the theory predicts that individuals who have an internal locus of control, i.e. the belief that one has control over his own life, as opposed to outside forces having control, tend to have higher job satisfaction. Finally, lower levels of neuroticism (the tendency to have negative emotions) lead to higher job satisfaction.

This view has been supported by evidence from studies of subjective life satisfaction or 'happiness' that have suggested that there is an adaptation process to life events. This is where some event happens, for example becoming unemployed, or winning the lottery and well-being changes in the short-term but then reverts to a baseline level or 'set-point' in the long-run (Kahneman, 1999). Although there is some evidence of incomplete adaptation in the cases of unemployment (Lucas et al., 2004), severe

disability (Oswald and Powdthavee, 2005), first marriages (Zimmermann and Easterlin, 2006) and divorce (Lucas, 2005).

4. Empirical Evidence

As noted in the introduction, the last 30 years have seen a rapid expansion in the number of studies by economists examining the determinants of job satisfaction. Characteristics on both sides of the employee-job relationship have been examined to assess their impact on job satisfaction. In this section, I summarise some of the main findings from these studies.

Demographic Factors

Gender

Several authors have found that women, on average, report higher levels of job satisfaction than men (e.g. Clark, 1996; Clark, 1997; Sloane and Williams, 2000 and Long, 2005), although conflicting evidence was presented by Kaiser (2002). Women reporting higher satisfaction than men has been viewed as a strange finding since women, on average, tend to be paid less than men, receive fewer opportunities for advancement and perceive more limited access to professional development resources.

The most common explanations for the gender-satisfaction paradox emphasise the role of expectations and preferences in determining job satisfaction. Clark, (1997) argued that an identical man and woman with the same jobs and expectations would report identical job satisfaction, but women's expectations are lower than men's are. Hamermesh, (2000) argued that this paradoxical situation is most likely transitory since the difference between expectations and reality should close relatively quickly. This view was supported by Sousa-Poza and Sousa-Poza (2003) who examined differences in job satisfaction between men and women in Great Britain between 1991 and 2000. Using data from the first ten waves of the British Household Panel Survey (BHPS), their results demonstrated that women's job satisfaction has declined substantially in the past decade, whereas men's

job satisfaction has been relatively stable. The positive job-satisfaction differential in women's favour has been halved in the past decade, consistent with Clark's and Hamermesh's expectations based interpretation of the gender differences in job satisfaction. Similar findings were reported by Rose (2005), who also noted that the fall in the job satisfaction of British women has been producing substantial convergence with the job satisfaction of male employees. Rose attributed to changes in women's position in the labour market, skills, and work orientations.

Authors who have examined the job satisfaction of younger workers have provided further support for Clark's expectations hypothesis. Royalty (1998) showed that the labour force experience of younger women is more similar to that of men than for older workers, with the two genders having similar expected tenure and attachment (especially among the more highly educated). Within this younger cohort with more similar experience, one would expect very similar expectations. This is particularly true for the US compared to the UK (Dex and Shaw, 1986). Second, large-scale entry of women into the work force, including earlier male dominated fields, occurred more completely for younger workers (Blau et al., 2002). Thus, to the extent that Clark (1997) was correct and "women's higher job satisfaction may be a transitory phenomenon, caused by women's improved position in the labour force relative to their expectation", that transitory phenomenon is more likely to be absent among young women.

This hypothesis is supported by the finding that the gender satisfaction differential disappears for the young, the higher-educated, professionals and those in male-dominated workplaces, for whom there is less likely to be a gender difference in job expectations. Donohue and Heywood (2004) used the younger cohort in US National Longitudinal Survey of Youth sample and found no difference in male and female job satisfaction. They did, however, find evidence that the job satisfaction of women was less sensitive to both actual and comparison earnings than that of men. They also found

substantial gender differences in the influence of fringe benefit provision (including childcare) on job satisfaction.

Donohue and Heywood's work provides support for the situational or structural approach in the sociological literature that attributes the gender difference in job satisfaction to factors that co-vary with gender, rather than gender itself (Guttek, 1988; Kanter, 1982). Further evidence supporting this argument is provided by Bender et al., (2005), who found that women had higher job satisfaction than men and that job satisfaction tended to be higher in workplaces dominated by female workers. The authors attributed this to men and women valuing job flexibility differently and that once differences in the extent of job flexibility were accounted for, the gender composition of the workplace played no role in determining the job satisfaction of women. Thus, women in female dominated workplaces may report higher job satisfaction because they value job flexibility and so disproportionately choose to work in workplaces that provide job flexibility.

This effect varies across countries. Petrongolo (2004) highlighted differences in the effect of job flexibility across countries within 15 EU countries, using data from the European Community Household Panel Survey (ECHPS). She reported that women are over-represented in part-time jobs in all countries considered. In northern European countries, this allocation roughly reflects women's preferences and their need to combine work with childcare but in southern European countries, part-time jobs are often involuntary and provide significantly lower job satisfaction than full-time ones.

A second explanation from this sociology literature is provided by Mason (1994) who suggested that gender differences in job satisfaction are due to women's preferences for socialization, that is, women are more satisfied in jobs that include supportive and cooperative interactions with others, even if the job is not highly demanding, challenging or well-paid. This viewpoint is

based upon the assumption that women are socialized into adopting communal attributes, while men are socialized into adopting what Mason calls 'agentic' values and behaviours (Mason, 1994). Thus, women tend to work in jobs that are more 'fitting' for their gender role.

Daymont and Andrisani (1984) postulated that men are more motivated by advancing their career and making money, whilst women are more interested in opportunities to work with other people. To the extent that working with other people is easier to achieve than making a lot of money, then women are better able to realize their work goals and will be more satisfied at work.

An alternative explanation for the gender satisfaction gap is that there is a selection process in operation so that women, who have a stronger aversion to work, are more likely to self-select out of the labour market. Thus, in the young cohort men and women have more nearly equal labour market experiences and reported satisfaction. As the cohort ages, women are more likely to drop out of the labour force than men are, and those who drop out are more likely to be those who have lower job satisfaction. Thus, the comparison in later cohorts represents a more nearly random selection of men but a self-selected group of women with better than average job satisfaction. This may be particularly true where the woman in the secondary earner in a household and might find it easier to leave paid employment.

Limitations in the data and econometric methods have meant that until recently economists have not explored the process of self-selection into the labour market leading to higher satisfaction for groups who have been traditionally viewed as disadvantaged. This is an issue I return to in chapter five in the context of low-paid employment.

Age

The literature generally points towards a U-shaped relationship between age and job satisfaction with those in the very young and old age groups being the most satisfied. Clark (1996) and Clark et al., (1996) reported a statistically significant U-shaped pattern in age for several job satisfaction measures. Clark et al., (1996) also found that the U-shape relationship between age and job satisfaction is particularly strong for full-time employees and stronger for men than for women.

One explanation for this was offered by Herzberg et al., (1957), who argued that young people enter the labour market with enthusiasm because of their new situation and transition to adulthood. Increasing boredom and a perception of decreasing opportunities, however, leads to a reduction in job satisfaction; the low point is reached when workers are in their late twenties and early thirties. Later, an increase in job satisfaction occurs as workers come to terms with their labour market status, perhaps through reduced aspirations, greater awareness of their needs leading to better choices being or moves to a more rewarding occupation (Kalleberg, et al., 1983, Warr, 1992). Quinn et al., (1974) argued that older workers are more satisfied because of promotions and the acquisition of more desirable positions within organizations.

Gaziolglu and Tansel (2006) used data from the 1998 Workplace Employee Relations Survey to examine different aspects of job satisfaction, i.e. satisfaction with influence over job; satisfaction with the amount of pay; satisfaction with sense of achievement; and satisfaction with respect from supervisors. They confirmed the U-shaped relationship between age and the different facets of job satisfaction but calculate that satisfaction with the different aspects reaches a minimum at different ages. Satisfaction with influence is lowest on average when the worker is 33 years of age; satisfaction with pay is lowest on average when the individual is 36,

individuals are least satisfied with their sense of achievement when they are 22 and least satisfied with the respect they get from their supervisors at 28.

Cohort Effects

Several authors have reported declining time trends in aggregate measures of job satisfaction (Westwood, 2002; Gardner and Oswald, 2002; Hammermesh, 1999). One postulated explanation for this is that there has been a succession of increasingly dissatisfied cohorts of workers entering the labour force. This raises the question why different cohorts of individuals should exhibit different levels of job satisfaction. This question has not been addressed adequately in the literature. Glenn and Weaver (1985) suggested that the US baby boom generation cohort faced more intense competition in the labour market and so exhibit lower job satisfaction. This is consistent with the work of Jürges (2003) who tested for cohort effects by regressing the individual's specific intercepts on time-invariant variables: year of birth, immigrant status, gender and educational attainment dummies. He found that employees born around 1955 seemed to be the least satisfied with their jobs but the magnitude of the cohort effect is not large enough to alter the conclusion about the downward trend in job satisfaction in the UK.

Race

Investigations into the relationship between race and job satisfaction have proven to be inconclusive. Brush et al., (1987) found no significant racial differences when comparing fifteen job satisfaction studies; however, Weaver (1977) reported that non-whites in the USA were consistently less satisfied than Caucasian employees are. Bartel (1981) presented a study on job satisfaction by focusing on race differences in the U.S. Utilising data from the National Longitudinal Surveys (NLS) of Mature Men, she found that black workers in the sample were significantly more satisfied with their jobs in 1966, 1969, and 1971 than whites with similar personal, job, and location characteristics. She also noted that the ratio of black to white job

satisfaction rose from 0.89 to 0.98 between 1969 and 1971. While blacks earn lower full-time wages than whites earn, on average, and would therefore be expected to be less satisfied, discrimination may have also caused blacks to be satisfied with less. A finding that can be interpreted in a similar way to the gender differences in job satisfaction discussed previously.

Human Capital

The evidence regarding the relationship between human capital and job satisfaction is also mixed. Many of the earlier studies (e.g. Glenn and Weaver, 1982; Burris, 1983) found a positive relationship between education and job satisfaction. In contrast, more recent studies e.g. (Hartog and Mekkelholt 1989, Hall, 1994 and Clark and Oswald, 1996) have reported a negative relationship.

Process theories of job satisfaction suggest that one possible resolution for these findings is to look at the 'goodness of fit' between the individual and their job (Hackman and Oldham, 1980; Cavanagh, 1992). As described above, theories suggest that individuals seek to maintain equality between inputs into the jobs, effort skills etc and the rewards they receive from it, both intrinsic and extrinsic. An important part of this matching process is the education or skill level to perform a job. The recent sharp increase in the number of people graduating from higher education in the UK in the last two decades has drawn attention to this matching process in particular the phenomena of over-education, where individuals are over qualified for their job. Felstead et al., (2002) reported that in Britain the proportion of over-educated workers rose from around 31.0 per cent of workers in 1992 to 37.0 per cent in 2001. The authors attributed the increase to rapidly rising supplies of workers with middle-level qualifications, but slowly rising demand for workers qualified to this level. Over the same period, the proportion of the workers who were undereducated increased from 16.5 per cent to 17.6 per cent. Thus, there was a significant decrease in the

proportion of British workers whose qualification levels matched the levels required by their jobs. These changes are potential contributors to the declining job satisfaction reported by Green and Tsitsianis (2005).

Tsang and Levin (1985) were the first to model the relationship between over-education and job satisfaction. They argued that over-education could lead to reduced work effort, increased production costs and thus, lower productivity. They tested this argument by constructing a firm-based production model (the 'Tsang-Levin' model), they concluded that over-education, via lower job satisfaction, led to not only lower productivity at the individual level, but also lower profits at the level of the firm. Tsang et al., (1991) found that workers with educational attainment above the level required to do the job had lower job satisfaction and this is especially true among those with higher levels of educational attainment (Burriss, 1983). Tsang (1987) confirmed the relation between over-education and lower productivity.

Hersch (1991) found that over-educated workers were less satisfied and more likely to resign than adequately educated workers were. In a follow-up study, Hersch (1995) reported that over-educated workers received less on-the-job training and were more likely to be promoted. However, Battu et al.'s (2000) study of UK graduates found a negative relationship between promotion and over-education. Moreover, they found no evidence of employers upgrading the tasks given to the over-educated.

Using data on workers from Belgium, Verhaest and Omey (2004) reported that, after controlling for educational attainment, over-educated workers were less satisfied, more mobile, participated less in training and earned less than adequately educated workers earn. Buchel (2002) found no significant difference in job satisfaction between over-educated and adequately educated employees in his study of German firms. Furthermore, over educated workers were healthier, more work and career minded, had more

on-the-job training and had longer tenure than their adequately educated counterparts are. The generality of his results, however, was somewhat limited by his sample, which was restricted to those working in low skill jobs that require few formal qualifications.

Allen and van der Velden (2001) differentiated between education and skill mismatches and found only a weak relationship between the two. They found a significant negative relationship between skill mismatch and job satisfaction, while the link between education-mismatch and job satisfaction was found to be insignificant.

Groot and Maassen Van den Brink (2000) reported no significant effect from over-education on job satisfaction. Under-educated people seem to be more satisfied than those who have the right education. Cavanagh (1992) reported that job satisfaction levels fell as qualified nurses become more educated and this was due to a lack of promotion opportunities.

Maynard et al., (2006) studied three samples of employees to examine relations among various types of underemployment, job satisfaction, organizational commitment, and turnover intentions. Each dimension of underemployment was explored as a case of poor person-job fit. The authors reported that perceptions of underemployment were associated with poor job satisfaction especially for aspects with a direct causal relationship with the specific dimension of underemployment, such as over-qualification and satisfaction with work. Perceived over-qualification was also related to lower feelings of commitment, and higher quit intentions. For part-time work, negative attitudes were only found when employees expressed a preference for full-time work; a similar trend was not found for temporary workers.

An alternative explanation for the ambiguous relationship between educational attainment and job satisfaction comes from Schwartz's (2004)

'paradox of choice' theory. Individuals with higher educational attainment tend to have a wider range of job opportunities available to them and this range of choice makes them feel helpless.

Job Characteristics

Situational theories suggest that the nature of an individual's job or other aspects of the environment determine job satisfaction. For example, Hackman and Oldham's (1976) Job Characteristics Model emphasises the role of certain job characteristics in promoting job satisfaction.

Intrinsic Characteristics

The importance of the intrinsic aspects of jobs in determining job satisfaction has been confirmed in several studies. Sousa-Poza and Sousa-Poza (2000) and Skalli et al., (2007) found that having an interesting job had the greatest positive impact on job satisfaction. Similarly, Clark (2005) found that 'good job contents' which includes having an interesting job, having a job that is useful for helping other people and society, or one that makes the worker independent, had the largest impact on job satisfaction along with relations at work.

Workers' involvement in the organization has been found to have a positive influence on job satisfaction. Nathan et al., (1991) found that the more workers participated in the discussion of career issues and human resources policies, the greater was their job satisfaction. Soonhee (2002) reported that a participative management style improved workers' job satisfaction especially when it was supported with clear communication and where workers were held accountable for the consequences of their decisions (Thoms et al., 2002).

Relatedness with supervisors, colleagues and customers is intuitively appealing as a determinant of job satisfaction and this is supported by evidence from Borzaga and Depedri (2005). Sousa-Poza and Sousa-Poza

(2000) estimated that workers' relationship with management had the third largest positive impact on job satisfaction and that it was far more important than the relationship with colleagues. Moreover, Helliwell and Huang (2005) found that the relationship between managers and workers and workers' trust in management were both positively related to job satisfaction.

Dunn (1986) and Idson (1990) found that job satisfaction was lower in large companies because of the inflexibility of the work environment (e.g. less freedom to choose work and hours). Gazioglu and Tansel (2006) suggested that this was also driven by lower satisfaction with achievement in larger organizations. However, this tends to be compensated by the higher wages paid by larger companies.

Ambiguous results emerge when comparing job satisfaction in the public sector versus the private sector. Diaz-Serrano and Cabral Vieira (2005) found that workers in the public sector were more satisfied than those in the private sector, whereas Ghinetti (2007) found that the opposite. The resolution to these findings appears to be that workers in the public sector are more satisfied with job security, whilst private employees emphasise interest in the type of job.

The importance of these intrinsic factors in determining job satisfaction suggested that High Performance Work Systems (HPWS) which promote greater levels of involvement and skill development for all employees regardless of their function or level in the organization would increase job satisfaction.

Several studies have examined the determinants of the adoption of HPWS and the effects of HPWS on firm performance (see Godard and Delaney (2000) for a survey). Studies by Appelbaum et al., (2000), Freeman et al., (2000) and Bailey, et al., (2001) in the US and in the EU by Bauer (2004)

and Oriogo and Pagani (2006) have reported positive relationships between HPWS and worker satisfaction.

Authors such Askenazy and Caroli (2002), however, have argued that some characteristics of HPWS's have a negative impact on worker's job satisfaction. They cited the example of teamwork, for example, which decreases the control of a worker over the pace of work and may increase peer pressure, which in turn increases the potential of conflicts among co-workers. Similarly, managers might use organizational changes to intensify or speed up work.

Earnings

The most commonly explored relationship in the job satisfaction literature is the one between earnings and job satisfaction. Intuitively, one might expect higher earnings would lead to increased job satisfaction. However, the evidence suggests that the relationship is much more complicated than this.

First, there are differences between groups of workers. Sloane and Williams (2000) found that wage income had a positive effect on job satisfaction for both male and female workers in Britain and the effect was stronger for men than for women. Moreover, Groot and Maassen van den Brink (2000), using data from a sample of British workers in the first wave of the BHPS, found that wages had a positive effect on job satisfaction for men, but a statistically insignificant effect on female job satisfaction.

A process of comparison appears to drive much of the effect of earnings on job satisfaction. As described above, process theories attempt to explain job satisfaction by looking at how well the job meets individuals' expectations and values. People form these expectations and values, in part, by comparisons with other people and with individuals themselves at different times. This idea is not new and can be traced back to the work of Veblen

(1899) and Duesenberry (1948). Rivalry and adaptation have been identified as two psychological forces that underlie this process of comparison.

Rivalry implies that individuals are unhappy when others get a pay increase but they do not and the only situation where individuals might happily accept a pay cut is when others do the same. Experimental and survey based approaches have been used in the literature to test this hypothesis. The experimental approach involves asking individuals hypothetical questions regarding their choice among alternatives states e.g. Johansson-Stenman et al., (2002) and Solnick and Hemenway (1998). Both studies found that subjects tend to prefer situations where they are poorer, provided their relative position improved. Numerous survey-based studies have supported the hypothesis that people care about other peoples' incomes as well as their own e.g. Clark and Oswald (1996).

Habituation or adaptation means that when people's income increases it makes them feel more satisfied at first but then when they get used to it and it makes little difference. There are several pieces of evidence to support this hypothesis. Van Praag and Frijters (1999) found that a ten per cent rise in actual income led to a five per cent increase in people's perceptions of required income.

Groot and Van den Brink (1999) tested for the presence of preference drift whereby workers grow accustomed to the new and thus the effect of the wage increase on job satisfaction thus evaporates, using data from the British Household Panel Survey. The authors estimated two models: the standard ordered probit model and an extended model that allowed for preference drift. The coefficient of the wage variable in the standard ordered probit equation on job satisfaction was negative but not statistically significant, suggesting that higher wages did not increase job satisfaction. When they allowed for preference drift, however, the coefficient reversed sign and becomes statistically significant at the one per cent level, indicating

that higher wages increased job satisfaction. The positive and significant coefficient on the wage drift term supports the preference drift interpretation. Clark (1999), using the same dataset, found that in the UK job satisfaction is unaffected by the level of wages and depends only on their rate of change implying a strong negative effect of habituation coming from the previous lagged wage.

The main difficulty in testing the rivalry hypothesis is measuring what individuals perceive as their comparison income. The psychology literature suggests that such comparisons tend to be narrowly drawn. Thus, what matters is what happens to an individual's "reference group" because what the reference group gets might have been feasible for the individual. In line with Adam's Equity Theory, Major and Forcey (1985) found that individuals preferred to make comparisons within the same sex and job rather than across these dimensions. Frank (1985) showed that wage distributions within firms were much more compressed than would be expected if relative income were unimportant. Further, the incidence of piecework pay was much lower and the frequency of strikes much higher than if this was not the case.

Brown (2001), however, found that external market comparisons dominated over internal organisational comparisons. Clark (1996) found that the more an individual's spouse earned, the less satisfied the individual was with his or her own job. Moreover, if a woman's sister's husband was earning more than her own husband earned, she was more likely to enter the labour market (Neumark and Postlewaite, 1998). Hence, the evidence points to the most intense rivalry being within organizations and within families.

Luttmer (2005) also tested the rivalry hypothesis by matching individual-level data containing various indicators of well-being to information about local average earnings. He found that after controlling for an individual's own income, higher earnings of neighbours were associated with lower

levels of self-reported happiness. The panel nature of the data and the variety of measures of well-being and behaviour indicated that this association was not driven by selection or by changes in the way people define happiness.

Brown et al., (2005) extended this line of reasoning by arguing it is not only the absolute level of pay, nor by relative pay that determine satisfaction but also the skewness of wage distributions. Thus, an individual's satisfaction is determined partly by the rank-ordered position of their wage within a comparison set (e.g., whether they are the second most highly paid person in their organization, the tenth most highly paid person, etc.).

Clark et al., (2006) used International Social Survey Programme data and experimental evidence from a gift-exchange game to determine the effect of status or relative income on work effort. They found a strong effect of other people's incomes on individual effort decisions in both datasets. The individual's rank in the income distribution had a more powerful effect on effort than did others' average income, suggesting that comparisons are more ordinal than cardinal. They further showed that, after controlling for own income and income rank, the width of the relevant income distribution matters, with effort increasing in the distance from the bottom of the income distribution. Lastly, effort was also affected by comparisons over time: those who received higher income offers or had higher income rank in the past, exerted lower levels of effort for a given current income.

As noted in the first section of chapter two, Levy-Garboua and Montmarquette (2004) viewed job satisfaction as being the judgment that one would now repeat one's past experience if one had to choose again. They postulated that if individuals had full information and stable preferences then a rational person would always be satisfied with a deliberate decision made in the past. It is the occurrence of surprises in the outcomes and/or possibilities that make posterior preferences deviate from

the prior. They tested this hypothesis using a cross-section of 2,600 employed workers from the 1986 Canadian General Social Survey. The authors found that, holding other factors constant, job satisfaction correlates with the wage gaps experienced in the past and present except for younger workers. The authors attributed this to younger workers having a long planning horizon and consciously make on-the-job investments.

Chevalier and Lydon (2002) addressed two complications that arise when examining the relationship between wage and job satisfaction, that of simultaneity and the derivation of appropriate relative wage. The simultaneity problem arises because of the possibility that both wages and job satisfaction are jointly determined and, consequently, estimates could be biased. This joint determination might emerge in two ways. First, through a compensating wage differentials interpretation of individual wage differentials whereby a worker may receive a pay premium to compensate them for accepting some satisfaction reducing disamenity as part of their job. A second reason is if more satisfied workers also increase their productivity, thereby ultimately also increasing their wages. Thus, wages and job satisfaction would be simultaneously determined. The authors constructed a model in which job satisfaction and wages are determined in a system of simultaneous equations. The model was then solved using appropriate exclusion restrictions and tested using two cohorts of graduates from a sample of UK universities. The dataset contains both forward looking and backward looking information (beliefs regarding past and future financial situation) and the graduates' employment history at three points in time (the present and five/ten years in the past). Their results showed that after controlling for endogeneity, the direct wage effect on job satisfaction doubles. They also show that future wage expectations and career aspirations had a significant effect on job satisfaction.

Another notable finding is that earnings are not the most important determinant of job satisfaction. According to Sousa-Poza and Sousa-Poza

(2000), monetary compensation is the fourth most important determinant of job satisfaction. Clark (2005) found job security, having an interesting job, independence, social usefulness, etc are all more important to workers than having a high wage. Moreover, placing most value on pay at work was negatively correlated with job satisfaction (Clark 1997).

Several authors have made the point that it is not income, per se, that is important; rather it is the consumption that can be paid for using the income. Moreover, some goods are more positional in their nature. Thus, relative consumption is more important for goods such as jewellery, cars and houses compared to more non-positional goods such as bread, insurance and leisure (Hirsch 1976, Frank 1985a, 1985b).

Payment Systems

The system by which workers are paid may also influence job satisfaction. Ewing (1996), Lazear (2000), Paarsch and Shearer (2000) and Parent (1999) have provided evidence that the use of performance pay schemes by employers increases worker productivity, effort and earnings. The relationship between performance pay schemes and job satisfaction is less clear. While increased earnings are likely to increase worker satisfaction, other aspects of performance pay schemes may have the opposite effect. For example, risk-averse workers would be expected to dislike variations in earnings. Similarly, workers would be expected to dislike the performance monitoring and increased effort associated with pay schemes.

McCausland et al., (2005), investigated these concerns using data from the British Household Panel Survey (BHPS) and techniques to control for endogenous selection into profit related pay (PRP) schemes. They found that profit related pay only increased the job satisfaction of those at the top of the earnings distribution. The authors suggested that this might be due to lower-paid employees viewing PRP to be controlling, whereas higher-paid workers derive a utility benefit from it. Similarly, case studies by Drago

(1996) and Fernie and Metcalf (1999) suggested that the jobs of low-waged workers were made more stressful by computerized monitoring and piece rates. While some types of performance pay (such as profit sharing) may increase job security, others will increase earnings dispersion within the firm and may reduce perceptions of fairness or lower morale and motivation.

Representation and Job Satisfaction

A common finding in the literature is that trade union members are generally less satisfied than non-union workers are (e.g. Hamermesh, 1977; Kochan and Helfman, 1981; Bender and Sloane, 1998; Clark, 1996; Heywood et al., 2002). Economists have proposed several explanations for what can appear to be a counter intuitive result when recalling that union members tend to have higher pay and generally better working conditions.

One suggestion is that there is a sorting process in operation in which workers with lower job satisfaction are more likely to join a trade union. Similarly, those workers in workplaces with disagreeable characteristics are more likely to unionise. Borjas (1979) tested this explanation by comparing the satisfaction of workers in newly formed unions to the satisfaction of those in older, more established unions. Kochan and Helfman (1981) used two-stage least squares to control for the joint determination of union membership and job satisfaction. Both concluded that this sorting process was not able to explain the lower average satisfaction of trade union members.

A second explanation offered by Borjas (1979) is that workers in the union sector have lower job satisfaction because of flatter wage-tenure profile that arises in the presence of unions. Using data from the US National Longitudinal Survey, he cited a negative coefficient on an interaction term between unionisation and job tenure as evidence supporting this hypothesis.

A third explanation, forwarded by Duncan and Stafford (1980) is that part of the frequently observed union wage premium is actually a compensating wage differential that workers receive for accepting jobs with less favourable working conditions. According to this view, union members are less likely to be satisfied at any given wage than comparable non-union workers are. Borjas refuted this explanation on two counts, first arguing that the wage differential necessary to account for the satisfaction differential is too large and second that the union/non-union satisfaction differential will only be significant if wages are held constant and working conditions are not. In Borjas' estimates, the union satisfaction differential remained whether the wage is included in the satisfaction equation or not.

A final explanation is the exit-voice theory (Hirschman 1970; Freeman and Medoff 1984) which suggests the greater the availability of structures for employee voice, the lower will be the incidence of exit, i.e. voluntary turnover, in response to dissatisfaction in the workplace. These structures encapsulate a range of workplace practices, such as grievance procedures, self-managed work teams, employee problem-solving groups and unions.

Freeman and Medoff's (1984) application of this theory is that unions provide a voice function within organizations that leads to lower employee quit rates, thereby reducing the costs of turnover. Unions can lower quit rates by providing higher compensation, thereby improving pay satisfaction compared to similar non-union jobs and reducing the incentive to quit. Whether it is rational for the organisation to do this depends on the relative costs of lower turnover and higher compensation. Unions also may lower quit rates by providing opportunities for voice on other workplace issues through the grievance procedure and shop floor representation that allow employees to challenge management decisions and remedy unfair treatment.

Borjas argued that unionised workers will have to express their dissatisfaction 'loudly' so that firms will hear them thus they will appear to

be less satisfied in their jobs. Borjas claimed that this is not genuine dissatisfaction in the sense that it would lead to quits rather it is a mechanism by which union can tell the firm that its workers are dissatisfied and can obtain improvements in working conditions.

Kochan and Helfman (1981) supported the view that some of the dissatisfaction expressed by union members is not genuine. They reached this conclusion by comparing the effect of union on a specific aspect of the job (risk of injury) with the effect of a union on worker satisfaction with that aspect. Dissatisfaction would be viewed as genuine if it represented true differences in objective attributes of the working environment or if it had the same effect on the propensity to quit for union and non-union workers. Kochan and Helfman found that at a given actual risk of injury, union workers report greater perceived danger in their jobs than comparable non-union workers do. Moreover, they estimate that dissatisfied union workers are less likely to quit than comparable non-union workers are.

Hersch and Stone (1990) used a dataset drawn from employees of manufacturing and warehouse firms in the Oregon area in 1986 to examine the union membership – job satisfaction relationship. These firms were selected because workers and jobs in these industries are relatively similar in this region and because there is significant worker mobility across the industries. Their findings were consistent with the view that unions encourage workers to voice dissatisfaction over working conditions. They reached this conclusion because of union perceptions of working conditions did not appear genuine in the sense that they failed to reflect accurately objective measures of working conditions. Contrary to the idea proposed by Borjas, however, expressed dissatisfaction did appear genuine in the sense that it lead to the same effect on the propensity to quit as for non-union workers.

Several other studies have provided support for both union voice explanations by reporting results that show that unionized establishments have lower quit rates, even after controlling for wage rates (Freeman 1980; Cotton and Tuttle 1986; Wilson and Peel 1991; Miller and Mulvey 1991; Lincoln and Kalleberg 1996). More recent evidence, however, has provided mixed results on the nature of the union-voice effect. In a study of truckers, Delery et al., (2000) found that unions were associated with lower quit rates. This effect disappeared, however, when wages and benefits were controlled for in the analysis, leading Delery to argue that union effect operated only through its impact on compensation, rather than through voice in resolving workplace problems.

Bender and Sloane (1998) attempted to deal with the selectivity issue by using a Heckman-correction term in their job satisfaction estimates. The authors found that when they controlled for the industrial relations climate, the negative relationship between unionization and satisfaction became statistically insignificant in many cases. They concluded that union workers' relative dissatisfaction was genuine in most cases and stemmed from poor industrial relations or from unions forming where job satisfaction would be low anyway.

Bryson et al., (2005) investigated the job satisfaction effect of unionisation in Britain by developing a model that simultaneously controls for the endogeneity of union membership and union recognition. They applied their model to linked employer-employee data from The Workplace Employee Relations Survey, 1998 (WERS98). They found a negative association between membership and satisfaction only emerged when there was a union recognised for bargaining, and the effect vanished when the simultaneous selection into membership and recognition was taken into account. They also showed that ignoring endogenous recognition led to trade union membership appearing to have a positive effect on satisfaction. Their estimates indicated that the unobserved factors that lead to sorting across

workplaces were negatively related to the factors determining membership and positively related to those generating satisfaction, a result that the authors interpreted as being consistent with the existence of queues for union jobs.

Hours of Work

There is an unclear relationship between working time and job satisfaction. It might be expected that job satisfaction would be negatively related to working hours so that people with longer working hours would be less satisfied with their jobs than those working less hours are. This view is supported by (Clark 1996) who found that long hours of work reduced overall job satisfaction and reduced satisfaction with pay. The relationship is more complicated than this, however, as some studies have shown a positive relationship between job satisfaction and working time flexibility, but a negative relationship between job satisfaction and overtime work.

Francesconi and Gosling (2005) used the British Household Panel Survey to analyse the job satisfaction of part-time workers. They found that part-time workers did not appear to be more or less satisfied with their jobs than full-time workers. Female part-time workers were, however, on average, more satisfied with pay and hours than female full-time workers were, but were less satisfied with the work itself. The same research also found that men working less than 15 hours per week were generally more satisfied with their work than men working between 30 and 48 hours per week were.

There also seems to be a relationship between work-life balance and job satisfaction (Kossek and Ozeki 1998). A survey of working time preferences across Europe found that over half of employees would prefer to work fewer hours in exchange for lower earnings (EFILWC, 2001). Within Britain's workplaces, satisfaction with working hours has declined considerably over the last ten years, especially among men. In 1992, 36 per cent of male senior managers/professionals and 34 per cent of male semi

and unskilled manual workers were satisfied or completely satisfied with their working hours. By 2000, this had dropped to 16 per cent and 14 per cent respectively (Taylor, 2002).

Outcomes of Job Satisfaction

Until the late 1970's, economists had been largely sceptical about the use of subjective and attitudinal variables in favour of a revealed preference approach. However, work by authors such as Hamermesh (1977), Freeman (1979) and Borjas (1979) established that job satisfaction was strongly and consistently related to a number of objectively measurable behaviours such as job absenteeism and quitting. In this section, I discuss how measurements of job satisfaction have been used to predict other economic phenomena.

Job Satisfaction and Exits

Numerous studies have shown that dissatisfied employees are more likely to quit their jobs than satisfied employees are. Three main sets of work can be identified. In the first set researchers used simple univariate analysis, typically based on very small samples of employees. Locke (1976) and Steel and Ovalle (1984), both concluded that a negative correlation coefficient between job satisfaction and employee turnover was usually obtained. Later research, using more sophisticated multivariate techniques, looked at job satisfaction and quit intentions, e.g. Shields and Wheatley-Price (2002) for ethnic minority nurses in Britain; Antecol and Cobb-Clark (2005) for the U.S. Armed Forces; and Laband and Lentz (1998) for female lawyers in the USA. All three papers found that lower overall job satisfaction increased quit intentions.

The increasing availability of panel data, allowed a third set of more sophisticated models to be used. Freeman, (1978), Akerlof et al., (1988), Clark, et al., (1998), Ward and Sloane (2000) and Kristensen and Westergård-Nielsen (2004), amongst others have all presented evidence

supporting the hypothesis of a strong relationship between low job satisfaction and leaving a job. This is a topic I return to in chapter four.

Job Satisfaction and Performance

The relationship between workers' job satisfaction and their job performance has fascinated researchers for decades and considerable effort has been put into establishing whether a happy worker is a good worker. Although intuitively appealing, the empirical evidence on this hypothesis is mixed. Metastudies by Brayfield and Crockett (1955), Iaffaldano and Muchinsky (1985), Petty et al., (1984) and Judge et al., (2001) have all reported positive but weak correlations between job satisfaction and performance. Many of the studies in this area have reported correlations but have not established causation. I examine the relationship between job satisfaction and performance in more detail in chapter four.

Job Satisfaction and Customer Satisfaction

The simple intuition underlying this relationship is that workers who are more satisfied in their job perform their tasks in a manner that provides more satisfaction for customers either directly in the case of firms in the service sector or via high quality and/or less expensive products in manufacturing sectors. Numerous empirical studies have found a strong positive relationship (Fosam et al., 1998; Rogers et al, 1994; Schneider and Bowen, 1985 and Schneider et al., 1998). Snipes et al., (2005) reported the results of a survey of 351 employees and their 8,667 customers from the UK higher education sector. They found that employee job satisfaction was a significantly associated with improvements in service quality.

Again, there is a difficulty in establishing the direction of causation i.e. do satisfied workers lead to more satisfied customers or does working for an organization that has satisfied customers lead to more satisfied workers? In attempt to disentangle these effects, Koys (2001) used data collected from the units of a regional restaurant chain via employee surveys, manager

surveys, customer surveys and organizational records to investigate this relationship. Using cross-lagged regression analyses Koys found that human resource outcomes influence business outcomes, rather than the other way around.

Job Satisfaction and Overall Well-Being

Given the amount of time people spend in work, it is reasonable to expect that there are linkages between an individual's job satisfaction and their overall happiness (or life satisfaction). Most of the literature supports positive and significant relationship between job satisfaction and well-being. For example, Easterlin (2005) and Layard (2005) both identified job satisfaction as one of the most important determinants of an individual's happiness. In their metastudies, Judge and Wantanbe (1993, 1994) and Spector (1997) reported correlations of between 0.5 and 0.6 between job and life satisfaction.

Three main explanations have been proposed for form of the job satisfaction-life satisfaction relationship. The spillover model suggests a positive association so that satisfaction in one area of one's life spills over or generalizes to another. The compensation model postulates that the relationship between the two variables is negative so that individuals who are dissatisfied with one area will compensate by gaining satisfaction in another area. The segmentation model assumes that the two variables are unrelated. The disaggregation model asserts that the importance of work in a person's life moderates the relationship between job and life satisfaction and that the relationship is more positive for those who value work. The empirical evidence is generally supportive of the first of these models (e.g. Rice et al., 1980; Champoux, 1981; Rain et al., 1991). The implication is that the quality of one's working life is important to the overall quality of one's life.

Judge and Ilies (2004) investigated the spillover in moods experienced at work and at home. Using an experience-sampling methodology, they collected data on a sample of 74 working individuals. Their results revealed that job satisfaction affected positive mood after work and that the effect of mood at work on job satisfaction weakened as the time interval between the measurements increased. Finally, positive (negative) moods at work affected positive (negative) moods experienced later at home.

Van Praag et al., (2003) examined the connection between satisfaction with six distinct domains of life (work, health, wealth, leisure, environment and house) and overall life satisfaction. They applied a simultaneous equation model to data on 20,000 individuals from the German Socio-Economic Panel between 1992 and 1997 and found that the three main determinants of overall life satisfaction were finance, health, and job satisfaction in that order.

Rogers and May (2003) used data from a twelve year panel survey of a nationally representative sample of married individuals and structural equation modelling to investigate the process of spillover between marital quality (satisfaction and discord) and job satisfaction among married individuals. They found that increases in marital satisfaction were significantly related to increases in job satisfaction, and increases in marital discord were significantly related to declines in job satisfaction. Finally, their results indicate that these processes operated similarly for married women and married men.

Job Satisfaction as an Indicator of Job Quality

As noted in the introductory chapter, in 2001 the European Council adopted job satisfaction as a measure of job quality. It is intuitively appealing that the two are correlated. There is, however, no consensus regarding this relationship. Authors such as Diaz-Serrano and Cabral Vieira (2005), D'Addio, Eriksson and Frijters (2003) have concluded that job satisfaction

is a good indicator of job quality, whilst others such as Llorente and Macías, (2003) reached the opposite conclusion. I examine this in more detail in chapter five.

5. Conclusions

Job satisfaction may seem to be an intuitive concept that is easily understood, but the diversity of recent research on job satisfaction, still raises conceptual and methodological issues. The early research in the field had a number of important limitations.

First, analysis aimed at explaining differences in job satisfaction across individuals has often been conducted using a dependent variable constructed by averaging the ordinal responses to the questions concerning satisfaction and by doing so implicitly assuming that satisfaction is cardinal. A corollary of this is that the majority of analyses by non-economists have been conducted using ordinary least squares as their estimation technique. This method fails to take into account the ordinal nature of the dependent variable. Much of the early literature also fails to consider the importance of measurement errors in the dependent variable and the nature of the error term. Another limitation of many of the early studies is that they have been based on cross sectional data. This has meant that little consideration was given to unobservable factors determining job satisfaction such as individual differences in baseline job satisfaction levels. Similarly, it is only recently that studies have begun to adequately address issues of endogeneity and sample selection.

These limitations mean that further and more in-depth research is needed. To answer many of these questions, researchers need more and better quality data. Longitudinal and multi-level data allows a richer analysis for example, factoring out unobserved individual or workplace effects from satisfaction equations, making more convincing causal analyses possible. Even if the unobserved heterogeneity problem has been solved, problems

such as omitted time-varying variables may remain even with longitudinal data. Thus, more causal analysis in well-being research requires not only rich longitudinal dataset but also a good use of instrumental variable techniques or natural experiments to deal with the problem of omitted variables.

As indicated in the literature review, several research questions remain unanswered. Few studies have looked at the impact of training on job satisfaction despite it being an important determinant of people choosing a particular job. The relationship between job satisfaction and economic performance has not been fully established at an individual or an organisational level. Finally, the political emphasis on creating 'more and better jobs' has raised questions on whether pay alone is an adequate measure of what constitutes a better job. In this thesis, I address some of these questions using relatively new econometric techniques that overcome some of the complications discussed above.

CHAPTER 3

Training and Job Satisfaction in Britain: Evidence from the 2004 Workplace Employee Relations Survey

1. Introduction

The direct effect of job related training on earnings, employment probabilities and promotion prospects is well documented in the literature (e.g. Blundell et al., 1996; Greenhalgh and Stewart, 1987; Booth, 1991 and Booth, 1993). Less well examined is the effect of training on job satisfaction. This is surprising as many people report training opportunities as being one of the main features they consider when searching for a job. For example, 94 per cent of a sample of 17,170 individuals who graduated in 2005 from pre-92 universities, cited training and development opportunities as one of their most important considerations when they selected their first job (High Flyers, 2007). To fill this gap in the literature, I use data from the 2004 Workplace Employee Relations Survey (WERS) to examine the impact of training on the satisfaction workers derive from their jobs.

This study adds to the job satisfaction literature in a number of ways. First, unlike most of the previous studies in the area, I use linked employer-employee data that allow me to control for a wider range of workplace characteristics than most other studies. Second, I investigate the determinants of eight dimensions of job satisfaction rather than an overall measure used in many other studies. Finally, by using relatively new econometric techniques and exploiting increases in computing power, I am able to control for unobserved workplace-level heterogeneity in a way that has not generally been exploited previously.

2. Background

Several theories can be used to explain the relationship between job satisfaction and training. Content theories of satisfaction suggest that job satisfaction occurs when individuals have a 'need' that is met by the individual's job. Variants of these theories refer to constructs such as development, growth and self-actualization needs. Where training facilitates the fulfilment of these needs, training can raise job satisfaction.

Process theories attempt to explain job satisfaction by looking at how well jobs meet individuals' expectations and values (Gruneberg, 1979). Locke's (1976) discrepancy theory, Adam's (1963) equity theory and Vroom's (1964) theory of job satisfaction are all based on the idea that employees seek to maintain equity between the inputs they bring to a job such as effort, skill, personal sacrifice etc and the outcomes they receive from it such as pay, recognition training and development opportunities etc.

Along similar lines, Blau (1964) suggested that the motivational processes of social exchange theory provides incentives for employees who believe that committed organizations provide employer-sponsored training for the benefit of employees (e.g. to support career development ambitions) to reciprocate by way of attitudinal and behavioural commitments that are of benefit to the firm. The provision of funded training opportunities can thus lead to an emotional attachment to the firm and the development of a psychological contract between the firm and employees (Wright and Boswell, 2002).

Situational theories suggest that job satisfaction is determined by how well an individual's personal characteristics fit with the organizational characteristics. Quarstein et al., (1992) argued that job satisfaction is determined by two factors: situational characteristics and situational occurrences. Situational characteristics are things such as pay, supervision, working conditions, promotional opportunities, and company policies that

typically are considered by the employee before accepting the job. Situational occurrences are things that occur after taking a job that may be tangible or intangible, positive or negative. Positive occurrences might include extra vacation time or training opportunities, whilst examples of negative occurrences might include faulty equipment or poor relationships with colleagues etc.

In a similar manner, training can improve the fit between workers' skills and the requirements of the job. A mismatch between the two has been found to lower job satisfaction. For example, Hersch (1991) and Fleming and Kler (2005) found that over-educated workers tend to be less satisfied and more likely to resign than adequately educated workers are. Allen and van der Velden (2001) found a significant negative relationship between skills mismatch and job satisfaction. Chen et al., (2004) suggested that 'training offered to employees, may help them reduce their anxiety or frustration, brought on by work demands, that they are not familiar with, and they are lacking the skills to handle effectively.' In addition, Bartlett (2001) and Tannenbaum (1991) noted the importance of new employee training in shaping attitudes that trainees take with them into the workplace.

Dispositional theories suggest that people have innate dispositions that cause them to have tendencies toward a certain level of satisfaction, independent of the job they have. Judge et al.'s (1998), 'Core Self-evaluations Model' argues that there are four core self-evaluations that determine one's disposition towards job satisfaction: self-esteem, general self-efficacy, locus of control, and neuroticism. This model states that higher levels of self-esteem (a person's subjective appraisal of himself or herself) and general self-efficacy (the belief that one has the capabilities to execute the courses of actions required to manage prospective situations) lead to higher work satisfaction. A collection of papers by Hammond and Feinstein suggested that adult learning, including job related training, leads

to increases in both self-efficacy and self-esteem (e.g. Hammond, 2004; Hammond and Feinstein, 2005 and Feinstein and Hammond, 2004).

Procedural utility theory suggests that individuals not only value outcomes as usually assumed in economic theory, but also the conditions and processes leading to these outcomes (Frey et al., 2004). Training activities organized by employers are expected to improve opportunities for skill use within the firm, allowing workers to take advantage of their skills and valued abilities in an enriching environment of job content and task variation. Similarly, participation in employer provided training activities may allow workers to hold more attractive roles in the firm, improve their perceived social position, enhance self-respect and lead to higher recognition of job status and occupational prestige. These two dimensions (opportunity for skill use and valued social position) were identified by Warr (1994) as driving forces of job satisfaction . An additional factor pointed out by Warr is the opportunity of benefiting from supportive supervision. It is likely that participation in employer provided training is followed by periods of supportive management, participation in decision-making and improved support from the boss or employer, thus raising the worker's perception of the job's value.

3. Previous Research

Several studies have explored the relationship between educational attainment and skills on job satisfaction (e.g. Clark and Oswald 1996; Tsang and Levin 1985; and Battu et al., 2000). Most of the evidence suggests that after controlling for other factors, individuals with higher levels of educational attainment are relatively dissatisfied with their employment. This finding has been attributed to:

- the stress related to jobs at higher positions

- lack of control and autonomy, especially in positions that carry high levels of responsibility and
- mismatches between expectations and employment possibilities. Workers with higher educational attainments, however, tend to be more satisfied with their pay and more generally, their financial situation.

Siebern-Thomas (2005) analysed data from thirteen countries based on the European Community Household Panel Survey (ECHP) 1994-2001 and found that job satisfaction tended to be higher where there was access to training at the workplace. Bauer (2004) used data from the European Survey on Working Conditions (ESWC) covering all EU member states and found that higher involvement of workers in High Performance Work Organisations (HPWOs⁴) was associated with higher job satisfaction. He found that a skill index derived from information on the number of days of training paid for or provided by the employer in the past twelve months was positively and significantly related to job satisfaction for the fifteen countries overall, but was not significant for the UK.

Petrescu and Simmons (2008) examined the relationship between human resource management (HRM) practices and workers' job satisfaction using British data from two cross-sectional datasets, the Workplace Industrial Relations Survey (1998) and the Changing Employment Relationships, Employment Contracts and the Future of Work Survey (2000). They found that, after controlling for personal, job and firm characteristics, several HRM practices raise workers' overall job satisfaction and their satisfaction with pay. In particular, creating workplaces that embedded a culture of "on-

⁴ HPWOs are organisations that take a strategic approach towards managing people, recognising that the full benefits of workforce development can only be achieved by adopting a wide array of workplace changes and human resource practices that impact on performance. See, for instance, Becker and Huselid (1998).

going learning” in their organisation increased the probability of a worker being either completely or very satisfied by 16 percentage points, and the probability of being satisfied (as opposed to dissatisfied) by over nine percentage points. The provision of employee-funded education and training was only marginally significant, leading the authors to suggest that workers prefer continuous on-the-job instruction to off-the-job training.

Ayres and Malouff (2007) examined the effectiveness of problem-solving training for improving adjustment in individuals who have low control over their work environment. The 118 participants were randomly assigned to an intervention or control group. Ayres and Malouff’s results indicated that, when compared to the control group, those who received the problem-solving skills training reported higher job satisfaction and higher life satisfaction.

Sahinidis and Bouris (2007) examined the responses of 134 employees in five large Greek organizations to questions about attitudes to their jobs after they had completed a training programme. They found a statistically significant correlation between the employee perceptions of training effectiveness and their commitment, job satisfaction and motivation. The study was limited to examining employee feelings, not taking into account their personal characteristics.

Lowry et al., (2002) concluded that employees who received training scored significantly higher on job satisfaction surveys than those who had not. Egan et al., (2004) found that employees’ willingness to leave an organization was negatively influenced by the organization’s learning culture and employees’ job satisfaction. This confirmed Eisenberger et al.’s (1986) proposal that employees are more likely to become committed to an organization if they believe that the organization is committed to them and that management should make efforts to create a positive work environment. Using a simple regression model, Chiang et al., (2005) found

that training was positively related to job satisfaction and the intention to stay with current employers.

Similarly, studies by Gazioglu and Tansel (2006) and Shields and Ward (2001), using UK data, showed that training availability during the previous year led to higher levels of job satisfaction as compared to no training. Shields and Ward (2002) found that dissatisfaction with promotion and training opportunities have a stronger impact than workload or pay on quitting intentions. However, no further breakdown of training by, for example, recipient characteristics or funding method was attempted. Several other studies in the human resources literature also acknowledge the impact of workplace training on job satisfaction and the latter's importance for inducing organizational commitment on the part of workers, but they also highlight the need for further research to include explicitly on-the-job training as an important facet of job satisfaction (Bartlett, 2001 and Nordhaug, 1989).

Training may also raise the job satisfaction of those who provide the training. Traut (2000) reported that programmes in which more experienced workers mentor newer workers to the organization and teach specific tasks improved the job satisfaction of the experienced workers. Similarly, Hatcher (1999) reported that 'train-the-trainer' programmes for employee trainers and improved training programmes for employees had positive effects on job satisfaction.

4. Data

I use data from the 2004 Workplace Employment Relations Survey (WERS 2004) (Department of Trade and Industry, 2005) to conduct my analysis. The survey is the fifth and most recent survey in the Workplace Industrial Relations Survey (WIRS) Series. The previous studies took place in 1980, 1984, 1990 and 1998.

The sampling frame for the Survey was taken from the Inter Departmental Business Register (IDBR), maintained by the Office for National Statistics. The survey covers British workplaces with five or more employees from all industrial sectors except for establishments engaged in primary industries and private households with domestic staff. This represents around 30 per cent of all establishments in Britain (697,000 establishments). The survey covers employers of around three-quarters of all employees in Britain (15.8 million). Interviews were conducted with managers in 2,295 workplaces from an in-scope sample of 3,587 addresses, representing a response rate of 64 per cent. Fieldwork for the WERS 2004 cross-section took place between February 2004 and April 2005.

The survey was conducted at a workplace level and contained five components:

- An employee profile questionnaire. A four-page self-completion questionnaire for the main management respondent about the composition of the workforce.
- A main management interview. A face-to-face interview with a senior person at the workplace with day-to-day responsibility for industrial relations, employee relations or personnel matters.
- A survey of employees. An eight-page self-completion questionnaire distributed to a random selection of up to 25 employees in each workplace or every employee in workplaces with between 5 and 24 employees. Permission to distribute the Survey of employees questionnaires was given by managers in 1,967 (86 per cent) of the 2,295 workplaces that participated in the WERS 2004 cross-section survey. Managers distributed the questionnaires in 76 per cent of all workplaces. Around 37,000 questionnaires were distributed in 1,733 workplaces. Some 22,451 were completed and returned, representing a fieldwork response rate of 60 per cent. The

mean number of completed questionnaires returned in each workplace was 13, covering a mean of 29 per cent of the total workforce in each establishment.

- Interviews with employee representatives. Face-to-face interviews with a senior union representative and a senior non-union representative, where present.
- A financial performance questionnaire. A four-page self-completion questionnaire for the financial manager about the financial performance of the establishment.

The main advantage of this survey is that it allows the linking of responses from employees to the corresponding information about their workplaces thus enabling estimation of models using worker and workplace characteristics. In this study, I use the first three components to create a combined dataset containing information on around 2,300 workplaces and 22,500 associated employees.

Survey Design

The WERS cross-section is based on a stratified random sample of establishments and a sample of employees at those establishments. The deviation from simple random sampling means that special statistical techniques have to be applied so that correct conclusions can be drawn from any analysis.

When samples are drawn using a simple random sampling procedure, each member of the population has an equal probability of selection. In the absence of non-response biases, the resulting sample would be expected to be representative of the population from which it was drawn. When the sample of workplaces was drawn for the WERS cross-section, however, large workplaces (which are relatively uncommon in the population) were

deliberately given a higher probability of selection than smaller workplaces. Moreover, workplaces from less populated industries (such as Electricity, Gas and Water Supply) were over-sampled relative to those from more heavily populated industries (such as Wholesale and retail). Thus, the profile of resulting sample of workplaces was not representative of the population of workplaces.

Similarly, in the employees' survey, once an employee's workplace had been selected to participate in WERS, a member of staff in a small workplace had a higher probability of receiving a Survey of Employees questionnaire than an employee in a large workplace. This was because questionnaires were distributed to all employees in workplaces with between 5 and 25 employees and to only 25 employees in larger workplaces. So employees from small workplaces were over-represented in the employee sample when compared with the population for the employee survey (i.e. all employees in workplaces participating in the WERS Cross-Section).

Chaplin et al., (2005) show that, on average, for the workplace survey when compared to a simple random sample drawn with replacement,

- Stratification of the population prior to sampling tends to give smaller standard errors.
- Unequal sampling fractions across strata tend to give larger standard errors.
- Sampling without replacement tends to give smaller standard errors.
- Post-stratification tends to give smaller standard errors.

The net effect of these departures from simple random sampling drawn with replacement for most data items in the survey is to increase standard errors.

The 'design factor' statistic (DEFT) provides a measure of the amplification in sampling errors that results from using a complex sample design rather than simple random sample drawn with replacement. Chaplin et al., (2005) present calculations of a median DEFT of 1.45 among a range of estimates from the WERS Management Questionnaire, indicating that standard formulae will underestimate the size of standard errors from the WERS Management Questionnaire by around 45 per cent on average. The median DEFT for the survey of employees questionnaire was 1.59, giving a general indication of the additional impact of clustering. Thus, the use of standard formulae for variance estimation will imply that estimates from the WERS 2004 are more precise than they really are. Hence, use of alternative methods of estimating standard errors that account for the more complex sample design used in WERS is needed.

In addition to biases created by the sampling process, different rates of non-response can lead to the achieved sample not accurately reflecting the population. In the workplace survey, smaller workplaces had a lower response rate on average than larger workplaces. In the employee survey, men were less likely to respond than women were.

Weights, equal to the inverse of the probability of selection and response, are used during analysis to bring the profiles of the achieved samples of workplaces and employees into line with the profiles of their respective populations, thereby removing known biases introduced by the sample selection and response process.

Characteristics of the Sample

Employee Characteristics

Table 21 contains the descriptions and summary statistics of the variables used in my analysis. Women constitute slightly more than 51 per cent of employees in the estimation sample while just over one-quarter of the

sample are aged 50. Just over two-thirds of the employees are married and only 6 per cent are from a non-white ethnic background. The proportion of employees with disability stands at 12 per cent and just over one-third of those have a work limiting disability. One-in-six employees have no qualifications; in contrast one in five have a degree or equivalent.

Just over one-quarter of employees have been in their jobs for more than ten years. Most employees (92 per cent) are employed on permanent contracts and 79 per cent of employees are employed full-time. Nearly one-half of employees work more than 48 hours per week. More than one-half of employees (53 per cent) feel that their skills are higher than required to do their job whilst only five per cent feel that their skills are lower than required to do their job. Some 36 per cent of employees are members of a trade union. The most common occupational group in the sample is administrative and secretarial (19 per cent) whilst the least common was process plant and machine operatives (7 per cent).

Workplace Characteristics

Sixty per cent of employees work in workplaces in the private sector, 31 per cent in the public sector and eight per cent in the 'other' sector. One-in-five employees work in workplaces that were sole establishments, indicating that most workplaces are part of a multi-establishment organisation. The highest concentration of employees is in the Health Industry (16 per cent of employees) whilst the lowest is in electricity gas and water industry (2 per cent of employees). London and the South East is the region with the highest representation (28 per cent of employees) whilst East Anglia has the lowest representation (4 per cent of the sample).

Measuring Training

To measure training in my analysis, I use information based on employees' responses to the question: 'Apart from health and safety training, how much

training have you had during the last twelve months, either paid for or organised by your employer?’ Respondents were instructed only to include training where they had been given time off from their normal daily work duties to undertake the training. Thus, one limitation of the WERS 2004 data is that there is no direct information on the provision of informal (on-the-job) training, which tends to be the most common form of training. The distribution of responses to this question is illustrated in Figure 1. The figure shows that around two-thirds of workers had received some training in the previous year. Of those who had received training, the most common duration was between 2 and 5 days. This distribution is consistent with the findings of Tamkin et al., (2004) who noted that most workers spend less than five days per year undertaking formal training. In my analysis, I use this variable in its original form thus retaining information about the volume of training (measured in days) and as a binary variable equal to one if the individual has received training in the previous twelve months and zero if they have not. Although, the original form provides more variability in the explanatory variable than the binary form, this may come at the expense of potential measurement error, as workers are more likely to be able recall whether or not they have had training in the previous year than to accurately remember how much training they had received.

Table 21 also contains information on the incidence of training for different groups. The table confirms the findings of Jones et al., (2005) that the training ‘advantage’ previously enjoyed by men has now been reversed with women now more likely to participate in training. Arulampalam et al., (2004) presented evidence suggesting that the UK is not the country where this reversal has taken place.

On average, individuals aged between 20 and 40, those with higher educational attainments, those with higher hourly earnings, and those with shorter job tenures are more likely to receive training. Members of trade

unions are also more likely to receive training, as are those who work for large organisations, workplaces in the public sector, and those in service industries. Higher concentrations of these types of workplaces contribute to workers in Wales having the highest training rates in the Great Britain, followed by London and the South East. Workers in the West Midlands and East Anglia have the lowest training rates.

Not surprisingly, training rates are highest in the occupational groupings traditionally populated by higher skilled workers i.e. managers and senior officials, professional etc. Training rates are also relatively high in the personal services occupations. In contrast, training rates are relatively low in low-skilled occupations. These findings are consistent with Shield's (1998) review of the training literature.

Measuring Satisfaction

I consider six direct measures of job satisfaction and three indirect measures. The six direct measures are based on a Likert scale. Specifically, workers were asked how satisfied they were with

- the sense of achievement they get from work (achievement)
- the scope for using own initiative (initiative)
- the influence over the job (influence)
- the training they receive (training)
- the amount of pay they receive (pay) and
- the work itself (work itself).

Workers are asked to rate their satisfaction on a five point scale with one representing 'very dissatisfied'; two 'dissatisfied'; three 'neither satisfied nor dissatisfied' four 'satisfied' and five being 'very satisfied'. The distribution of responses for each of these facets is shown in **Figure 14** to **Figure 20** in Appendix 1. With the exception of satisfaction with the amount of pay they receive, the figures are skewed to the right indicating

that workers are generally satisfied with most aspects of their jobs. For each aspect, the modal response is satisfied. Around 70 per cent of workers said that they were satisfied or very satisfied with the sense of achievement they get from their job. Similar proportions are reported for the satisfaction with the scope for using their own initiative and with the work itself. Just over one-half of the workers who responded said that they were satisfied with the amount of training that they received. In contrast, just over one-third reported that they were satisfied or very satisfied with the amount of pay they received.

In addition to the direct satisfaction measures, I also examine the impact of training on three indirect indicators. In particular, individuals are asked to indicate how much they agree with the following statements:

- ‘I share the values of my organisation’ (Shared Values)
- ‘I feel loyal to my organisation’ (Loyalty) and
- ‘I am proud to tell people who I work for’ (Pride).

Workers are asked to rate their agreement on a five point scale with one representing ‘disagree strongly’; two ‘disagree’; three ‘neither agree nor disagree’; four ‘agree’; and five ‘agree strongly’. The distribution of responses for each of these facets is shown in **Figure 21** to **Figure 23** Appendix 1. Similar to the direct satisfaction measures, the distribution of the indirect measures is skewed to right, indicating generally positive feelings towards their workplace. Fifty-five per cent of workers agreed that they shared the values of their organisation; seventy per cent said that they felt loyal to their organisation and 60 per cent said that they were proud to tell people for whom they worked.

Table 1 summarises the responses for each of the questions for all workers and according to whether or not a worker received any training during the

previous twelve months. I then perform a t-test of whether differences in the mean reported level of satisfaction for these groups are statistically different and report the associated p-values in **Table 1**. The mean average values in **Table 1** reflect that distributions of responses in to Figure 14 and Figure 23 in that most workers appear satisfied with most of the dimensions considered, but the means vary across the different dimensions. Mean satisfaction with pay is lowest (2.86) by some distance relative to the other indicators, followed by mean satisfaction with training (3.32). Overall, work appears to have substantial intrinsic value to employees, with high scores being reported for autonomy, achievement and the work itself. Another notable feature is that those who have received training in the past year are significantly more satisfied on all of the measures than those who have not. While this would perhaps be unsurprising on the training dimension, this suggests that the higher mean satisfaction scores among training recipients extend to other dimensions not directly associated with training. Of course, training may facilitate greater autonomy/initiative, improve pay and be associated with greater job security, so this outcome should not be entirely unexpected.

The direction of causation may also run in the opposite direction in that those who are more satisfied with work are more likely to receive training. Dual labour market theory suggests that those who receive training may also have jobs with other desirable characteristics such as high pay, good promotion prospects, job security etc. Similarly, those who receive training may have particular demographic characteristics that are positively associated with higher job satisfaction. Thus, a multivariate modelling methodology is required to examine the job satisfaction/training relationship.

5. Methodology

The General Framework

Roy (1951) and Rubin (1974) set out the general framework for evaluating treatment effects such as the receipt of on-the-job training on some outcome of interest denoted by a random variable Y , in this case job satisfaction.

Let

Y_{1i} = job satisfaction for individual i if he or she receives on-the-job training

Y_{0i} = job satisfaction for individual i if he or she does not receive on-the-job training

$d_i = 1$ if individual receives on-the-job training

$d_i = 0$ if individual does not receive on-the-job training

The impact of training is given by: $\psi_i = Y_{1i} - Y_{0i}$.

However, for each individual the only observed outcome is:

$$Y_i = d_i Y_{1i} + (1-d_i) Y_{0i}$$

Equation 1

The fundamental problem in evaluation is to work out how individuals' job satisfaction responses were altered by the receipt of training. To do this one needs to know what the individuals' outcomes would have been had they not received the training and how this differs from what one observes. However, the counter-factual outcome is not observed and a way of estimating it must be devised.

The main parameter of interest in this framework is the population average treatment effect i.e. $\bar{\psi} = E[Y_{1i} - Y_{0i}] = E[\alpha_i]$. This is a weighted average of the average treatment effect for those who receive the policy intervention and those who do not i.e.

$$\begin{aligned}
E[\psi_i] &= E[Y_{1i} - Y_{0i}] \\
&= E[Y_{1i} - Y_{0i} | D_i = 1]P(D_i = 1) + E[Y_{1i} - Y_{0i} | D_i = 0]P(D_i = 0)
\end{aligned}$$

Equation 2

This is the expected effect of the job related training on job satisfaction would be on average for the entire population. The average effect on those who receive training is:

$$E[Y_{1i} - Y_{0i} | D_i = 1] = E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 1]$$

Equation 3

The average effect of the training on the trained ($E[\psi_i | D_i = 1]$) shows what the effect of the training is likely to be if similar groups of individuals were to receive the same training. The problem is how to estimate the average effect on those who receive the training i.e. $E[\psi_i | D_i = 1]$ when Y_{0i} is not observed for those individuals for whom $D_i = 1$.

One possibility is to use the outcomes of non-trained individuals as a measure of the outcomes of trained individuals had they not received training i.e.

$$\begin{aligned}
&E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 0] \\
&= E[Y_{1i} - Y_{0i} | D_i = 1] + E[Y_{0i} | D_i = 1] - E[Y_{0i} | D_i = 0]
\end{aligned}$$

Equation 4

However, simply comparing the observed outcomes of those who do and do not receive training yields a biased estimate of the average effect of training on the trained if the trained group would have reported different satisfaction levels than non-trained group in the absence of training, since:

$$\begin{aligned}
&E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 0] \\
&= E[Y_{1i} - Y_{0i} | D_i = 1] + E[Y_{0i} | D_i = 1] - E[Y_{0i} | D_i = 0]
\end{aligned}$$

$$= E[\psi_i | D_i = 1] + (E[Y_{0i} | D_i = 1] - E[Y_{0i} | D_i = 0])$$

Equation 5

The second right-hand-side term in Equation 5 ($E[Y_{0i} | D_i = 1] - E[Y_{0i} | D_i = 0]$) is a measure of the bias due to selection effects: i.e., that those who receive training have different untrained outcomes than do the non-trained. The solution to this problem depends on the assumptions made about the assignment of training, in particular with receipt of job related training is randomly or non-randomly assigned.

Randomly Assigned Training

If the job related training is randomly assigned i.e. D_i is independent of other variables, including reported job satisfaction Y_{0i} . This implies that:

$$E[Y_{0i} | D_i = 1] = E[Y_{0i} | D_i = 0] \text{ given this second right-hand-side term in equation Equation 5 } (E[Y_{0i} | D_i = 1] - E[Y_{0i} | D_i = 0]) = 0.$$

so

$$E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 0] = E[\Delta_i | D_i = 1] + 0$$

Equation 6

$$E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 0] = E[Y_{1i} - Y_{0i} | D_i = 1]$$

Equation 7

which is the average effect of the treatment on the treated (AETT).

This can be estimated by:

$$AETT = \frac{\sum Y_i D_i}{\sum D_i} - \frac{\sum Y_i (1 - D_i)}{\sum (1 - D_i)} = \bar{Y}_{Treated} - \bar{Y}_{Untreated}$$

Equation 8

The advantages of this approach are that it is relatively easy to calculate and the intuition underlying it is relatively straightforward. Set against these advantages are the expense of undertaking such experiments.

Non-Randomly Assigned Training

When training is non-randomly assigned alternative methods have to be used. To discuss this it is useful to introduce additional explanatory variables (X) by assuming:

$$Y_{0i} = X_i\beta_1 + \varepsilon_i$$

i.e. that satisfaction for individual i (Y_{0i}) depends on a vector of explanatory variables including a constant (X) and an error term (ε). β_1 is a vector of coefficients associated with the explanatory variables.

Thus $Y_i = \psi D_i + X_i\beta_1 + \varepsilon_i$.

When the assignment of training is non-random, dependence between D and ε , $E[D_i | \varepsilon_i] \neq 0$, can lead to a bias in the estimation of the treatment effect α . It is useful to distinguish between selection on observables – where the treated group and the non-treated group differ in ways that are observable to the econometrician – and selection on unobservables, which occurs if the treated and the non-treated differ in ways that are not observable to the econometrician. These two situations require modifications of the modelling technique. To explain this I first set out the framework for modelling the impact on satisfaction when there are unobserved workplace characteristics and then when there are unobserved worker characteristics. I will show that because of the repeated sampling from within the same workplace it is possible to control for unobserved workplace heterogeneity. Whilst controlling for the selection mechanisms determining whether or not workers receive training requires the use of alternative modelling techniques.

Modelling the Effect of Training on Satisfaction

The most commonly used method of estimating the determinants of satisfaction when satisfaction is measured on self-reported scale has been to assume that satisfaction is measured by some unobservable latent variable Y^* determined by set of explanatory variables and a disturbance term. Letting $\gamma_1 < \gamma_2 < \dots < \gamma_{Q-1}$ be unknown cut points or threshold parameters, the observed response, Y , will take the value 1 if $Y^* \leq \gamma_1$ while

$$Y = 2 \text{ if } \gamma_1 < Y^* \leq \gamma_2$$

$$Y = 3 \text{ if } \gamma_2 < Y^* \leq \gamma_3$$

...

$$Y = Q \text{ if } \gamma_{Q-1} < Y^*$$

where Q is the number of alternative responses.

Assuming an appropriate form for the cumulative density function of disturbance term, the coefficients for the covariates and the threshold parameters γ and β can be estimated by maximising the log-likelihood function summed over the sample of data. This approach, however, does not address the issue of unobserved heterogeneity. The matching process of employees to workplaces means that observed job satisfaction may not represent random phenomena. Hedeker and Gibbons (1994) show where data at one level, such as the workplace, are linked to multiple observations at a lower level, such as employees; groups of respondents share observed and unobserved workplace attributes. This violates the assumption of independence made when using regression models leading to the possibility of biased coefficient estimates. One way of accounting for this unobserved heterogeneity is by exploiting the nested structure of the using multilevel modelling techniques in particular, random-effects ordinal probability models.

These models extend the standard ordinal probability model outlined above. Following Hedeker and Gibbons (1994), let i denote the level-2 units, workplaces in the WERS 2004 data, and let k denote the level-1 units, the employees. There are N workplaces and n employees in each workplace. The random effects regression model for the latent job satisfaction is given by

$$y_{ik}^* = x'_{ik} \beta_i + w'_{ik} \alpha + \varepsilon_{ik}$$

Equation 9

where

w_{ik} is $p \times 1$ covariate vector and x_{ik} is the design vector for the r random effects. Both vectors are for the k^{th} employee nested within workplace i . Also, α is the $p \times 1$ vector of unknown fixed regression parameters; β_i is an $r \times 1$ vector of unknown random effects for workplace i and ε_{ik} are the model residuals. The distribution of the random effects is assumed to be multivariate normal distributed with mean vector μ and covariance matrix Σ_β . The residuals are assumed independently normally distributed with mean 0 and variance σ^2 . The model does not assume that workplaces have an equal number of employees.

The model can be described in terms of a multilevel or hierarchical structure. For the model is partitioned into the following within workplace model:

$$y_{ik}^* = x'_{(1)ik} b_i + w'_{(1)ik} \alpha_{(1)} + \varepsilon_{ik}$$

Equation 10

and the between workplace model:

$$b_i = \mu + w'_{(2)i} \alpha_{(2)} + \delta_i$$

Equation 11

where $w_{(1)ik}$ and $\alpha_{(1)}$ represent the fixed employee covariates and their effects and $w_{(2)ik}$ and $\alpha_{(2)}$ represent the fixed workplace covariates and their effects; and $x_{(1)ik}$ are the workplace variables allowed to vary for employees. The workplace effects b_i , are then influenced by an overall mean, μ , workplace covariates, $\alpha_{(2)}$, and a unique random component, δ_i , distributed normally with mean 0 and covariance matrix Σ_β .

The multivariate representation shows that just as employee covariates are included in the model to explain variations in employee satisfaction (y_{ik}^*), workplace characteristics are included to explain variation in workplace outcomes (b_i). In the WERS data where there is only one random effect, b_i is a scalar that represents differences due to the clusters and is modelled in terms of cluster (workplace) level variables ($w_{(2)i}$) as well as unexplained random cluster-level variation (δ_i).

Substituting Equation 11 into Equation 13 gives:

$$y_{ik}^* = x'_{(1)ik} (\mu + w'_{(2)i} \alpha_{(2)} + \delta_i) + w'_{(1)ik} \alpha_{(1)} + \varepsilon_{ik}$$

Equation 12

and then $x'_{ik} = x'_{(1)ik}, \beta_i = \mu + \delta_i,$ $w'_{ik} = x'_{(1)ik} \otimes w'_{(2)ik} ; w'_{(1)ik}$
and $\alpha = [\alpha'_{(2)} ; \alpha'_{(1)}]$. The individual covariates $w_{(2)i}$ are assumed not to influence all of the workplace level effects b_i so that the corresponding elements of the $x'_{(1)ik} \otimes w'_{(2)ik}$ partition of the covariate vector w'_{ik} are removed.

The probability that for a given workplace that $Y_k = q$ i.e. that an employee reports satisfaction in category q , conditional on β and α is given by:

$$P(Y_k = q | \beta, \alpha) = F(x'_k \beta_i + w'_k \alpha - \gamma_q) - F(x'_k \beta_i + w'_k \alpha - \gamma_{q-1})$$

Equation 13

where $F(\cdot)$ is the cumulative density function of ε .

The parameters α and β can be estimated by maximising the log-likelihood function summed over n individuals (indexed by i) as:

$$\ell(Y_i | \beta, \alpha) = \sum_{k=1}^{n_i} \sum_{q=1}^Q D_{ij} \log[P(Y_i = q)]$$

Equation 14

$$\text{where } D_{ij} = \begin{cases} 1 & \text{if } Y_{ik} = q \\ 0 & \text{otherwise} \end{cases}$$

Hedeker and Gibbons (1994) proved the computational tractability of Equation 14 when $F(\cdot)$ takes the form of a cumulative normal distribution. As noted above WERS has complex design and weights should be used when analysing the data. Hedeker and Gibbons (1994) also showed that this framework can be modified to accommodate sampling weights such as those associated with the WERS dataset. Therefore, I used the employee weights (`empwtmr`) when fitting these models.

The statistical significance of the overall regression can be tested using the Likelihood Ratio Test Procedure. L_1 is the maximum value of the likelihood of the data from the full model and L_0 is the maximum value of the

likelihood when the parameters are restricted to equal to zero. The likelihood ratio, is defined as $\omega = L_0/L_1$. The test statistic is calculated as: $\chi^2 = -2 \ln \omega$, which can be compared to percentile point of a Chi-Square distribution with k degrees of freedom corresponding to the confidence level chosen. The likelihood ratio test computes χ^2 and rejects the null hypothesis that all the assumption that all coefficients are zero if χ^2 is larger than a Chi-Square percentile with k degrees of freedom, where the percentile corresponds to the confidence level chosen by the analyst.

The model can be implemented in STATA using the suite of GLLAMM commands described by Rabe-Hesketh et al., (2004). They set out the assumptions used in this set-up including:

- independence across the k workplaces;
- the employee level error terms are normally distributed ($\varepsilon_{ik} | x_{ik} \sim N(0, \theta)$) with no correlation between error terms associated with any two different employees within a workplace, i.e. ($Cov(\varepsilon_{ik}, \varepsilon_{i'k}) = 0$ for $i \neq i'$); and
- workplace level variations are distributed normally and uncorrelated with individual/employee error terms, i.e. $\xi_{0k} | x_{ik} \sim N(0, \gamma)$ and $Cov(\xi_{0k}, \varepsilon_{ik}) = 0$, where $\theta \equiv Var(\varepsilon_{ik})$ and $\gamma \equiv Var(\xi_{0k})$.

Alternative Methods

An alternative method would have been to use the cluster option in a traditional ordered probit regression. However, this procedure does not allow the estimation and testing of the parameters measuring (shared) unobserved attributes.

A model with fixed effects at the workplace level could also have been used but the workplace dummy variables would be correlated with important workplace characteristics. Moreover, Crouchley (1995) shows

that attempts to estimate fixed effects models with the cluster effects treated as dummy variables gives rise to inconsistent estimates of the ordinal and regression coefficients.

Endogenous Selection into Training

One complication not addressed using this methodology is the possibility of endogenous selection into training. The difficulty in identifying the causal effect of job related training on worker satisfaction arises because of the potentially circular relationship between job related training and worker satisfaction. For example, if having high aspirations is negatively correlated with training receipt and if adaptation means that low aspirations lead to higher levels of satisfaction.

Simple regression techniques will only identify the impact effect of job related training on job satisfaction if the receipt of training is independent of job satisfaction given the other determinants of job satisfaction included in the regression. If training and job satisfaction are endogenous, other things being equal, then estimates of the effect training on satisfaction will be biased upwards unless the endogenous switching process is controlled for.

More formally, the endogenous switching problem, the response y_i of the i 'th individual is always observed. Moreover, y_i is assumed to depend on the endogenous dummy S_i and a $K \times 1$ vector of explanatory variables (including the constant term), x_i . Similarly, the endogenous dummy S_i depends on an $L \times 1$ vector of explanatory variables (including the constant term), z_i .

Following Miranda and Rabe-Hesketh (2006), the endogenous switching model can be written as a system of equations for two latent variables.

$$y_{it}^* = x_{it}'\beta + S_{it}\beta_k + u_{it}$$

Equation 15

$$S_{it}^* = z_{it}'\alpha + v_{it}$$

Equation 16

Equation 15 is the model of latent job satisfaction and Equation 16 is the model determining training receipt.

Where z is a vector of explanatory variables determining participation and α is the associated coefficient vector. Typically, a bi-variate normal distribution is assumed for u_{it} and v_{it} .

A shared random effect is used to induce the dependence between u_{it} and v_{it} so that:

$$u_{it} = \lambda\varepsilon_{it} + \tau_{it}$$

Equation 17

$$v_{it} = \varepsilon_{it} + \zeta_{it}$$

Equation 18

Thus

$$y_{it}^* = x_{it}'\beta + \lambda\varepsilon_{it} + \tau_{it}$$

Equation 19

$$S_{it}^* = z_{it}'\alpha + \varepsilon_{it} + \zeta_{it}$$

Equation 20

Here ε_{it} , ζ_{it} , τ_{it} are independently normally distributed with a mean zero and a variance 1, and λ is a free parameter. The covariance matrix of the residuals is given by:

$$\rho = \frac{\lambda}{\sqrt{2(\lambda^2 + 1)}}$$

Equation 21

The free parameter, λ , is identified because the data provide information on the correlation, ρ . If $\lambda = 0$ so that $\rho = 0$, individuals are randomly selected into training. This can be tested using a likelihood ratio test.

S_i is exogenous in (1) if $\rho = 0$. Consistent estimators of β and θ are then obtained by fitting model (1) with ordinary probit regression. If $\rho \neq 0$, however, this approach delivers inconsistent estimators because S_i is correlated with u_i via the unobserved heterogeneity term ε_i . The presence of this bias is why one should use an endogenous switching model if S_i is suspected to be endogenous.

Inserting a selectivity correction term into an ordinal probability model is, however, a non-standard procedure. An alternative is to transform the ordinal dependent variable so that it can be used in models that rely on the assumption of a cardinal dependent variable. The use of the ordinal models such as the ordered probit to model job satisfaction reflects the assumption that one does not know the respondents' exact feelings about their jobs, only the interval in which they belong. Authors such as Freeman (1978), however, have suggested that by using an appropriate utility transformation, researchers may be able to approximate the true evaluations of the respondents by means of a cardinal scale. For example, Freeman (1978) used a standardized z-score transformation arguing that this practice does not distort results compared to techniques that assume interpersonal ordinal comparability. Recently, other options have been explored, most notably the 'conditional mean' transform. According to this method, the researcher may approximate the unknown 'true' value of job satisfaction \tilde{JS} by its conditional mean \bar{JS} .

$$\bar{JS} = E(\tilde{JS} \leq \gamma_{i-1}) = \frac{-\phi(\gamma_{i-1})}{\Phi(\gamma_{i-1})} \text{ if JS} = 1$$

$$J\bar{S} = E(\gamma_{i-1} \leq J\tilde{S} \leq \gamma_i) = \frac{\phi(\gamma_{i-1}) - \phi(\gamma_i)}{\Phi(\gamma_i) - \Phi(\gamma_{i-1})} \text{ if } 1 < JS < 5$$

$$J\bar{S} = E(J\tilde{S} \leq \gamma_i) = \frac{\phi(\gamma_i)}{1 - \Phi(\gamma_i)}$$

This method assumes that for those individuals whose ‘actual’ responses to the Job Satisfaction questionnaire took the value one, the distribution of their ‘true’ satisfaction was truncated from above, while for those who replied with a five, it was truncated from below. For the intermediate satisfaction categories, it is assumed that the respondents’ true evaluations were truncated both from above and below, and, thus, these are approximated with the expected values of a doubly truncated normal variable (Maddala, 1983, p. 366). This approach, which Van Praag and Ferrer-i-Carbonell (2004) have called the Probit Ordinary Least Squares approach (POLS), yields approximately the same estimates as a traditional ordered probit regression, apart from a multiplying factor that stems from a different normalization. Moreover, the significance of the estimates, e.g. as evaluated by t-values, has been shown to be practically the same for both methods (see Ferrer-i-Carbonell and Fritjers, 2004; Van Praag and Ferrer-i-Carbonell, 2004, Ch. 2). One of the main advantages of this method over the ordered probit methods is that it can more easily be applied to more complicated models (e.g. sample selection or panel data). A limitation of this approach is that it relies on the selection variable being dichotomous i.e. trained or not trained and cannot be used with the original version of the training question which contains information on the volume of training.

A second limitation is that the model is only identified if the chosen identifying restrictions \mathbf{Z}_i are orthogonal to the structural model, $E(\mathbf{Z}_i' \eta_{ji}) = 0$ (the exogeneity condition), but sufficiently partially correlated with X_{ji} (the rank condition) Wooldridge (2002, p. 567). Thus, the solution to this

problem relies on finding a variable or variables that are correlated with training receipt but that are not correlated with job satisfaction.

Finding appropriate exclusion restrictions is not a straightforward and this problem has remained largely unaddressed in the job satisfaction literature. Lydon and Chevalier (2002) used spouse/partner's wages whilst McCausland et al., (2005) used a dummy variable indicating whether the spouse/partner works part-time (1-30 hours) or not in their studies of job satisfaction. Both sets of authors justify this on the grounds that features of the spouse can act as reasonable proxies for the individual's unobserved characteristics i.e. Becker's assortative matching argument (Becker 1973, 1974). This however, comes at the expense of restricting their sample to married individuals.

Pouliakas and Theodossiou (2005) in their study of the relationship between low pay and job satisfaction used information on individuals' housing conditions in the selection equation, but not in the main job satisfaction equations, to implement this approach.

An alternative approach to deriving an appropriate comparison group is presented by Leuven and Oosterbeek (2008). They argued that those who received training should be compared with those who were motivated to be trained, but who (owing to some random event) did not attend those training courses. To identify this group they used specific survey questions that ask (a) whether there was any training that the respondent wanted to attend, but did not and (b) the reason for non-participation, including more random events such as sickness. They argue that those giving a positive answer to the first, and describing a random event for the second, are the most appropriate comparison group for those undergoing training. This method relies on having a sufficiently large sample of data. In Leuven and Oosterbeek's study, the more tightly drawn comparison group contained

on only 77 respondents. This approach is not used here, as there are no questions in the WERS 2004 that permit the implementation of this approach.

6. Results

In perform my econometric modelling using show the determinants of the satisfaction measures described above, with particular reference to individual training receipt, as measured both by incidence and by volume in the previous twelve months. Each of the models estimated contains the full set of control variables shown in but for presentational reasons I only present the results on the main variables of interest in the text. Full results are presented in Appendix 1.

To implement the econometric models described here, the original five-point scale of responses was converted into three-point scales responses. Thus, the five responses for the facets of job satisfaction are ‘very satisfied’, ‘satisfied’, ‘neither satisfied nor dissatisfied’, ‘dissatisfied’ and ‘very dissatisfied’, are converted into the three scales of satisfied, neither and dissatisfied by collapsing the first and the last two responses. As noted above and illustrated in Appendix 1, most of distributions of responses to the job satisfaction questions are skewed to the right with relatively few responses in the very dissatisfied category. This led to presented convergence problems when estimating models for sub-groups using the full one to five scale.

Before examining the main variables of interest, I consider the results relating to control variables.

Employee Characteristics

Gender

The results confirm that women are more satisfied with various aspects of their jobs than men are. The coefficient estimate of the male dummy variable is negative and statistically significant for all measures except for shared values. Some of the proposed explanations for this are that women have different tastes and preferences, different comparison groups, and different expectations from their job (Clark, 1997). All of these may influence their job satisfaction.

Age

Previous research (e.g. Clark, 1996 and Clark et al., 1996) has found a statistically significant U-shaped relationship between age and overall job satisfaction. Clark et al., (1996) also found that the U-shape relationship is particularly strong for full-time employees and stronger for men than for women. This U-shaped relationship between age and satisfaction is also found in the literature on life satisfaction (e.g. Easterlin, 2003). I find that the age-satisfaction relationship varies between the different dimensions of satisfaction. Workers' feelings of loyalty and shared values increase with age.

One possibility maybe that older worker find it easier to leave the labour market, through early retirement, if they are dissatisfied. Similarly, older workers would have had more opportunities to change jobs and find a suitable job. Workers' satisfaction with the sense of achievement they get from their job also increases with age. One possible explanation for this is that older workers are more proficient at their jobs and draw more 'process satisfaction' from their work. In contrast, satisfaction with pay, training and job security decreases with age.

Disability

Workers with a work-limiting disability are generally less satisfied on all the dimensions considered. This is contrast with previous studies have shown a positive relationship between job satisfaction and health status (e.g. Clark et al., 1996 and Clark and Oswald, 1996) . Moreover, Kraiser (2002) , and Ahn and García (2004) found that health is the single most important determinant of overall job satisfaction. It is important to note that disability and health are not strictly the same thing. For example, blindness is a work-limiting disability but would not necessarily relate to very poor health status. This conflicts with the idea that disadvantaged groups in the labour market have such low expectations about obtaining any type of job that they are very happy at work when they do have a job.

Educational Attainment

An initially surprising result is that higher educational attainment is associated with lower job satisfaction. Blanchflower and Oswald (1994) suggested that higher educational attainment contributes to a higher level of income, faster promotions and the achievement of better jobs Educational attainment also contributes to a higher level of autonomy, reduces routines in the job and enhances participation in the relevant decisions of the firm, among many other aspects. This makes individuals with a higher education attainment more prone to be satisfied, both with the job and with other aspects not directly related to the job.

Nevertheless, some pieces of evidence find counterintuitive evidence: more educated individuals register a lower level of satisfaction, even after controlling for income (e.g. Clark and Oswald 1996; Tsang and Levin 1985 and Battu et al., 2000). This result has been attributed to several factors. First, individuals with a higher level of education have generally higher expectations that are more difficult to fulfil. These findings are consistent with Graham's (2010) idea of the 'frustrated achiever' where the capacity of

individuals to adapt and the mediating role of norms and expectations leads to highly educated individuals reporting lower job and life satisfaction despite having better economic prospects, health statuses etc. Second, satisfaction depends in part on the comparison with similar workers and the higher the level of education, the more disperse incomes are, reducing average job satisfaction for more highly educated workers. Third, the effect of past wages since overall satisfaction with the job diminishes with the level of education once income tends to stabilise. Finally, there is a mismatch between the skills possessed by the individual and the skills needed to do the job. However, I control for this and the negative association remains. As expected, being over-skilled or under-skilled reduces satisfaction on all the dimensions considered.

Union Membership

I find that union members are less satisfied with their jobs. Again, this is a common finding in the literature (e.g. Hamermesh, 1977; Kochan and Helfman, 1981 ; Bender and Sloane, 1998 ; Heywood et al., 2002) . This result has to be viewed with caution, however, since there may be an issue of endogeneity since dissatisfied workers are more likely to join a union. Alternatively, unions might work to compress wage structures thereby creating discontentment (Borjas, 1979 ; Hersch and Stone, 1990) . Attempts to address this question require using modelling union membership and job satisfaction separately but this is not something I deal with here.

Organisation Size and Sector

Those working in larger organisations are generally less satisfied. Dunn (1986) and Idson (1990) attributed this to the inflexibility of the work environment (e.g. less freedom to choose work and hours). However, this tends to be compensated by the higher wages paid by larger companies. Workers in the Public administration, Education, Health, and other

community services tend to be more satisfied with most aspects of their jobs except for pay.

Pay

Workers who earn £15 or more per hour are more satisfied across all the dimensions except for the amount of training that they receive. This might reflect workers' desire to increase the earnings capacity that allowed them to earn higher wages.

Hours Worked

Working long hours (over 48 hours per week) is found to be statistically significantly associated with all satisfaction measures except with 'satisfaction with pay'. These associations are positive and statistically significant mostly with the intrinsic aspects of jobs including 'satisfaction with achievement', 'satisfaction with taking own initiative', 'satisfaction with influence over the job', 'satisfaction with the work itself', and 'satisfaction with involvement in decision making'. In contrast, working long hours is found to be negatively and statistically significantly associated with extrinsic aspects of jobs including 'satisfaction with the amount of training received' and 'satisfaction with job security'.

Occupation

Relative to professional occupations, senior managers tend to be more satisfied with all the dimensions considered. In contrast, those in less skilled occupations (sales and customer service; process, plant and machine; and elementary occupations) are less satisfied with their sense of achievement, use of initiative, influence, and with the work itself. This reflects the more structured and routine nature of many of these jobs. Workers in these occupations are also less likely to share the values of their employer, to feel loyal to their organisation or to be proud of who they work for.

Other Factors

Not surprisingly, those workers in temporary jobs or employed on fixed-term contracts are less satisfied with their job security than those on permanent contracts. This is consistent with the findings of Booth et al., (2002) and Bardasi and Francesconi (2003) who using data from the BHPS, showed that British workers in seasonal-casual jobs are significantly less satisfied with their jobs than workers in permanent contracts. However, the same studies find no differences between the job satisfaction of permanent workers and those with fixed term contracts. Clark (2005) however found negative coefficient on 'temporary job' on overall job satisfaction for UK workers represented in the BHPS 1992-2002. Similarly, Greenand and Tsitsianis (2005) report a negative relationship between type of contract and job satisfaction in West Germany and UK.

Finally, workers employed in workplaces in Wales tend to have higher job satisfaction than those in other parts of the country, consistent the findings of Jones and Sloane (2009) and findings in chapter 5 of this thesis.

Training and Job Satisfaction

The coefficient estimates in **Table 2** show that having received training in the previous 12 months is positively and significantly related to all seven direct satisfaction indicators and the three indirect measures. I also report the marginal effects associated with the training measures. These show the marginal change in the probability of an individual reporting a particular satisfaction category following a marginal change in an explanatory variable. In my results, they illustrate that a worker receiving training in the last 12 months increases the probability of them reporting that they are satisfied or very satisfied, other things being equal. Not surprisingly, the relationship is strongest when considering satisfaction with the amount of training received. On average, having received training in the last year

raises the probability that a worker reports that they are satisfied or very satisfied with the amount of training received by 0.221. The effects on other dimensions range from 0.065 for job security and the work itself to 0.047 for use of initiative.

Training also engenders a sense of shared values, on average, raising the probability of agreeing or strongly agreeing with the shared values statement by 0.125. Training also increases feelings of loyalty and pride, on average raising the probabilities of agreeing or strongly agreeing with these statements by 0.082 and 0.098 respectively. All these marginal effects are significant at conventional levels and a likelihood ratio test indicates rejection of the null hypothesis that all coefficients are jointly equal to zero. The unobserved heterogeneity parameter is significant for all the measures of satisfaction used, confirming the need to use an estimation strategy that accounts for unobserved heterogeneity when modelling satisfaction using matched employee-employer data.

The results in **Table 3** show that workers who receive very short amounts of training (less than one day) in the previous year are less satisfied on several dimensions than those who received no training at all. The explanation for this is unclear. It may reflect the fact that receiving any training raises individuals' expectations, but that these are not fulfilled when only a very modest amount of training is provided. Alternatively, very short volumes may be associated with particular types of training which reflect a more regimented, bureaucratic approach to (at least some facets of) work, with a corresponding reduction in levels of satisfaction for measures such as achievement and autonomy. Sahinidis and Bouris (2007) reported that study training programme content must be perceived as effective and of value to those participating in it for it to raise job satisfaction.

Relative Amounts of Training

One of the corollaries of Kahneman and Tversky's (1979) reference dependent theory is that individuals' utility depends not just on absolute arguments but also relative arguments. This idea has been applied to the relationship between job satisfaction and pay. The idea that individuals are not just concerned with the absolute amount of pay they receive but also about where they are in the distribution of pay has been generally supported in the literature (e.g. Clark and Oswald, 1996 and Ferrer-i-Carboell, 2005). I test whether this process of comparison is also applied to training by including variables that measure the proportion of workers who placed themselves in higher categories when answering the training question.

As in the job satisfaction and pay literature, this raises the question of with whom do workers compare themselves. To examine this, I create comparison variables based on three groups: workers in the same establishment, workers in the same occupation group (at a one-digit level) and workers in the same industry. The comparison variables are constructed as the proportion of workers in the same establishment, occupation or industry who report themselves as spending more time in training than the individual concerned spends. For example, if individual *i* spent less than one day in training in the previous year, then the comparison variable at the workplace level will be the proportion of workers at the workplace that report that they received more than one day of training. Each of the three comparison variables were entered separately into each model of the job satisfaction dimensions.

The previous literature suggests that such comparisons about pay tend to be narrowly drawn (e.g. Major and Forcey 1985 ; Frank, 1987 ; Neumark and Postlewaite, 1998). I find that this is also true when making comparisons about training because of the three comparison variables

created, only the comparison with workers in the same establishment is significant. Regardless of the dimension of satisfaction considered, the higher the proportion of other workers receiving more training than the individual does, the less satisfied the individual is.

Effects by Worker Group

I then test whether training has a different effect on the satisfaction of different sets of workers. I do this by estimating separate models for different groups of workers.

The results in **Table 4** show that using the incidence measure of training, training has larger effect on the probability of being satisfied or very satisfied for men than women across all the dimensions of satisfaction considered. Not surprisingly, the largest impact for both sexes is on satisfaction with training; raising the probability by of being satisfied or very satisfied by around a quarter for men and one-fifth for women.

Next, I split the sample into three groups according to whether the worker thinks they have skills above those needed to do the job (over-skilled); skills that match the job requirements (matched-skills); or skills below those needed to do the job (under-skilled). I find that, for workers who are under-skilled, training increases the satisfaction across all dimensions of considered. In contrast, training reduces the satisfaction of those whose skills already match the requirements of the job. Training, typically, reduces the probability of being satisfied or very dissatisfied by between 0.03 and 0.05 depending on the dimension considered, but by 0.11 for satisfaction with training. The effect is even stronger for those who view themselves as being over-skilled for their jobs, thus reducing the probability of reporting that they are satisfied or very satisfied with achievement, initiative, influence, loyalty, pride and training by around one-tenth. The marginal effect on satisfaction with pay and job security is statistically insignificantly

different from zero. This suggests that the provision of training cannot be used indiscriminately as a tool for increasing job satisfaction. To increase job satisfaction, training has to be targeted at those who perceive themselves as lacking the skills needed to do their jobs.

The impact of training on satisfaction with all dimensions, except pay, is greatest for those with higher educational attainment. Whilst training has the biggest impact on satisfaction for those with a postgraduate degree or equivalent, the marginal effects for those with 'A' level or equivalent or a degree is statistically insignificant at conventional levels.

Splitting the sample by the banded age variable, I find that training has the largest positive impact on job satisfaction for those workers in the middle of the age distribution. One explanation for this might be that workers in these categories have received their initial or induction training and are now receiving training that is more relevant to their jobs. It may also be that workers in these groups have established themselves within their workplaces and have more discretion on the type of training they take. Moreover, these workers also have a longer time to capture the benefits of training, compared to workers aged 50 or above. Splitting the sample by disability status, shows that the receipt of job related training only raises satisfaction with training and satisfaction with work itself for the disabled group. Although this result should be viewed with caution since workers who have a work limiting disability only account for less than 5 per cent of the sample and as noted above, work limiting disability and health status are not strictly the same thing.

Endogenous Selection into Training

As discussed in section 4 of this chapter, the possibility of endogenous selection into training may introduce bias into the sample into the coefficient estimates. The proposed solution was to use Probit Ordinary

Least Squares approach (POLS). This approach relies on the selection variable being dichotomous i.e. trained or not trained and cannot be used with the original version of the training question that contains information on the volume of training.

The approach also relies on the availability of suitable identifying restrictions i.e. variable or variables that are correlated with training receipt but that are not correlated with job satisfaction. I experimented with several variables, such as the qualifications of the person responsible for staffing matters, whether the firms had briefing groups or quality circles that discuss training and whether the firm had investor in people status. I tested the adequacy of the restrictions by including the candidate variables as regressors in the job satisfaction equations and in probit models of training receipt. Using an F-test, none of the candidate variables satisfied the conditions of contributing to explaining training receipt but not adding any significant explanatory power to the job satisfaction equations.

Type of Training

Employees were not directly asked about the content of the training, but the WERS management questionnaire contains questions about the content of training offered to the largest occupational group. In particular, the management representative was asked whether or not the workplace provides training for the largest occupational group and if so whether the training covered any of the following:

- Computing skills
- Team-working
- Communication skills
- Leadership skills
- Operation of new equipment
- Customer service/liaison
- Health and safety

- Problem-solving methods
- Equal opportunities
- Reliability and working to deadlines
- Quality control procedures
- None of these

Similarly, whether the training had any of the following objectives:

- Improve the skills already used by employees in their current jobs
- Extend the range of skills used by employees in their current jobs
- Provide the skills needed for employees to move to different jobs
- Obtain Investors in People status or other quality standard
- Increase employees' understanding of, or commitment to, the organisation
- Some other objective(s)
- None of these

I attempted to use information from these workplace level questions as a proxy for training content at the individual, but the high degree of collinearity between these measures meant that although the coefficients were jointly significant, individual training types were not, even when the sample of workers was restricted to those in the largest occupational group.

Mechanics of the Training/Job Satisfaction Relation

Having established a positive and statistically significant association between training and all the dimensions of job satisfaction, I consider how training influences satisfaction. Training is associated with a 0.053 increase in the probability of a worker being satisfied or very satisfied with the amount of influence they have over their work. To investigate which aspects of their work training improves influence over, I make use of the questionnaire item in which employees are asked how much influence they

have over the tasks they do in their job, the pace at which they work, how they do their work, and the order in which they carry out their tasks.

In **Table 5**, I present results from multilevel ordered probit estimation of the effect of training on perceptions of influence using the incidence measure of training. The results show that training increases the probability of an employee reporting that they have a lot of influence over the tasks they do by 0.025 and over the order in which they carry out their tasks by 0.035. The associations with other dimensions are not statistically significant.

In **Table 6**, I present results from a similar model but this time making use of answers indicating, on a one-to-five scale, how much workers agree with each of these statements:

- My job requires that I work very hard
- I never seem to have enough time to get my work done
- I feel my job is secure in this workplace
- I worry a lot about my work outside working hours.

The results show that training is associated with increases in the perceptions of job security by 0.051. This is consistent with the idea of training improving employability or feelings of loyalty from the employer to the worker. Training is also associated with a reduction in the probability of ‘worrying about work outside working hours’ of 0.02. In contrast, training is associated with a 0.026 increase in the probability of having perceptions of needing to work hard and an increase of 0.017 in the probability that the employee does not have enough time to get their work done. There may be selection effects in operation here as those workers who tend to work hardest or longest are in jobs that provide more training. Including the intermediate outcome variables as explanatory variables did not change the direction and significance of estimates presented in previous tables.

7. Conclusions

Main Findings

In this paper, I have examined the impact of receiving employer-based training on individual job satisfaction. Using a cross section of matched employee-employer data from UK workplaces, and using statistical techniques that allow me to control for the multi-level nature of the data, the complex sample design and the ordinal nature of the dependent variable, I have found clear evidence that training is positively and significantly associated with various measures of job satisfaction. This result is significant for all the dimensions of job satisfaction considered even after controlling for a range of employee and workplace characteristics. Moreover, the effect increases with the volume of training and the effect varies across different groups of workers.

Clark et al., (2009), concluded that job satisfaction is also influenced by processes of social comparison and the perception of other worker's situations and rewards. I have also found that training is one of the aspects considered by workers with the satisfaction they receive from training also depending in part on the amount of training other workers receive, particularly those in the same workplace.

Implications

Conventional estimates of the rate of return to training focus on the monetary rewards to training through higher productivity and pay. Evidence reported by the OECD (2004) and Bassanini et al. (2005) suggests that private returns to training are below 5% in most cases workers. These figures are based on broad definitions of training. Comparisons that are more meaningful can be made by considering studies that focus on firm-provided training. Parent (1999) and Blundell et al. (1999) report wage returns to training range in the range of 3% to 12% depending on whether

instrumental variables or fixed effects are used in the estimation. These returns are slightly lower in Pischke (2001), who finds that one year of full-time, work-related training increases wages by between 2.6% to 3.8%. Goux and Maurin (2000) found that an initial return of 7.1% drops to -5.7% after considering selectivity issues. Similarly, In Leuven and Oosterbeek (2008), an initial 9.5% falls to a return that is close to zero when unobserved heterogeneity is taken into account.

This research suggests that a full evaluation of the benefits of a training programme, by firms or as a government programme, should include the positive impact of training on worker well-being. My estimates already control for labour earnings so that some of the variation in job satisfaction due to an increase in earnings as a result of participation in a training programme is already netted out from the training coefficient. This coefficient therefore largely focuses on the intangible, non-pecuniary benefits of the programme, showing that training brings important benefits for the worker in addition to wage and productivity returns. More importantly, these subjective benefits are found to be remarkably larger than the objective ones.

Ferrer-i-Carbonell and van Praag (2002), Van de Berg and Ferrer-i-Carbonell (2007) and Verhaest and Omey (2009) show that, under certain assumptions, well-being equations can be used to empirically estimate indifference curves in terms of the various dimensions that are relevant to evaluating well-being. Thus in principle, responses to job satisfaction could be used to calculate the trade-off ratio between training and labour income. This ratio is an estimate of the income variation that is needed to affect job satisfaction to the same extent as participation in training does. The earnings data in WERS is banded and it is therefore difficult to do this calculation using this dataset.

In the literature on High Performance Work Systems (HPWS), training is considered part of a larger package of human resource practices aimed at protecting and enhancing a firm's investment in human capital. Much of the current debate centres on identifying what practices are more relevant along this dimension. The results in this chapter suggest that training should be one of the components of a successful HPWS, insofar as it is closely related to job satisfaction among specific groups of workers.

The results also provide several insights into how training programmes should be implemented within firms. First, firms should consider the coverage of training provision across all its employees. An unequal distribution of training between workers will tend to reduce the satisfaction of those workers who receive relatively less training. Second, for training to be effective in increasing job satisfaction training, employers should aim to close gaps between the skills required for jobs and the skills possessed by the individuals. Providing training to those workers who already have the skills required for their jobs or who are over-skilled is associated with reductions in worker satisfaction.

There is evidence to suggest that as much as between 50 per cent and 70 per cent of the productivity effects from training are not realized by individuals, with firms extracting considerable rents from their human capital investments (OECD, 2004). The larger returns found with the subjective method would be consistent with workers internalizing part of these firm effects.

Limitations of the Study

The results presented above have several limitations. First, the above estimates are based on cross-sectional data. This means that I cannot control for unobserved worker heterogeneity and cannot claim to identify definitively the causal relationship between training and job satisfaction.

The absence of suitable exclusion restrictions meant that I was unable to model the possible endogeneity of training.

Further research is required before models for explaining job satisfaction can be specified with certainty. Estimation using panel data would allow one to establish causal relationships by following individuals over time and investigating how the job satisfaction of the same people changes when they take part in training schemes. Moreover, panel estimation allows one to control for individual effects, thereby addressing the unobserved heterogeneity issue.

Finally, this study only considers one particular type of training. Analysis of the UK Labour Force Survey by Cheung and McKay (2010) showed that in 2008, 27 per cent of all respondents in employment reported they had received training in the preceding 13 weeks. The majority who received training in the last 13 weeks said the course was related to the jobs they had. Among all respondents who received training in the last four weeks, 37 per cent of them reported they had ‘on the job training’ and 45 per cent said that training was away from the job, while 18 per cent said they had both.

Not all training took place at employers’ premises, or was offered and paid for by employers. Just over half (57 per cent) said their training was offered and paid for by their employers; 20 per cent said they, or their family and relative paid for it and 12 per cent of them received funds from government or local authorities.

The definition of training considered in this study is wide enough to capture a range of different types of training. Further research could explore in more detail the different types of training and how training is delivered affects job satisfaction. Rowden and Conine (2003) and Schmidt (2007) have argued

that training had the largest impact on job satisfaction when the methodology used was the one that employees felt was most effective in helping them to learn. Schmidt reported that instructor-led training was the methodology most often received by respondents, and was the most preferred methodology. The second and third most preferred choices were one-on-one training and job shadowing but these used less often. Self-study, including video-based training, and online or computer-based training were the least preferred methodologies. Schmidt attributes this preference ordering to trainees valuing the interaction between an instructor or coach and other trainees.

The impact of training on job satisfaction may depend on the type of skills developed by the training, in particular whether the skills are general or specific. The portability of general skills may raise job satisfaction, as it is easier to move to other jobs where satisfaction is higher. General skills also provide an insurance against unemployment since those worker's with general skills are likely to have shorter search times than those without skills. In contrast, specific skills bind the worker to the firm and may reduce satisfaction by creating a barrier to exit, as workers will lose a portion of the return on such skills if they move. Barrett and O'Connell (1998) suggested that vocational training has the greatest impact on wages and productivity when it is specific to the firm providing it. The effect on job satisfaction may follow similar patterns. Similarly, the funding of training and whether the training leads to a recognised qualification may affect job satisfaction.

Moreover, is the relationship between training and job satisfaction maintained overtime? The process of adaptation identified in the well-being literature could mean that may be workers get used to having a particular amount of training and require additional training to maintain satisfaction levels. Further research, could examine how education or training affects wider aspects of well-being.

8. Figures and Tables

Figure 1: The Distribution of Training Spells

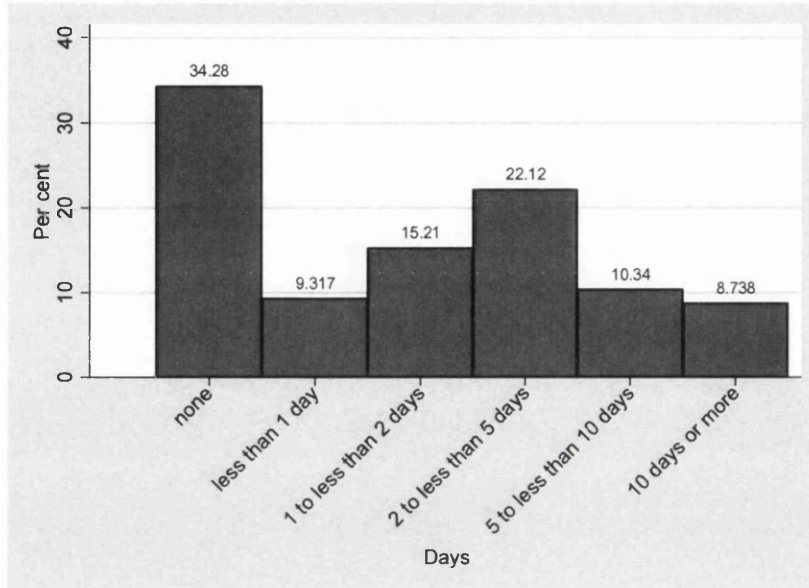


Table 1: Tests of Difference in Average Satisfaction between Those Receiving and Not Receiving Training in Previous Twelve Months

	Mean response for:			P-Value
	All Employees	Those employees who received training	Those employees who did not receive training	
<i>Direct Measures</i>				
Satisfaction with:				
Achievement	3.76	3.81	3.66	0.000
Initiative	3.77	3.84	3.70	0.000
Influence	3.53	3.56	3.46	0.000
Training	3.32	3.48	2.97	0.000
Pay	2.86	2.92	2.75	0.000
Job security	3.56	3.61	3.46	0.000
Work itself	3.77	3.82	3.69	0.000
<i>Indirect Measures</i>				
Shared Values	3.53	3.64	3.32	0.000
Loyalty	3.79	3.85	3.66	0.000
Pride	3.65	3.74	3.49	0.000

Table 2: Multilevel Ordered Probit Estimates of the Effect of Training on Job Satisfaction Using the Incidence Measure of Training

Satisfaction Dimension	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Achievement	0.163*** (0.026)	-0.026*** (0.004)	-0.030*** (0.005)	0.056*** (0.009)
Initiative	0.140*** (0.026)	-0.022*** (0.004)	-0.024*** (0.005)	0.047*** (0.009)
Influence	0.135*** (0.025)	-0.028*** (0.005)	-0.025*** (0.004)	0.053*** (0.010)
Training	0.562*** (0.024)	-0.170*** (0.008)	-0.051*** (0.002)	0.221*** (0.009)
Pay	0.136*** (0.024)	-0.053*** (0.009)	0.003*** (0.001)	0.050*** (0.009)
Job security	0.174*** (0.026)	-0.037*** (0.006)	-0.028*** (0.004)	0.065*** (0.010)
Work itself	0.193*** (0.026)	-0.029*** (0.004)	-0.035*** (0.005)	0.065*** (0.009)
Shared Values	0.315*** (0.025)	-0.059*** (0.005)	-0.066*** (0.005)	0.125*** (0.010)
Loyalty	0.238*** (0.026)	-0.038*** (0.004)	-0.044*** (0.005)	0.082*** (0.009)
Pride	0.252*** (0.025)	-0.044*** (0.005)	-0.053*** (0.005)	0.098*** (0.010)

Notes: All models contain the full set of control variables. Standard errors in parentheses. Full tables of results are included in Appendix 1. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level.

Table 3: Multilevel Ordered Probit Estimates of the Effect of Training on Job Satisfaction Using the Volume Measure of Training

VARIABLES	Achievement	Initiative	Influence	Training	Pay	Job security	Work itself	Shared Values	Loyalty	Pride
Coefficient Estimates										
< 1 day	-0.070*	-	-0.064	0.096**	-0.003	0.003	-0.023	0.069*	0.047	0.026
	(0.039)	(0.041)	(0.040)	(0.039)	(0.040)	(0.039)	(0.038)	(0.040)	(0.040)	(0.038)
1 to < 2 days	0.039	0.054*	0.073**	0.362***	0.068**	0.090***	0.075**	0.229***	0.128***	0.145***
	(0.031)	(0.031)	(0.030)	(0.031)	(0.031)	(0.030)	(0.031)	(0.032)	(0.031)	(0.031)
2 to < 5 days	0.216***	0.200***	0.199***	0.623***	0.190***	0.191***	0.227***	0.361***	0.228***	0.278***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.030)	(0.030)	(0.029)	(0.030)	(0.029)
5 to < 10 days	0.227***	0.240***	0.174***	0.867***	0.183***	0.264***	0.199***	0.373***	0.285***	0.323***
	(0.039)	(0.038)	(0.038)	(0.038)	(0.037)	(0.039)	(0.040)	(0.038)	(0.039)	(0.037)
> 10 days	0.381***	0.292***	0.313***	1.175***	0.246***	0.379***	0.364***	0.497***	0.378***	0.454***
	(0.043)	(0.041)	(0.040)	(0.046)	(0.041)	(0.041)	(0.042)	(0.042)	(0.041)	(0.042)
Marginal Effects										
P(Dissatisfied or very dissatisfied)										
< 1 day	0.005	0.013*	0.014	-0.023**	0.004	-0.001	-0.006	-0.016**	-0.013**	-0.011*
	(0.007)	(0.008)	(0.009)	(0.011)	(0.017)	(0.009)	(0.006)	(0.007)	(0.006)	(0.007)
1 to < 2 days	-0.012**	-	-	-	-0.032**	-	-	-	-	-
	(0.005)	(0.014***)	(0.020***)	(0.091***)	(0.013)	(0.025***)	(0.018***)	(0.041***)	(0.025***)	(0.029***)
2 to < 5 days	-0.035***	-	-	-	-	-	-	-	-	-
	(0.005)	(0.033***)	(0.038***)	(0.160***)	(0.076***)	(0.038***)	(0.036***)	(0.061***)	(0.038***)	(0.047***)
5 to < 10 days	-0.037***	-	-	-	-	-	-	-	-	-
	(0.005)	(0.036***)	(0.033***)	(0.183***)	(0.066***)	(0.054***)	(0.029***)	(0.061***)	(0.045***)	(0.051***)
> 10 days	-0.043***	-	-	-	-	-	-	-	-	-
	(0.005)	(0.034***)	(0.054***)	(0.204***)	(0.100***)	(0.062***)	(0.040***)	(0.064***)	(0.047***)	(0.057***)
P(Neither dissatisfied nor satisfied)										
< 1 day	0.006	0.014*	0.012	-0.010*	-0.000	-0.001	-0.008	-0.022**	-0.016*	-0.015
	(0.008)	(0.008)	(0.008)	(0.006)	(0.001)	(0.007)	(0.008)	(0.010)	(0.009)	(0.009)
1 to < 2 days	-0.015**	-0.017**	-	-	0.001***	-	-	-	-	-
	(0.007)	(0.007)	(0.020***)	(0.052***)	(0.000)	(0.021***)	(0.024***)	(0.060***)	(0.034***)	(0.041***)
2 to < 5 days	-0.046***	-	-	-	0.001*	-	-	-	-	-
	(0.007)	(0.041***)	(0.040***)	(0.102***)	(0.001)	(0.033***)	(0.051***)	(0.092***)	(0.052***)	(0.070***)
5 to < 10 days	-0.052***	-	-	-	0.000	-	-	-	-	-
	(0.009)	(0.047***)	(0.036***)	(0.157***)	(0.000)	(0.051***)	(0.041***)	(0.103***)	(0.066***)	(0.084***)
> 10 days	-0.062***	-	-	-	-0.002	-	-	-	-	-
	(0.009)	(0.044***)	(0.064***)	(0.198***)	(0.002)	(0.061***)	(0.060***)	(0.113***)	(0.071***)	(0.097***)
P(Satisfied or very satisfied)										
< 1 day	-0.011	-0.028*	-0.025	0.033**	-0.004	0.002	0.014	0.038**	0.029**	0.026*
	(0.015)	(0.016)	(0.017)	(0.017)	(0.016)	(0.017)	(0.015)	(0.017)	(0.015)	(0.016)
1 to < 2 days	0.027**	0.031***	0.041***	0.142***	0.031**	0.046***	0.042***	0.101***	0.059***	0.070***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.014)	(0.012)	(0.013)
2 to < 5 days	0.081***	0.074***	0.078***	0.262***	0.075***	0.071***	0.087***	0.153***	0.091***	0.117***
	(0.011)	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.010)	(0.012)	(0.011)	(0.012)
5 to < 10 days	0.089***	0.083***	0.069***	0.340***	0.065***	0.106***	0.070***	0.163***	0.111***	0.135***
	(0.014)	(0.013)	(0.016)	(0.013)	(0.015)	(0.015)	(0.014)	(0.016)	(0.013)	(0.015)
> 10 days	0.106***	0.078***	0.118***	0.401***	0.102***	0.123***	0.100***	0.177***	0.119***	0.154***
	(0.014)	(0.014)	(0.016)	(0.012)	(0.017)	(0.014)	(0.014)	(0.016)	(0.013)	(0.016)

Notes: All models contain a full set of control variables. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 4: Marginal Effect on the Probability of being Satisfied or Very Satisfied for Different Groups the Using Incidence Measure of Training

Group	Achievement	Initiative	Influence	Training	Pay	Job security	Work itself	Shared Values	Loyalty	Pride
Gender:										
Males	0.075*** (0.013)	0.064*** (0.013)	0.071*** (0.014)	0.251*** (0.014)	0.071*** (0.012)	0.087*** (0.013)	0.101*** (0.013)	0.148*** (0.014)	0.100*** (0.012)	0.126*** (0.013)
Females	0.038*** (0.012)	0.028** (0.012)	0.031** (0.013)	0.197*** (0.014)	0.029** (0.013)	0.034** (0.013)	0.030** (0.012)	0.098*** (0.014)	0.048*** (0.013)	0.069*** (0.013)
Skills/Job Match:										
Underskilled	0.055*** (0.012)	0.064*** (0.012)	0.061*** (0.013)	0.239*** (0.013)	0.046*** (0.011)	0.074*** (0.013)	0.067*** (0.012)	0.129*** (0.013)	0.089*** (0.012)	0.106*** (0.013)
Matched Skilled	-0.037*** (0.010)	- (0.010)	- (0.012)	- (0.013)	- (0.012)	-0.029** (0.013)	- (0.011)	- (0.012)	- (0.011)	- (0.011)
Overskilled	-0.120*** (0.039)	- (0.036)	- (0.034)	-0.091** (0.039)	-0.045 (0.034)	-0.057 (0.038)	- (0.033)	-0.041 (0.032)	- (0.034)	-0.091** (0.037)
Highest Qualification:										
None	0.048** (0.019)	0.043** (0.020)	0.029 (0.022)	0.209*** (0.023)	0.052** (0.021)	0.061*** (0.022)	0.084*** (0.019)	0.153*** (0.023)	0.104*** (0.019)	0.115*** (0.022)
Other	-0.002 (0.032)	0.047 (0.030)	0.081** (0.034)	0.192*** (0.035)	0.083** (0.033)	0.008 (0.032)	0.063** (0.030)	0.129*** (0.036)	0.013 (0.032)	0.046 (0.033)
CSE or equivalent	0.068*** (0.026)	0.055** (0.025)	0.054* (0.029)	0.173*** (0.029)	0.068** (0.028)	0.058** (0.028)	0.040 (0.026)	0.129*** (0.029)	0.077*** (0.025)	0.076*** (0.028)
O level or equivalent	0.051*** (0.017)	0.039** (0.016)	0.050*** (0.018)	0.217*** (0.018)	0.069*** (0.017)	0.067*** (0.018)	0.055*** (0.016)	0.113*** (0.018)	0.078*** (0.017)	0.116*** (0.018)
1 A level or equivalent	0.041 (0.034)	0.052 (0.037)	-0.000 (0.040)	0.230*** (0.041)	0.062 (0.039)	-0.010 (0.041)	-0.012 (0.035)	0.160*** (0.040)	0.059* (0.034)	0.098** (0.038)
2+ A level or equivalent	0.082*** (0.030)	0.035 (0.030)	0.053 (0.033)	0.230*** (0.033)	-0.023 (0.029)	0.034 (0.031)	0.050* (0.030)	0.102*** (0.033)	0.097*** (0.031)	0.096*** (0.032)
Degree or equivalent	0.086*** (0.022)	0.084*** (0.024)	0.099*** (0.025)	0.290*** (0.024)	0.036 (0.022)	0.106*** (0.024)	0.097*** (0.022)	0.133*** (0.024)	0.086*** (0.023)	0.120*** (0.025)
Postgraduate or equivalent	0.094** (0.042)	0.075* (0.043)	0.124*** (0.045)	0.348*** (0.043)	0.121*** (0.042)	0.145*** (0.045)	0.115** (0.045)	0.206*** (0.047)	0.179*** (0.042)	0.139*** (0.044)
Age:										
21 or less	-0.025 (0.036)	-0.042 (0.030)	-0.027 (0.026)	0.140*** (0.039)	0.000 (0.034)	0.007 (0.036)	-0.037 (0.026)	0.033 (0.038)	0.020 (0.022)	0.008 (0.037)
22-29	0.091*** (0.023)	0.037 (0.023)	0.032 (0.026)	0.205*** (0.026)	0.042* (0.023)	0.089*** (0.025)	0.075*** (0.023)	0.098*** (0.025)	0.051** (0.025)	0.074*** (0.025)
30-39	0.101*** (0.018)	0.081*** (0.017)	0.097*** (0.020)	0.284*** (0.019)	0.071*** (0.017)	0.076*** (0.019)	0.094*** (0.018)	0.172*** (0.020)	0.118*** (0.018)	0.137*** (0.019)
40-49	0.072*** (0.017)	0.074*** (0.017)	0.079*** (0.018)	0.231*** (0.018)	0.070*** (0.017)	0.085*** (0.018)	0.077*** (0.017)	0.143*** (0.019)	0.108*** (0.017)	0.125*** (0.018)
50 or more	-0.002 (0.017)	0.022 (0.017)	0.021 (0.018)	0.200*** (0.018)	0.040** (0.017)	0.035* (0.019)	0.052*** (0.016)	0.104*** (0.018)	0.057*** (0.016)	0.079*** (0.018)
Disability Status										
Disabled	0.031 (0.042)	0.023 (0.041)	0.032 (0.042)	0.216*** (0.044)	0.040 (0.036)	0.069 (0.045)	0.085** (0.040)	0.051 (0.043)	-0.030 (0.043)	0.065 (0.041)
Non-Disabled	0.057*** (0.009)	0.047*** (0.009)	0.054*** (0.010)	0.225*** (0.010)	0.052*** (0.009)	0.064*** (0.010)	0.063*** (0.009)	0.129*** (0.010)	0.087*** (0.009)	0.098*** (0.010)

Notes: All models contain a full set of control variables. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 5: Multilevel Ordered Probit Estimates of the Effect of Training on Perceptions of Influence Using Incidence Measure of Training

	Dimension				
	What tasks you do in your job	The pace at which you work	How you do your work	The order in which you carry out tasks	The time you start or finish your working day
Coefficients	0.069***	0.029	0.003	0.089***	0.038
	(0.023)	(0.023)	(0.024)	(0.024)	(0.024)
Marginal Effects					
Amount of influence					
None	-0.012***	-0.005	-0.000	-0.009***	-0.014
	(0.004)	(0.004)	(0.002)	(0.003)	(0.009)
A little	-0.010***	-0.004	-0.001	-0.012***	-0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.001)
Some	-0.004***	-0.002	-0.001	-0.014***	0.003
	(0.001)	(0.001)	(0.004)	(0.004)	(0.002)
A lot	0.025***	0.011	0.001	0.035***	0.012
	(0.009)	(0.009)	(0.010)	(0.010)	(0.007)

Notes: All models contain a full set of control variables. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 6: Multilevel Ordered Probit Estimates of the Effect of Training on Agreement with Statements about Job Using Incidence Measure of Training

	My job requires that I work very hard	I never seem to have enough time to get my work done	I feel my job is secure in this workplace	I worry a lot about my work outside working hours
Coefficients	0.084***	0.044*	0.142***	0.066**
	(0.028)	(0.025)	(0.026)	(0.026)
Marginal Effects				
Disagree or disagree strongly	-0.008***	-0.015*	-0.031***	-0.026**
	(0.003)	(0.008)	(0.006)	(0.010)
Neither agree nor disagree	-0.018***	-0.002*	-0.020***	0.006**
	(0.006)	(0.001)	(0.004)	(0.002)
Agree or agree strongly	0.026***	0.017*	0.051***	0.020***
	(0.009)	(0.009)	(0.010)	(0.008)

Notes: All models contain a full set of control variables. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level.

CHAPTER 4

Job Satisfaction and Workplace Performance

1. Introduction

Are satisfied workers more productive workers? Since the Hawthorne studies of the 1920s and 1930s, considerable effort has been put into answering this question with mixed empirical success⁵. This aim of this study is to identify whether job satisfaction affects workplace performance.

This study adds to the job satisfaction literature in a number of ways. First most previous studies of the job satisfaction and performance relationship have been conducted at the individual level whereas this study uses data collected at the workplace and the employee level. Several studies have shown a positive relationship between job satisfaction and commitment (e.g. Vandenberg and Lance 1992 ; Cook and Wall, 1980; Green et al, 1996). Other studies have shown the link between commitment and: increased job performance (Mathieu and Zajac, 1990); increased total return to shareholders (Walker Information Inc, 2000); increased sales (Barber et al., 1999); decreased employee turnover (Cohen, 1992); decreased intention to leave (Balfour and Wechsler, 1996); decreased intention to search for alternative employers (Cohen 1991); decreased absenteeism (Cohen, 1992 and Barber et al., 1999). Few studies, however, have examined the relationship between work satisfaction and workplace performance directly. Second, this linked employer-employee data contains information on employee and workplace characteristics as well several new measures of workplace performance, allowing me to control for a wider range of characteristics than most other studies. Third, I use eight dimensions of job satisfaction rather than an overall measure as used in most other studies.



2. Background

Judge et al., (2001) outlined several rationalisations of the job satisfaction-job performance relationship. Firstly, job satisfaction is a determinant of job performance. Economic theory, in particular agency theory and efficiency wage theory, assumes that effort has a positive effect on a workers' output but has a negative impact on his or her utility or job satisfaction. In contrast, the work of Akerlof (1982) and Akerlof and Yellen (1986) suggested that dissatisfied workers are more likely to show neglect towards their job in the form of higher absenteeism, lateness, shirking and more generally lower levels of effort.

Secondly, job performance is determinant of job satisfaction. Judge et al., (2001) suggested that job performance has a positive impact on job satisfaction because good performance on the job affects increases self-esteem that is an important determinant of an individual's motivation, job performance and job satisfaction. Particularly, important is 'an individual's organization-based self-esteem', which Pierce and Gardner (2004) define as, "the extent to which an individual believes her/himself to be capable, significant, and worthy as an organizational member." They also find that this construct is highly related to job satisfaction.

A compromise between the first two views is that job satisfaction and job performance are reciprocally related. An alternative view is that job satisfaction and job performance is moderated by other variables. For example, Zhang and Zheng (2009) argued that the job satisfaction-job performance relationship is mediated by affective commitment to the organization. Important candidates for moderating variables are the employee turnover rate and the absence rate. Oi (1962) pointed out that absenteeism can impose a number of costs on employer such as the lost

⁵ Prompting, Landy (1989) to refer to establishing the performance-satisfaction relationship as

output of the absent employee; overtime for other employees to fill in; any temporary help costs incurred; possible loss of business or dissatisfied customers etc. In contrast, some psychologists have found that absenteeism may be beneficial as it provides some temporary relief from the stresses of work (Steers and Rhodes, 1978). Similarly, voluntary employee turnover can affect workplace performance. The theoretical arguments for this are mostly based on Salop (1979), where workers are identical and firms incur turnover costs; in this context, turnover reduces profits. Brown et al. (2007) however, point out that incoming workers, may be better educated, more highly skilled and more highly motivated. Thus, employee turnover may actually enhance firm performance.

Judge's final suggestion is that there is no relationship between job satisfaction and job performance.

3. Previous Research

The job satisfaction/performance literature has been thoroughly reviewed at regular intervals in the past sixty years. In their metastudy of 26 studies published before theirs, Brayfield and Crockett (1955) found an average correlation of 0.15 between job satisfaction and worker performance. The same correlation was reported by Iaffaldano and Muchinsky (1985) from their meta-analysis of 217 separate correlations, in 74 studies. Eight of these studies produced correlations of 0.44 or above; these were all supervisory or professional workers, using self, peer or supervisory ratings of performance. Vroom (1964) estimated an average correlation of 0.14 characterizes the typical quantified research result available in the literature.

Petty et al., (1984) found an overall correlation of 0.23 between satisfaction and performance; this was 0.31 for supervisors and above, 0.15 for those at lower levels. A more recent metastudy by Judge et al., (2001) covering 312

the 'holy grail' of industrial/organizational psychology.

samples with a combined total of 54,417 observations found a correlation of 0.30 between job satisfaction and individual performance. They also found that the relationship between satisfaction and performance can be moderated by job complexity. For high-complexity jobs the correlation between satisfaction and performance is higher (0.52) than for jobs of low to moderate complexity (0.29). Similarly, Wright et al., (2007) reported a correlation of 0.36 between self-reported psychological well-being of over 5,000 employees with supervisor ratings of job performance.

Steel and Ovalle (1984) performed a literature review and meta-analysis of the early empirical and theoretical work linking turnover behaviour to psychological antecedents. The authors calculated a weighted average correlation of .50 between behavioural intentions and employee turnover. Intentions were more predictive of attrition than overall job satisfaction, satisfaction with the work itself, or organizational commitment. Many of these studies, however, were based on very small samples of employees with little conformity in the control variables used. Indeed, some of the highest estimates are likely to be caused by the fact that establishment characteristics were not controlled for in all studies.

These correlations do not show the direction of causation. Bateman and Strasson (1983) used a cross-lagged design; with a time-interval of six weeks in an attempt to overcome this problem. They found that satisfaction and performance had a correlation of 0.43 and that the best predictor of performance was past performance with a correlation of 0.80. Cross-lagged correlations are now out of favour being replaced by multiple regression techniques to find for example whether job satisfaction in one period predicts performance in subsequent periods, when performance in the first period is also used as a predictor.

Job satisfaction has also been found to be negatively correlated with other kinds of desirable behaviour at work. For example, there is less sabotage, stealing, doing work badly on purpose, and spreading rumours or gossip to cause trouble (Mangoine and Quinn, 1975; Hollinger and Clark, 1983; Kamp and Brooks, 1991).

Job Satisfaction and Quitting Behaviour

Several authors have shown a link between job satisfaction and quitting behaviour. Locke (1976) provided an extensive review of the literature in the psychology field, concluding that a negative correlation coefficient between job satisfaction and employee turnover is usually obtained. Many of these studies, however, only used a very simple univariate analysis.

Until recently there had been relatively few studies by economists that have examined the role played by job satisfaction in quitting decisions. The main reason for this was the lack of large-sample longitudinal data that can be used to identify job satisfaction in one period and job turnover in subsequent periods.

Freeman (1978) was one of the first economists to analyse the connection between quits and job satisfaction. His analysis was based on panel data from two different US sources, the National Longitudinal Survey between 1966 and 1971 and the Michigan Panel Survey of Income Dynamics for 1972 and 1973. Freeman's calculations showed that the subjective level of job satisfaction is positively and significantly related to the probability of quitting. Moreover, he found that reported job satisfaction was a quantitatively more important determinant of quitting than wages. Freeman also demonstrated that the causality ran from job satisfaction to future quitting behaviour. Akerlof et al., (1988) confirmed this relationship using data from the NLS Older Men Survey.

More recently, Clark et al., (1998) used data from ten waves of the German Socio-Economic Panel (1984-93) to examine the effect of wages and job satisfaction on workers' future quit behaviour. Their results showed that workers who reported dissatisfaction with their jobs were statistically more likely to quit than those with higher levels of satisfaction were.

Using data from the Danish section of the European Community Household Panel (ECHP), Kristensen and Westergård-Nielsen (2004) found that the inclusion of a subjective measure of job satisfaction, improved the predictive ability of a job-quit model. The authors reported a ranking in the ability in the ability of different aspects of in their ability to predict quits. Dissatisfaction with the type of work was found to be the aspect most likely to lead to a worker leaving their job whilst satisfaction with job security was found to have an insignificant effect on quit propensity. The authors contrasted this finding to results from the UK, where dissatisfaction with job security has often been found to be one of the most important predictors of quit behaviour. They attributed this discrepancy to the differing generousities of the benefit systems in the two countries; the system in Denmark being more generous and thus employees in Denmark are less concerned about job security.

Several papers from using UK found a negative relationship between job satisfaction and intentions to quit or observations of quits but disagree on the relative importance of different aspects of satisfaction. Shields and Ward (2001) found that the main factor driving the negative relationship between nurses' job satisfaction in determining intentions and their intentions to quit the NHS was dissatisfaction with promotion and training opportunities rather than workload or pay.

Frijters, et al., (2004) examined the factors influence the quitting decision of public sector teachers in England and Wales, using a panel data of 29,801

observations on 7,989 different teachers, drawn from the quarterly labour force survey between 1997 and 2003. They argued that improving job satisfaction through non-pecuniary aspects of teachers' jobs had a larger impact on improving retention than increasing pay. In contrast, using a sample of employees from three low-wage service sector companies, Brown and McIntosh (1998) found that satisfaction with short-term rewards and long-term prospects were more influential in determining overall quit behaviour than contentment with social relationships or work intensity.

Stevens (2005) used responses from a survey of 2,722 academics at ten higher education institutions to examine the relationship between job satisfaction and intentions to leave academia. Stevens reported that dissatisfaction with both the pecuniary and the non-pecuniary elements of the job increased the likelihood of leaving

Job Satisfaction and Absenteeism

Dissatisfaction is consistently associated with higher levels of absence. An early study by Vroom (1964) found low levels of job satisfaction contributed to higher absenteeism rates. A finding confirmed by Clegg (1983), who also found that low job satisfaction was also associated with a lack of punctuality and a higher propensity to quit. In a meta-analysis of the available literature Hackett (1989) found a mean correlation of -0.23 between general job satisfaction and time lost measures of absence.

One of the most frequently proposed explanations for this correlation is that people use absence to escape, even if only temporarily, from unpleasant work circumstances. Drago and Wooden (1992) conducted a comparative study examining the causes of absenteeism using data from a survey of 601 workers from Australia, New Zealand, Canada, and the United States. Their results indicated that absenteeism was lower in occupations where employees work together closely and harmoniously and where job satisfaction was high.

Wegge et al., (2004) utilised a sample of 436 employees working in a large civil service department. Absence data (frequency, time lost) were drawn from personnel records and referred to a period of 12 months after the administration of questionnaires. Using regression analysis, they found that the hypothesized interaction between satisfaction and involvement was statistically significant predictor of both indicators of absence behaviour.

Several authors (e.g. Barmby et al., 1994) have tried to distinguish between voluntary and involuntary absence but this has proven to be difficult. Barmby et al., (1991) reported that the majority of sickness absence in the UK was in spells of five days or less. A finding supported by Labour Market Trends (2003) which showed that of those workers who were absent during a reference week, 40 per cent of workers claimed absence for a period of only one day and approximately 75 per cent claimed absence for 4 days or less. Both these suggest that much absenteeism is based on self-certification of illness and this has been cited as support for the voluntary absence hypothesis.

Absenteeism caused by low job satisfaction, however, is consistent with both the involuntary and voluntary absence schools. Low job satisfaction can stimulate withdrawal (voluntary absence). However, low job satisfaction has also been linked to a range of health issues especially mental/psychological problems (Faragher et al., 2005) and absence in this way can be thought of as involuntary.

Economists have examined absenteeism from both a supply and a demand perspective. On the supply side, Paringer (1983) and Bridges and Mumford (2001) have found that older and single workers were more likely to be absent, especially for men. On the demand-side, Barmby and Stephan, (2000) found that larger workplaces tended to have higher rates of

absenteeism because of their ability to diversify the risk from absence more easily. Workers who are employed on full-time contracts were more likely to be absent than part-time workers (Barmby et al., 1995 and Barmby 2002), whilst Ichino and Riphahn (2005) showed that the ending of any probationary period and employment protection legislation both tended to increase absenteeism.

Job Satisfaction and Organisational Performance

Grugulis and Stoyanova (2006) argued that there are a number of difficulties in establishing linkages between worker satisfaction and organisational performance. Firstly, organisations are complex social systems and it is unlikely that there is a single cause of productivity and profitability. Secondly, firms can succeed several ways, including deskilling and work intensification. A further difficulty is measuring each of the concepts involved. At an organisational level, there is no single measure of performance. In the literature, various measure of performance have been used productivity, self-reported employee productivity or labour productivity, product quality, various financial measures, pay rates, turnover, efficiency (including labour efficiency), machine efficiency, scrap rates, labour turnover, job creation, absenteeism, perceived organisational performance and perceived market performance. As noted by Forth and McNabb (2007), performance measures are not equivalents and their determinants may be very different and will therefore not necessarily move in the same way. For example, introducing a work practice that is costly to monitor may improve productivity but at the expense of reducing profitability.

A further difficulty arises from the way data is collected in this research. Many studies rely heavily on single respondents within an organisation, who may not be able adequately assess both performance. There is a risk that the respondents will focus on the dominant occupational group and

studies. The cross sectional nature of many studies means that the causal links between the variables chosen cannot always be properly established.

4. Data

I use data from the cross sectional part of the Workplace Employment Relations Survey (WERS) 2004 to conduct my analysis. This is described in more detail in section four of chapter three. The WERS 2004 is the most recent data for investigating the link between job satisfaction and workplace performance. Moreover, WERS 2004 has a greater range of data than previous surveys. For the first time the survey includes a financial performance questionnaire that provides objective (accounts-based) performance measures - labour productivity and profitability.

The dataset used in my analysis was constructed by combining information from the financial performance questionnaire dataset, information on employee job satisfaction from the employee questionnaire dataset and workplace characteristics from the management questionnaire dataset.

One limitation of the resulting dataset is that only half of the 2,295 workplaces in the original WERS 2004 cross-section survey provide data in the financial performance questionnaire. Of these, less than half of these again had valid data for the productivity and profitability measures. This was compounded by several large outliers, which led me to drop the top and bottom 2.5 per cent of values. Thus, the sample size was reduced to 563 observations with full information on dependent and explanatory variables.

As discussed in more detail in section four of chapter three, the Workplace Employment Relations cross-section survey is based on a stratified random sample of establishments and a sample of employees at those establishments. The deviation from simple random sampling means that special statistical techniques have to be applied so that correct conclusions

can be drawn from my analysis. To correct for this response bias an additional set of weights have been constructed.

The financial performance questionnaire dataset contains data on the performance of the workplace (or in a minority of cases, the wider organisation) for a single accounting year⁶. The financial performance questionnaire contains questions on turnover; employment; value of assets; capital expenditure; purchases of goods, materials and services; employment costs; and research and development. In most cases, this is the calendar year January to December, 2003. This follows the explicit practice followed in respect of other quantitative data items (such as labour turnover, absence etc), and the implicit practice in respect of the subjective measures of performance, whereby data is collected on behaviour in the period immediately preceding the interview. It assumes that workplaces practices have not changed to any substantive degree since that time. It reflects the difficulties of trying to return to the workplace at a later point in time to collect performance data for the accounting period that includes the interview date: bundling all of the data collection in one visit is considered to maximise response.

Sample Characteristics

Around 46 per cent of the establishments in the sample are part of organisations with less than 250 employees, whilst one-in-five is part of an organisation with more than 10,000 employees. The average establishment age is 36 years and establishments have, on average, 31 employees on the payroll. Just over one-quarter of the establishments are based in London and the South East, with the other regions each accounting for between five and twelve per cent of the sample. The highest concentration of establishments, one-quarter, is in the wholesale and retail sector, followed by business services (17 per cent). Because my study is restricted to workplaces in the

⁶ More information on the collection of this data can be found in Forth and McNabb (2007).

trading sector, there are only a small number of establishments in education and public administration sectors. Thirty-eight per cent of establishments pay performance related bonuses or merit pay and 18 per cent have employee share ownership schemes. Average union density is around 28 per cent.

Three-quarters of establishments operate in markets they describe as competitive. Similarly, 83 per cent say they have some or many competitors. Only one per cent say they have no competitors or that they dominate the market. Almost one-half of workplaces describe their market as growing; just less than one-quarter say that their market is mature whilst just less than ten per cent say that their market is declining.

Measuring Job Satisfaction

In this analysis I consider six measures of job satisfaction. Specifically, workers were asked how satisfied they were with:

- the sense of achievement they get from work (achievement)
- the scope for using own initiative (initiative)
- the influence over the job (influence)
- the training they receive (training)
- the amount of pay they receive (pay)
- the work itself (work itself).

Workers are asked to rate their satisfaction on the following five point scale:

1 = 'very dissatisfied',

2 = 'dissatisfied',

3 = 'neither satisfied nor dissatisfied',

4 = 'satisfied', and

5 = 'very satisfied'.

From these I constructed a mean average for each workplace with each dimension of satisfaction measure. As discussed in section two of chapter two these subjective well-being measures are subject to several criticisms notably, their reliability, validity and how they can be interpreted.

These seven measures are likely to be strongly collinear, and as such, this militates against their simultaneous and independent inclusion among the set of explanatory variables. Instead I therefore combine the various indicators into an index (S) according to $S = \sum_{k=1}^7 \theta_k s_k$ where s_k denotes the k^{th} component of the index and θ_k the associated weight. Rather than assign weights on an ad hoc basis, I adopt the data reduction approach used by Machin (1991) in which the weights are derived from the scaled first principal component of the variance-covariance matrix of the elements of the index and normalised such that they sum to unity. The correlation matrix between the seven indicators is given in **Table 7** below, which reveals relatively high levels of correlation, most notably among the first three satisfaction measures. The first principal component accounts for almost exactly half (49.3 per cent) of the covariance; the second in contrast, accounts for just 15.3 per cent, suggesting that restricting attention to the first principal component is appropriate.

Table 8 documents the (scaled) weights used in constructing the composite measure. Interestingly, these are all positive and relatively similar in magnitude, ranging from 0.157 for ‘influence’ to 0.123 for ‘security’.

Measuring Performance

In this study, I use two sets of performance measures:

- Objective performance measures from the Financial Performance Questionnaire (FPQ) and the management questionnaire. Specifically value-

added per worker, profit or surplus per worker, the employee voluntary turnover rate (quit rate) and the absence rate.

- Subjective performance measure from the management questionnaire.

Objective Performance Measures

Financial Measures

The second two performance measures are derived from the Financial Performance Questionnaire that contains estimates of turnover, labour costs and other costs, making it possible to calculate:

1. gross value added per full time equivalent employee i.e. (total sales - the total value of purchases of goods, materials and services) / total full time equivalent employment.
- profit (loss) per full time equivalent employee i.e. (total sales - the total value of purchases of goods, materials and services + acquisitions - disposals) / total full time equivalent employment)⁷.

Such data items can also be obtained for some workplaces by linking their records, via the Inter-Departmental Business register, to the Annual Business Inquiry (ABI⁸). These data are discussed in Forth and McNabb (2008). Here I use their derivations applied to the April 2007 WERS 2004 release. I also use the new sample weights as described in Forth and McNabb (2008). These objective business performance measures would normally be preferred to the subjective performance measures, were it not for the significantly reduced sample for which these data items are available.

⁷ These variables were already calculated by the data distributors.

⁸ The Annual Business Inquiry (ABI) is the Office for National Statistics (ONS) integrated survey of employment and financial information. This inquiry samples UK Businesses, and other related establishments, according to their employment size and industry sector. For more information see <http://www.statistics.gov.uk/abi/>. Last accessed on 26/09/2010.

Kersley et al., (2006) investigated the integrity of the data and concluded that the financial performance questionnaire data on output per worker and value-added per worker corresponded well with aggregates from the Annual Business Inquiry, and that the financial performance questionnaire measures demonstrated reasonable degrees of convergent validity

The Quit Rate

The quit rate is derived from responses to the questions: “In total, how many employees (full- and part-time) were on the payroll at this establishment 12 months ago?” and “Of these employees how many have stopped working here, because they left or resigned voluntarily?”

Across the whole sample, the mean quit rate is around 16 per cent. This is marginally above the annual average for OECD countries of 15 per cent (OECD Employment Outlook, 2005). However, this also varies substantially across sectors, for example 3.0 per cent in the Electricity, Gas and Water sector and over 30 per cent in Hotels and Restaurants. In contrast to the picture in terms of absence rates, sectors such as Education and Public Administration exhibit low levels of voluntary separations (7.3 and 2.7 per cent respectively). Again, there are very substantial variations even within sectors; a small number of workplaces report 100 per cent turnover during the year.

The Absence Rate

The absence rate derived from responses to the question, “Over the last twelve months what percentage of work days was lost through employee sickness or absence at this establishment?” Respondents were asked to exclude authorised leave of absence, employees away on secondment or courses, or days lost through industrial action.

Over the whole sample, managers reported an average of around five per cent of working days lost to sickness or absence. However, absence rates

were higher in the public sector. In contrast, lower rates are reported in construction, perhaps reflecting the nature of contracts/employment in this sector. However, even these data reveal some substantial variations: absence rates in the survey vary from zero to well in excess of 20 per cent.

Subjective Performance Measures

The subjective performance measures are based on responses to the questions in the management questionnaire that asks where the respondent would place their workplace's performance on a five-point scale (A lot below, Below, Average, Better, A lot better) relative to the respondent's perception of the performance of other establishments in their industry. As illustrated in Figure 2 and Figure 3, few establishments report performance as a being a lot below average. Approximately half of establishments report average, or below average, performance; the other half report above average performance. Respondents were also asked how they interpreted financial performance. To avoid the problems associated with small cell sizes in my econometric analysis below I treat the replies 'a lot below' and 'below' average as similar. I do the same for the responses 'above average' and 'a lot above average' to produce a three point scale for each measure.

Various criticisms have been levelled at these subjective performance measures (See Kersley et al., 2006 for a full discussion). First, they are based on the assessments of employee relations managers who may not always be in the best position to make such judgements. The WERS interviews are conducted with 'the senior person at the establishment with day-to-day responsibility for personnel or employment relations issues' who may only have limited information on either or both of the performance variables.

Second, they rely on management's ability to locate the performance of their own establishment in relation to an industry average that is left

undefined. Third, it is not clear what measure of labour productivity is being considered – output per head, value added or some measure of total factor productivity. Fourth, these subjective measures are ordinal in nature so contain less information than continuous measures of productivity or profitability and thus prohibit direct quantification of the impact of any particular explanatory variable on workplace performance. Finally, individuals may not measure things in precisely the same way and tend to be over-optimistic in the sense that most of them think their establishment is above average.

The consequences of these measurement errors differ according to the source. If this type of measurement error is random, the effect is to reduce the explanatory power of any model to explain the variance in performance across workplaces and to limit the identification of significant associations with individual explanatory variables. More serious is the case where there is a consistent positive (or negative) response bias across a range of variables. In other words, respondents evaluate what is happening in their own establishment in a positive (negative) way, irrespective of the actual state of affairs. This may lead to positive (negative) responses about explanatory variables and positive (negative) responses about performance, introducing a spurious correlation between the two.

Subjective performance measures, however, also have several of advantages. The first is their availability, objective measures of profitability or productivity are not always available at the level of the establishment, either because such information is not collected at the level of the individual workplace or because, even if it is available, it is commercially sensitive. In contrast, subjective measures tend to attract higher response rates. Subjective evaluations are much cheaper to collect, for both the survey administrator and the respondent, as there is no requirement to provide detailed financial breakdowns. Finally, even where objective data are

available, these also have limitations and can be subject to measurement error, for example, where there are variations in accounting practices across workplaces. Nevertheless, earlier studies have found, for example, that financial performance is a good measure of whether a workplace is likely to close or not (Machin and Stewart, 1996, and Bryson, 2004).

5. Methodology

Modelling Workplace Performance

The starting point for modelling workplace performance is to assume that the performance measure, Y, depends on

$$Y = f(X, L)$$

Where L is effective labour input, assuming that worker productivity varies with satisfaction and X is a set of factors that directly influences business outcomes. Factors included in X from the WERS 2004 data include:

- workplace characteristics (industry group, region, size of establishment and/or organisation, culture of ownership, age, the capital labour ratio),
- employee characteristics (skill composition of the work force, gender and ethnic and age composition of the workforce),
- market characteristics (state of the market, competitiveness of the industry, trading in the international versus local market),
- industrial relations and human resources (trade union representation, participation in control, participation in returns) and
- job-related factors (pay, training, independence in work, part-time incidence).

The approach taken to modelling performance varies according to the particular performance measures.

Modelling the Objective Financial Performance Measures

The objective financial performance measures are continuous measures and are therefore amenable to modelling using linear regression techniques.

Modelling the Quit rate and the Absence rate

The quit rate and the absence rate are bounded continuous variables and therefore can be modelled using a Tobit framework. In this censored regression model, the underlying latent model determining quits or absenteeism can be expressed as

$$y_i^* = x_i' \beta + \varepsilon_i$$

Equation 22

Where y_i^* is the latent outcome variable, x is a matrix containing information on a set of factors that directly influences business outcomes, for simplicity including a measure of worker satisfaction, β is the associated vector of parameters and ε is an error term. The observable outcome variable y_i takes the value 0 if $y_i^* \leq 0$ and y_i^* if $y_i^* > 0$.

The parameters are estimated by maximising the log-likelihood function:

$$\ell(\beta, \sigma_u) = \sum_{i=1}^N \left[I(y_i = 0) \log \left\{ 1 - \Phi \left(\frac{x_i' \beta}{\sigma_u} \right) \right\} + I(y_i > 0) \left\{ \log \phi \left(\frac{y_i - x_i' \beta}{\sigma_u} \right) - \frac{1}{2} \log \left(\frac{\sigma_u^2}{\mu} \right) \right\} \right]$$

Equation 23

Where $I(\cdot)$ is an indicator variable that equals one if its argument is true and zero otherwise. Three marginal effects can be calculated from this model.

First, the marginal effects of a change in x_j on y^* , the unobserved latent variable:

$$\frac{\partial E[y^*|x]}{\partial x_j} = \beta_j$$

Equation 24

The effect on the observable Y is:

$$\frac{\partial E[y|x]}{\partial x_j} = \beta_j * P(a < y_i^* < b)$$

Equation 25

Where a and b define the limits of y. For instance left censoring at zero gives $a=0$ and $b=\infty$.

Modelling the Subjective Performance Measures

Modelling the subjective performance measures requires the use of ordinal response models. This can also be written as a latent response model as in Equation 22 but where the observed variable, the observed response, y, will take the value 1 if $y^* \leq \gamma_1$ while

$$Y = 2 \text{ if } \gamma_1 < Y^* \leq \gamma_2$$

$$Y = 3 \text{ if } \gamma_2 < Y^* \leq \gamma_3$$

...

$$Y = Q \text{ if } \gamma_{Q-1} < Y^*$$

where Q is the number of alternative responses and $\gamma_1 < \gamma_2 < \dots < \gamma_{Q-1}$ are unknown cut points or threshold parameters.

The probability that for a given workplace that $Y_i = q$ i.e. that reported subjective performance is in category q , conditional on β is given by:

$$P(Y_i = q|\beta) = F(x'_k \beta_i - \gamma_j) - F(x'_k \beta_i - \gamma_{j-1})$$

Equation 26

where $F(\cdot)$ is the cumulative density function of ε .

The parameter β can be estimated by maximising the log-likelihood function summed over n workplaces (indexed by i) as:

$$\ell(Y_i|\beta, \alpha) = \sum_{i=1}^N \sum_{q=1}^Q D_i \log[P(Y_i = q)]$$

Equation 27

$$\text{where } D_i = \begin{cases} 1 & \text{if } Y_i = q \\ 0 & \text{otherwise} \end{cases}$$

The complex sample design means that probability weights All models are run with sampling weights that are the inverse of the probability of sample selection. The weights for the models that use the financial performance questionnaire data also adjust for non-response, as described in Chaplin et al. (2005). I also use a robust estimator to account for heteroskedasticity.

The Identification Problem

As noted in the introduction, the difficulty in identifying the causal effect of job satisfaction on business performance, measurement issues aside, arises because of the potentially circular relationship between job satisfaction and business performance. Simple regression techniques will only identify the impact of job satisfaction on business performance if job satisfaction is independent of business performance given the other

determinants of business performance included in the regression. Job satisfaction is likely to be endogenous rather than exogenous to business performance for two reasons. First, productivity may cause increased job satisfaction. Second, job satisfaction may be correlated with other factors that determine business performance that I am unable neither identify, measure nor include in a regression. Separately, the correlation between job satisfaction and other factors needs to be imperfect so that it is possible to differentiate the two.

In practice, it is usually necessary to adopt other methods than simple regression techniques to detect causal impacts rather than correlations in the data. The standard way forward in this situation is to instrumental variable techniques. Suitable instruments need to be strongly correlated with job satisfaction but uncorrelated, or at least weakly correlated, with business performance. In practice, instrumental variable analysis is complicated because of the difficulty in finding suitable instruments and results are typically sensitive to the instrument used.

As noted above, there may a chain of causation running from job satisfaction through the absence rate and labour productivity to profitability. Thus, if job satisfaction affects profitability exclusively by reducing employee turnover, I will find no effect of job satisfaction if I include employee turnover in the profitability model. At the same time, it is important that I include the determinants of these intermediate outcomes in the business performance model, so that, the estimated job satisfaction effect does not pick up the effect of these intermediate outcome variables on business performance, other than where these occur through job satisfaction. Thus, I run models including and excluding intermediate outcomes.

6. Results

In **Table 9**, I present selected results from models estimates of different measures of jobs satisfaction on the performance measures described previously. I use a parsimonious specification because of the relatively small number of observations and consequent relatively small number of degrees of freedom. Each model contains a set of control variables with the full results shown in **Table 33**. I first briefly discuss the results for the control variables before turning to the main variables of interest.

Control Variables

The results for the control variables for the performance measures are not completely consistent for the two sets of performance measures. This is to be expected since as noted above, that the financial performance questionnaire and human resource manager reports on productivity contain different information about the workplace. Bryson and Freeman (2008) calculated that the two objective measures are correlated with one another at 0.39. The objective measures are not correlated with manager reports of productivity relative to the industry average.

The estimation results, shown in **Table 33** show that both sets of performance measures are positively related to organisation size. This is consistent with economies of scales and knowledge-sharing increasing performance. Similarly, both sets of measures of performance are positively related to the capital-labour ratio.

Establishment age is positively related to both sets of performance measures. This is consistent with results of Dunne and Roberts (1990) and Davis and Haltiwanger (1991) using data from the USA who reported a positive correlation between firm age and measures of productivity, after controlling for size, industry and region. Findings corroborated by study by Koelling et al (2005) using data from Germany but not by Blanchflower and Oswald (1988) for UK data. This finding is attributed to

older firms, on average, having more better institutional and market knowledge and developed customer and supplier networks.

The statistically insignificant coefficients on trade union density are not surprising as the relation between unions and business productivity remains contentious. Theory suggests a number of possible effects. First, unions might raise labour productivity if they raise wages and so raise the capital labour ratio. Second, unions might lower labour productivity if they hold-up investment and so lower the capital-labour ratio (Grout, 1984). Third, unions might lower productivity if they raise X-inefficiency. Fourth, unions might raise productivity their voice reduces X-inefficiency (Freeman and Medoff, 1984). The empirical results are mixed. Black and Lynch (1997), in their review of the studies noted that the range of estimates on the impact of unions on labour productivity runs from minus three per cent in Clark (1984) to plus 22 per cent in Brown and Medoff (1978) to no effect in Freeman and Medoff (1984).

Training rates and the educational attainment are positively related to work improvements in all the direct performance measures except quit rate. This reflects productivity enhancing effects of education and training. This is consistent with many other studies e.g. Dearden, et al. (2000). The effect of training on performance varies according to the nature of training. For instance, Barrett and O'Connell (1998) found that specific training had a bigger impact on wages and productivity than general training. Whilst, Mason et al., (1996) found that both value-added and product quality were higher where workers were trained to take charge of several production lines at once. Over-education or over-skilling could also moderate any influence on performance. Thus, Tsang and Levin (1985) argued that over-education could lead to reduced work effort, increased production costs, and thus lower productivity. I do not address these issues in this thesis.

Training can have an indirect effect on performance if it increases job satisfaction by, for example, making it easier for employees to perform the job or feel more valued.

The results show a high degree of heterogeneity across the economy. Relative to manufacturing, performance is higher in the financial services sector, the other business services sector and the education sector. With the performance being highest in the financial services sector where value added per full-time equivalent employee (FTEE) is around £638 higher than in manufacturing and profitability per FTEE is £300 higher. Moreover, profitability is £50 higher per FTEE in the construction sector than in the manufacturing sector. Value added in the health and other community services sectors than in the manufacturing sector.

The subjective measures of performance indicate that relative to the manufacturing sector firms in the Electricity, Gas and Water sector, the construction sector, financial services, education and health sectors are more likely to report higher subjective financial performance. Whilst those in the wholesale and retail sector and in the other business services sector are less likely to report higher subjective financial performance. These results should be interpreted with caution since participants in the WERS 2004 dataset are asked about performance relative to the industry average. That respondents from one industry should systematically over- or under-state the performance of their workplace relative suggests that there is a signal extraction problem, where respondents are not able distinguish between the performance of their workplace and the industry. Alternatively, the industry classifications presented in my results do not correspond perfectly with the respondents' perception of their industry. A more detailed of industry classifications, say SIC 2-digit level, is not available as this could make it possible to identify individual workplaces.

Higher concentrations of managerial occupations, skilled trade occupations, sales and process, plant and machine operatives are positively associated with higher value added, but not with higher profitability. Whilst higher concentrations of personal service and administrative and secretarial occupations are associated with higher value added and with higher profitability.

Performance related pay, through its impact on employee motivation and effort is positively associated with both performance measures adding around £129 per FTEE to gross value added and £39 to profits per FTEE. This is consistent with reviews by Bryson and Freeman (2007) and Oxera in its analysis for the UK Treasury (Oxera, 2007, appendix 2). Both reviews show that the majority of studies find positive effects of shared capitalist pay on productivity or financial outcomes, while some find negligible effects and virtually none find negative effects. Indicators of a competitive market are negatively related to measure of profitability, in line with standard microeconomic theory.

Satisfaction Variables

The results in **Table 9**, show that the combined satisfaction measure is positively related to value added per full-time equivalent employee and that this result is significant at the 10 per cent significance level. A one-point increase in the combined satisfaction measure is associated with a £512 increase in value added. Of the individual facets of jobs satisfaction, satisfaction with sense of achievement, with scope for using own initiative and with the amount of pay received are also positively and significantly associated with value added. A one-unit increase in each of these measures is associated with a £455, £481 and £332 increase in value added. The F-statistic and associated probability value leads to rejection of the null hypothesis that all the coefficients of variables in the regression are equal to zero.

Table 33 shows that whilst the overall regression is again significant, there are no significant associations between any of the satisfaction measures and profit per full-time employee. I test the robustness of the results by transforming the financial variables into deviations from the industry mean form. The same pattern of results emerges, with the association between the profit measure and the satisfaction measure remaining statistically insignificant. In contrast, the association between satisfaction and the value added measure was significant when the quit rate and absence rate were excluded.

The results from the ordered probit estimations recorded in **Table 9**, show that the combined satisfaction measure is positively associated with assessments of relative financial performance; on average, the marginal effect of an increase in the combined satisfaction measure is a 0.076 increase in the probability of the manager reporting that financial performance is above average. Average satisfaction with each of the different job facets except satisfaction with the work itself is positively and significantly associated with subjective financial performance. The largest association is with satisfaction with job security, with a marginal effect of 0.207. The smallest marginal effect is for satisfaction with pay. Based on the F-statistics I reject the null hypothesis that all the coefficients are jointly equal to zero.

A similar pattern is found for the model of subjective assessment of labour productivity show. The combined satisfaction is positively related to assessment of labour productivity with marginal effects that are the same to two decimal places. Average satisfaction with achievement, initiative, influence and job security are positively related to the subjective performance; satisfaction with achievement having the largest positive marginal impact. In contrast, with the subjective financial performance

estimates, no significant associations with satisfaction with pay and training are found.

Both the quit rate and the absence rate are negatively related to the combined satisfaction measure. The marginal effect of an increase in the combined satisfaction measure is to reduce the probability of having some absence by 0.013, although this not statistically significant at conventional test levels. Satisfaction with influence, training, pay, job security and the work itself are all associated with lower absence rates. The marginal effect of an increase in the combined satisfaction measure is to reduce the probability of having some quits by 0.053 and to reduce the quit rate, conditional on having some quits, by 0.015. The two measures of satisfaction significantly associated with the reducing the quit rate are the satisfaction with initiative and influence.

Intermediate Outcomes

I suggested above absence rate and quit rate may be a determinant of financial performance and labour productivity. To account for this, I repeated the estimates documented in **Table 9** but also including the absence rate and the quit rate. The addition of the intermediate outcome variables led to the coefficient on the combined measure becoming statistically insignificant in the model of value added and remained insignificant in the model of profits. Suggesting that in the first round of estimation, the combined satisfaction measure was picking up the effect of the turnover rate and the quit rate on performance. In contrast, the addition of the intermediate variables into the models of subjective performance did reduce the small impact on the estimates of the coefficients with the estimates remaining statistically significant.

To gain a limited insight into the direction of causality I estimated a model with the satisfaction measures as the dependent variable, the performance

measure as an explanatory variable and the same set of control variables. The results in **Table 10** show that both the objective and subjective measures of labour productivity and the quit rate are significantly associated with the combined satisfaction measure, the satisfaction with achievement measure and the satisfaction with influence over job measure. The subjective labour productivity measure, the quit rate and the absence rate are also significantly associated with the satisfaction with scope for using own initiative measure. Value added is also positively associated with satisfaction with the amount of pay received but strangely negatively associated with satisfaction with job security.

Instrumental Variable Estimation

I then attempted to use instrumental variable estimation to tackle the endogeneity issue described above. When attempting to identifying the effect of equal opportunities policies on business outcomes using the WERS 2004 data, Riley et al. (2008) used: the share of employees with a disability; the gender of the human resource manager or establishment owner; and the share of the population in the local Travel-to-Work Area from an ethnic minority background as instruments for the incidence of equal opportunities policies.

Bryson et al., (2009) in their study of the effect of unions on workplace performance in the UK and France, used several instruments for union presence. In the UK survey:

- a dummy variable identifying workplaces in existence for 10 years or more to capture the Union cohort effect in Britain
- a dummy variable identifying workplaces located in the North East, North West, Yorkshire and Humberside, Scotland or Wales (areas where the propensity to unionise has traditionally been, and remains, strongest)

- a dummy variable indicating workplaces where women account for more than 50% of employees (since in Britain women now have a greater propensity than men to join unions, Mercer and Notley, 2008) and
- a dummy identifying workplaces with any workers aged 16-17 (since younger workers have a lower propensity to join unions (Machin, 2000; Mercer and Notley, 2008)).

For the French data, they used:

- a dummy identifying organizations with fewer than 50 employees, this being the size cut-off above which organizations are subject to the law governing worker bargaining rights.
- a dummy variable identifying workplaces in which more than 10% of workers are young women
- a dummy identifying workplaces with male craftsmen present.

The identifying assumption in all cases is that these instrumental variables capture differences in the net benefits (to either workplaces or individuals) of union organizing but, having conditioned on the other variables in the model, they have no direct bearing on workplace performance.

In both studies, the relationship between the variable of interest and workplace was significant when treated as exogenous but the significance was eliminated when the endogeneity was taken into account.

After experimenting with several variables as potential instruments including, the unemployment rate in the local area, whether the company has an equal opportunities policy etc. To the extent that these variables explain determine job satisfaction, they could have been used as instrumental variables to aid identification of causal impacts, assuming that the correlation with job satisfaction and independence of business outcomes

is justified on theoretical grounds. I was unable to find many strong covariates of these satisfaction indicators that are independent of business performance. In other words, I do not have strong instrumental variables for the satisfaction indicators, limiting my ability to identify the causal impacts of job satisfaction on performance.

7. Conclusions

In this study, I have used matched employer-employee data to examine the relationship between job satisfaction and workplace performance. I have found that a combined measure of job satisfaction is positively and significantly associated with gross value added per full time equivalent employee, subjective measures of financial performance and labour productivity, whilst being negatively related to the quit rate and the absence rate. However, the positive associations between value added and the satisfaction measures became statistically insignificant when the quit rate and the absence rate are added as explanatory variables.

Taken together these results are consistent with the findings of Zhang and Zheng (2009) and the job satisfaction-job performance relationship is mediated by employee commitment to their organisation as measured by the quit rate and the absence rate in this study. The implication for businesses is that improving employee job satisfaction can improve performance as measured by value added per employee but this works through reduced absenteeism and lower voluntary employee turnover. For workplaces with relatively low absence rate and low quit rates, potential for increasing workplace performance by raising satisfaction appears to be limited. Thus, while absences and dissatisfaction are statistically correlated, costly and extensive redesign of work to increase satisfaction with the purpose of reducing absenteeism may make it too difficult to justify in many instances.

Similarly, turnover is the result of many factors other than unhappiness in the job situation. Economic circumstances and the availability or unavailability of alternative employment would be expected have an impact on the level of employee turnover. Intense discomfort in the job situation, however, can drive workers to quit in the interest of their mental and physical well-being.

This research could be usefully extended in several ways. First using panel analysis, repeated observations of the same workplace would make it easier to make causal inferences about the impact of satisfaction on performance. These data also permit analysis of the impact of the factors that determine satisfaction, such as a higher pay, on changes in performance.

The second is the use of alternative performance measures. The robustness of results could be tested using alternative measures of economic climate and performance. The latter could include financial information from the Annual Business Inquiry that could be matched to workplaces in WERS. Research could be extended to other performance indicators. Similarly, matching to additional data sources may provide suitable instruments for conducting instrumental variable estimation.

8. Figures and Tables

Figure 2: Subjective Assessment of Financial Performance

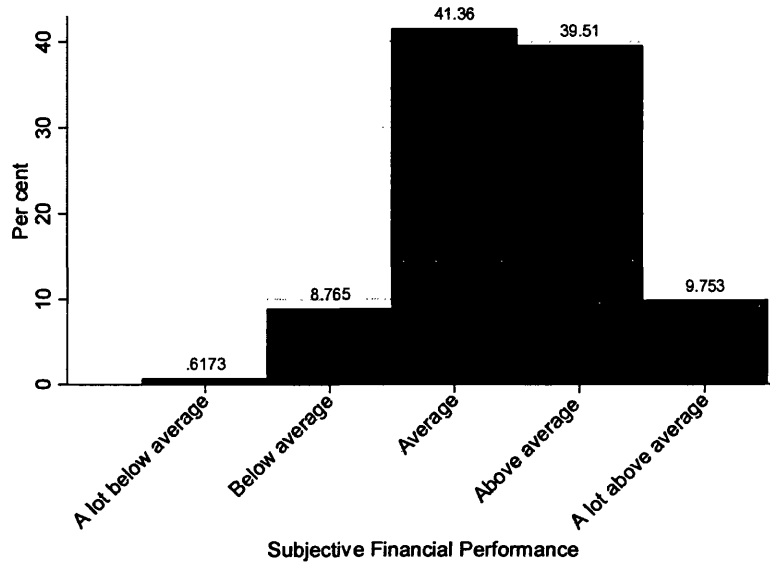


Figure 3: Subjective Assessment of Labour Productivity

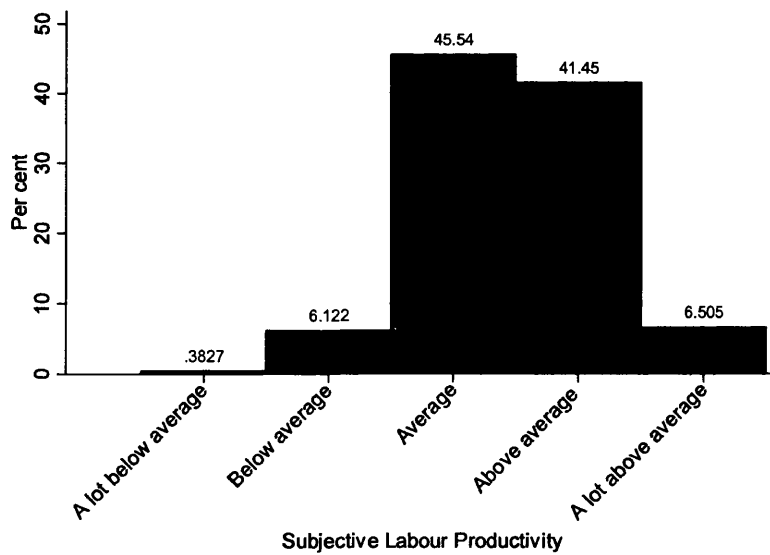


Table 7: Correlation Matrix of Satisfaction Indicators

	Achievement	Initiative	Influence	Training	Pay	Job security	Work itself
Achievement	1.000						
Initiative	0.639	1.000					
Influence	0.592	0.727	1.000				
Training	0.383	0.383	0.420	1.000			
Pay received	0.272	0.274	0.315	0.334	1.000		
Job security	0.331	0.316	0.356	0.357	0.306	1.000	
Work itself	0.681	0.547	0.537	0.371	0.284	0.352	1.000

Table 8: Weights used in Composite Satisfaction Index

Satisfaction Indicator	Scaled Weight
Sense of achievement from work	0.151
Scope for using own initiative	0.151
Amount of influence over job	0.157
Training received	0.150
Amount of pay received	0.131
Job security	0.123
The work itself	0.139

Table 9: Estimation of the Relationship between Job Satisfaction and Workplace Performance

Performance Measure		Combined satisfaction measure	Sense of achievement	Scope for using own initiative	Influence over the job	Training received	Amount of pay received	Job security	Work itself
Value Added	Coefficients	0.512*	0.455*	0.481*	0.328	-0.056	0.332**	0.232	0.144
		(0.226)	(0.256)	(0.257)	(0.237)	(0.187)	(0.164)	(0.238)	(0.256)
Profit	Coefficients	0.189	0.195	0.221	0.145	-0.102	0.014	0.068	-0.033
		(0.247)	(0.234)	(0.290)	(0.241)	(0.192)	(0.174)	(0.248)	(0.257)
Subjective Financial Performance	Coefficients	0.191**	0.502***	0.446**	0.306*	0.218*	0.229*	0.521***	0.241
		(0.077)	(0.149)	(0.177)	(0.156)	(0.125)	(0.121)	(0.133)	(0.158)
	Marginal Effects								
	P(Below average)	-0.028**	-0.070***	-0.064**	-0.045*	-0.032	-0.055*	-	-0.035
		(0.012)	(0.023)	(0.027)	(0.024)	(0.020)	(0.019)	0.072***	(0.021)
	P(About the same)	-0.048**	-0.129***	-0.113**	-0.077*	-0.055*	-0.076*	-	-0.060
	(0.020)	(0.041)	(0.046)	(0.040)	(0.031)	(0.030)	0.135***	(0.036)	
P(Above average)	0.076**	0.199***	0.177**	0.121*	0.087*	0.118*	0.207***	0.096	
	(0.031)	(0.059)	(0.070)	(0.062)	(0.049)	(0.048)	(0.053)	(0.063)	
Subjective Labour Productivity	Coefficients	0.183**	0.426***	0.405**	0.370**	0.190	0.101	0.313**	0.269*
		(0.075)	(0.158)	(0.185)	(0.161)	(0.125)	(0.148)	(0.134)	(0.144)
	Marginal Effects								
	P(Below average)	-0.022**	-0.050***	-0.049**	-0.045**	-0.023	-0.013	-0.038**	-0.033*
		(0.009)	(0.019)	(0.022)	(0.020)	(0.015)	(0.018)	(0.016)	(0.017)
	P(About the same)	-0.051**	-0.119***	-0.112**	-0.103**	-0.052	-0.028	-0.087**	-0.074*
	(0.022)	(0.047)	(0.054)	(0.047)	(0.035)	(0.041)	(0.039)	(0.041)	
P(Above average)	0.073**	0.170***	0.161**	0.147**	0.076	0.040	0.125**	0.107*	
	(0.030)	(0.063)	(0.074)	(0.064)	(0.050)	(0.059)	(0.053)	(0.057)	
Absence Rate	Coefficients	-0.566*	-0.926	-0.817	-1.313**	-	-	-	-
		(0.305)	(0.617)	(0.621)	(0.580)	1.647***	0.922**	1.425***	1.886**
	Marginal Effects								
	$\frac{\partial P(Y > 0)}{\partial \text{Average Satisfaction}}$	-0.013	-0.022	-0.019	-0.030	-0.028	-0.019	-0.026	-0.039
		(0.009)	(0.017)	(0.016)	(0.019)	(0.018)	(0.012)	(0.016)	(0.024)
	$\frac{\partial E(Y Y > 0)}{\partial \text{Average Satisfaction}}$	-0.502*	-0.818	-0.723	-1.165**	-	-	-	-
	(0.272)	(0.548)	(0.551)	(0.514)	1.503***	0.828**	1.291***	1.689**	
Quit Rate	Coefficients	-0.031**	-0.048	-0.075**	-0.061*	-0.011	0.005	0.001	-0.046
		(0.015)	(0.031)	(0.038)	(0.032)	(0.024)	(0.028)	(0.027)	(0.029)
	Marginal Effects								
	$\frac{\partial P(Y > 0)}{\partial \text{Average Satisfaction}}$	-0.053**	-0.081	-0.127**	-0.103*	-0.018	0.009	0.001	-0.078
		(0.026)	(0.052)	(0.064)	(0.053)	(0.040)	(0.048)	(0.046)	(0.049)
	$\frac{\partial E(Y Y > 0)}{\partial \text{Average Satisfaction}}$	-0.015**	-0.024	-0.037**	-0.030*	-0.005	0.003	0.000	-0.023
	(0.007)	(0.015)	(0.019)	(0.015)	(0.012)	(0.014)	(0.013)	(0.014)	

Notes: All models contain a full set of control variables. Full results shown in Table 33. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 10: Least Squares Estimates of the Relationship between Performance Measures and Job Satisfaction

Performance Measure	Combined satisfaction measure	Sense of achievement	Scope for using own initiative	Influence over the job	Training received	Amount of pay received	Job security	Work itself
Value Added	0.085**	0.044***	0.022	0.043***	-0.019	0.041**	-0.045**	0.002
	(0.036)	(0.015)	(0.015)	(0.015)	(0.022)	(0.017)	(0.021)	(0.021)
Profits	0.043	0.030	-0.052	0.003	-0.069	0.006	-0.017	0.070
	(0.089)	(0.049)	(0.036)	(0.058)	(0.055)	(0.103)	(0.052)	(0.045)
Subjective Financial Performance	0.017	0.056	0.004	-0.033	0.078	0.030	0.133***	0.018
	(0.092)	(0.042)	(0.038)	(0.043)	(0.048)	(0.057)	(0.051)	(0.044)
Subjective Labour Productivity	0.254**	0.143**	0.090**	0.110**	0.085	0.036	0.118**	0.077*
	(0.107)	(0.056)	(0.045)	(0.049)	(0.057)	(0.069)	(0.053)	(0.042)
Quit Rate	-0.947**	-0.340*	-0.431**	-0.380**	0.039	-0.090	-0.161	-0.282
	(0.429)	(0.189)	(0.189)	(0.193)	(0.196)	(0.286)	(0.180)	(0.180)
Absence Rate	-1.541	-0.313	-0.987**	-0.893*	-0.548	-1.374	-0.402	-0.173
	(1.007)	(0.453)	(0.462)	(0.502)	(0.377)	(0.538)	(0.431)	(0.340)

Notes: All models contain a full set of control variables. Standard errors in parentheses. * denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

CHAPTER 5

Low Pay, Higher Pay and Job Satisfaction in Wales

1. Introduction

In recent years, the issue of work quality has attracted increasing attention from policymakers across the world. In the EU, where the problem of low pay has proved to be a particular issue, ‘more and better jobs’ has been adopted as one of the strategic goals for the European Union (European Commission 2001; 2002). The 2006 Lisbon Summit reaffirmed the goal of improving the quality of work as a complementary objective to those of full employment and social cohesion. Similarly, in 2010, the joint ministerial statements from the meeting of G20 leaders in Washington and the Asia-Pacific Economic Cooperation (APEC) ministerial meeting in Beijing both contained a commitment to creating “more and better jobs.”

The issue of job quality has come to the fore because the structural change in labour markets in recent decades through skill-biased technical change, a reduction in collective bargaining arrangements and the growth of ‘atypical’ forms of employment, such as agency working, fixed term contracts, part-time working etc and the resulting widening of the earnings distribution have raised concerns about the welfare of workers at the bottom of the earnings distribution. The European Commission has argued that not only are some jobs low-paid but also that these suffer a double penalty as they are also of low quality. Thus, the 2001 Employment in Europe Survey refers to the existence of a two-tier labour market in which jobs in the second tier are characterised by low pay, job insecurity and lack of training and promotion opportunities. Further, it was found that 65 per cent of workers in jobs of good quality reported high levels of job satisfaction compared to only 30 per cent in jobs of low quality.

This poses the question of how to measure job quality. A job is a multifaceted concept, attempts to quantify the term have been contentious. Standard micro-economic theory portrays the labour supply decisions as a trade-off between income and the disutility that individuals gain from work. Thus, earnings have often been used as a measure of job quality. The job satisfaction literature, however, has emphasized that satisfaction from work is determined by much more than just pay and hours. In particular, individuals job satisfaction is determined, amongst other things, by the work itself, job security and their relationships with co-workers.

Beatson (2000) highlights the difference between the economic contract and the psychological contract between employer and employee. The former emphasises the effort/reward relationship embodied in process theories of job satisfaction (Adams, 1963 and Vroom 1964) whilst the latter focuses on working conditions. A further distinction is made between extrinsic job characteristics such financial rewards, working time, work/life balance, job security, opportunities for advancement etc and intrinsic job characteristics such as job content, work intensity, risk of ill health or injury and relationships with co-workers and managers. Because of this diversity, Beatson rejects the possibility of forming a single measure of job quality that can be used to rank jobs. Similarly, the EU 2001 Employment in Europe Survey suggests that in the absence of a single composite indicator, any analysis of job quality must be based on data containing both objective and subjective evaluations of the worker-job match.

Layard (2005) argued that one of the main advantages of asking people to assess their own subjective well-being is that paternalism (prescriptive questions that assume certain things are good or bad for well-being) can be avoided and people's thoughts and feelings are placed at the centre of the debate. In that spirit, Leontaridi and Sloane (2001) argued that job satisfaction can serve as a reasonable proxy for job quality since it is the

worker's perceptions of a job that ultimately matters and workers can make judgements about aspects of their job that cannot be captured by questions about the nature of work contained in the standard datasets. Thus, the EU has used subjective job satisfaction as one of the measures of progress to goal of 'more and better jobs'. Similarly, work satisfaction has been adopted as one of the OECD's headline measures of social well-being (OECD, 2008).

This study attempts bring together these issues. In particular, I examine the relationship between pay, job quality and job satisfaction for workers in Wales, where the Welsh Assembly Government explicitly aligned itself to the 'European Employment Strategy in Wales a Better Country, September 2003'. In the Skills and Employment Action Plan for Wales (Welsh Assembly Government, 2005), improving the quality of jobs in Wales was given particular prominence with the aim of, "a Wales where everyone has the skills, motivation and opportunity to obtain good quality jobs that meet their aspirations". In 'Wales: A Vibrant Economy' (Welsh Assembly Government, 2003) the objective was formulated as raising the quality of jobs to increase average earnings, and to close the gap in earnings with the rest of the UK. Yet, it is also recognised that the relatively low Welsh GDP per head is mainly due to low employment rates and a lack of highly skilled jobs rather than low productivity within existing occupations. This poses a policy dilemma, since it may be easier to close the employment gap that is concentrated among the less skilled and older age groups through the creation of what are perceived to be low quality jobs rather than up-skilling the workforce.

In the next section, I briefly review some of the literature on job satisfaction and pay. I then describe the data used in my analysis before setting out my methodology. In section five, I present my findings and finally draw some conclusions.

2. Background

Nearly, all the studies of job satisfaction by economists have included some discussion of the relationship between earnings and job satisfaction. The early classical reference is Veblen (1899). Post-war formal analyses begin with Duesenberry's (1949) relative income model of consumption. Easterlin (1974) used this model to explain the weak link between national income and happiness. Hamermesh (1975) presented the seminal analysis of the effect of relative pay on worker effort. Akerlof and Yellen (1990) provided an extensive review of the literature, mostly outside of the economics discipline, on the impact of relative pay comparisons.

Economic theory predicts that higher earnings leads to increased job satisfaction. However, the empirical evidence suggests that utility is determined by much more than just pay and hours and that the relationship between earnings and job satisfaction is not straightforward. Clark (1997) found that income is an important determinant of both overall job satisfaction and satisfaction with pay. Others, for example Clark and Oswald (1996) found weak correlation between absolute income and job satisfaction while Belfield and Harris (2002) found no evidence that links job satisfaction with absolute income. However, there seems a consensus on the link between 'relative' income and job satisfaction. A number of studies including Clark and Oswald (1996), Levy-Garboua and Montmarquette (1997), Neumark and Postlewaite (1998), Sloane and Ward (2001), Hamermesh (2001), and Shield and Price (2002) have found relative income has a significant effect on job satisfaction.

Card et al., (2010) describe two broad reasons why peer salaries may affect workers' utilities. First, much of the existing relative pay literature assumes that workers' preferences depend directly on their salary relative to their peers'. This relationship may be linear so that relative pay has a

negative effect on below-median earners and a positive effect on above-median earners, with an average impact of zero. If job satisfaction is a concave function of relative pay, as in the inequality-aversion model of Fehr and Schmidt (1999), the negative effect on below-median earners is larger in magnitude than the positive effect on above-median earners, and information revelation causes a reduction in average job satisfaction.

Alternatively, workers may have no direct concern about co-workers' pay but may use peer wages to help predict their own future pay. The predicted pattern of impacts is quite different in a model where people have no direct concern over co-worker wages, but rationally use information on peer salaries to update their future pay prospects. If co-worker wages provide a signal about future wages, either through career advancement or a bargaining process, learning that his or her own wage is low (high) relative to co-workers' salaries will lead him or her to update his or her expected future wage upward (downward). In this model, the revelation of co-workers' salaries raises the job satisfaction of relatively low-wage workers and lowers the satisfaction of relatively high-wage workers.

3. Previous Research

Several studies have looked at the relationship between low pay and job satisfaction. Leontaridi, Sloane and Jones (2005) examined the relationship between job satisfaction and low pay for British workers between 1991 and 1997 using data from the British Household Panel Survey. They found that the overall job satisfaction of low-paid workers was higher than that of higher-paid workers and, while for higher-paid workers higher earnings raised job satisfaction this was not the case for lower-paid workers of either sex.

Responding to these findings, Diaz-Serrano and Cabral Vieira (2005) attempted to replicate this study using the European Community Household

Panel for fourteen countries between 1994 and 2001. They found that higher-paid workers had significantly higher job satisfaction than low-paid workers in eleven of the fourteen countries considered, with the UK, Denmark and the Netherlands being the exceptions. However, the level of job satisfaction of lower-paid workers was relatively high everywhere, ranging from 3.13 to 4.96 on a six-point scale with the gap between the average job satisfaction ratings of higher-paid and lower-paid workers being wider in Southern European Countries. Whilst hourly wages were a significant determinant of job satisfaction in their regression findings for higher-paid workers in most countries, the evidence was mixed for the lower-paid and in three countries (UK, France and Austria) where the coefficient on earnings was negative and significant for the low paid.

Pouliakas and Theodossiou (2005) provided further evidence against the generality of the low-pay satisfaction relationship across European labour markets, by showing that low-paid workers in Greece, Spain and Finland are markedly more dissatisfied than the higher-paid but no differences in the overall satisfaction of high and low-paid workers in the UK, France and Denmark.

4. Data

The data used in my analysis is drawn from the British Household Panel Survey (BHPS), a panel study of British households conducted annually by the Institute for Social and Economic Research, University of Essex since 1991. The initial sample of approximately 5,500 households, 10,000 respondents was a nationally representative sample of households in 1991. Individuals aged over sixteen in the household are interviewed. My sample is restricted to workers aged from 18 to retirement age as this enables me to define those covered by the National Minimum Wage. I examine the period from 1999 to 2004 using waves 9 to 14 of the BHPS, as prior to 1999 the

number of observations from Wales was too small to provide robust estimates.

My analysis makes use of the Welsh boost to the survey that was introduced along with the Scottish boost in 1999. These can be analysed individually or integrated into core BHPS. I restrict my analysis to working age individuals who completed full interviews. This results in a sample size of 1,000 individuals in each wave; just over 5,300 in total.

The main advantage of using the BHPS, and panel data in general, over cross-sectional data is it can be used to disentangle a key type of causality, namely state dependence (the dependence of current behaviour on earlier outcomes), from the effects of heterogeneity (extra variation due to omitted and unobserved covariates) and non-stationarity (changes in the nature of the systematic relationships over time).

Survey Design

The complex survey design of the BHPS means that special statistical techniques have to be applied so that correct conclusions can be drawn from my analysis. Most common statistical analyses assume that the data sample under consideration is drawn randomly from the population of interest in which each member of the population has an equal probability of selection. In the BHPS, the initial selection of households for inclusion in the panel survey was made using a two-stage clustered probability design and systematic sampling. The frame used for the selection of sample units was the small users' Postcode Address File (PAF) for Great Britain. In the first stage of selection, 250 postcode sectors were selected as the primary sampling units (PSUs) from an implicitly stratified listing of all sectors on the PAF using a systematic sampling method. In the second stage of selection, delivery points, which are approximately equivalent to addresses, were sampled from each selected PSU using an analogous systematic

procedure The sample for the second wave and subsequent waves consists of all eligible adults in all households where at least one interview was obtained in the first, regardless of whether that individual had been interviewed. Thus, the elements of the BHPS samples are clustered since the households are sampled first, and then individuals from each household are sampled. Thus, households are the survey's primary sampling units, even though individuals are the units of interest in the analysis.

Stratification and clustering can both skew the standard errors from results of statistical analyses. Because standard errors affect significance levels, the conclusions drawn from an analysis that does not consider these complex survey design features may be false. STATA provides simple commands that can adjust the standard errors to correct for these complex survey design factors.

A further complication arises from the surveys over-sampling of subpopulations in the BHPS, in particular households in Wales and Scotland. Therefore, when a survey uses over-sampling, results cannot be generalized to the broader population until probability weights are applied. These weights take into account the greater probability that over-sampled group will be included in the sample compared to other groups.

Another consideration when using panel data is the possibility of sample selection bias whereby the sample under consideration is not representative of the population from which they drawn. This can occur in a panel survey like the BHPS, in at least two ways. First, it can occur because of sample truncation at the start, i.e. the sampled individuals refuse to participate or because a respondent or because they are unwilling to answer some questions (item non-response). Second, it can occur through subsequent non-random attrition dropout by the respondents. Taylor (1994) looked at the problem of dropout or attrition in the BHPS. He identified several

subgroups that were likely to have high levels of attrition, the most important of these being whether an individual had moved since the first wave. The BHPS contains an additional set of weights for longitudinal respondents to be used when conducting of panel analyses. These longitudinal respondent weights, re-weight cases in each wave to take account of previous wave respondents lost through refusal at the current wave or through some other form of sample attrition.

Self-reported panel data can also have some drawbacks when used to analyse long-term trends due to the repeated measurement effect. Some respondents might overstate their job satisfaction in the first wave because the interviewer is a stranger to them. In later waves, as the interviewer and interviewee become closer, this kind of bias might diminish. Green (2004) argues that this repeated measurement effect can be found in the German Socio-Economic Panel (GSOEP) where first-time interviewees are significantly and positively associated with job satisfaction in the West German sample. However, no effect was found for either the East German sub-sample or the BHPS. Moreover, Jürges (2003) reported that with the inclusion of a dummy variable for first-time interview has no effect on the job satisfaction in West German sample.

A further problem when using panel data is that of framing effects, such as changes in the wording of questions and their response scales. In all the annual datasets, known as waves, the precise wording of questions and their response scales are unchanged. Although the domains of job satisfaction were changed and the position of the job satisfaction questions within the questionnaire was changed in 1998, this does not affect my analysis that uses data from 1999 onwards. Similarly, some questions are not asked on a consistent basis or even at all across waves. These are excluded from the satisfaction equations.

Measuring Job Satisfaction

In terms of attitudes towards their jobs, individuals are asked the following questions:

- All things considered, how satisfied or dissatisfied are you with your present job overall?
- How satisfied or dissatisfied are you with your total pay?
- How satisfied or dissatisfied are you with your job security?
- How satisfied or dissatisfied are you with the work itself?
- How satisfied or dissatisfied are you with the hours worked in your job?

Individuals are asked to respond on a one to seven scale where one represents not satisfied at all; four represents neither satisfied nor dissatisfied and; seven completely satisfied. Because there are few observations for the cells at the tails of the distribution in the job satisfaction responses, I combine those observations at levels one and two into one cell and those at the opposite end of the scale six and seven into one cell, thus creating a five point rather than a seven-point scale. Models were estimated for overall job satisfaction and the four facets of job satisfactions for which data are available.

Measuring Low Pay

I therefore attempt to explain the determinants of job satisfaction, according to whether the individual is low-paid or not. The pay variable is calculated using the normal hourly rate of pay and usual hours. Low pay is defined first as pay below two thirds of median hourly earnings for Britain as a whole (Lowpaid1), and second as payment at or below the National Minimum Wage (Lowpaid2). Based on these definitions, the incidence of low pay is 19.31 per cent and 10.92 per cent respectively.

5. Methodology

I follow the established literature (see, for example, Clark and Oswald, 1996, Sloane and Williams, 2000, and Hamermesh, 2001) in estimating a model in which job satisfaction is taken as a measure of the individual's utility from work. This is a function not only of the level of the wage received by an individual and hours of work as in the standard indifference curve approach, but also of his or her pay relative to others, and of both individual and workplace characteristics. Thus

$$u_i = u(y, y^*, h, i, j)$$

Equation 28

where u represents the utility of the i^{th} individual obtained from work (i.e. job satisfaction), y is the wage and y^* is the comparison wage, h represents hours of work and i and j are vectors of individual and job specific characteristics respectively.

I have no direct information on the comparisons an individual makes to ascertain whether he or she is equitably paid, but there is some suggestion in the literature that such comparisons tend to be narrowly drawn. I make the assumption that men will compare their pay with that of other men and women with that of other women with similar characteristics.⁹ I assumed first that Welsh workers would compare their pay with levels prevailing in Wales for the same age group, occupation and industry using Annual Survey of Hours and Earnings Panel (ASHE) dataset. The Annual Survey of Hours and Earnings (ASHE) was introduced in 2004 to replace the New Earnings Survey (NES) and is the largest regular survey of pay in Great Britain, with data being collected on approximately 160,000 employees. The survey is conducted in April of each year, based upon a 1 per cent

⁹ Major and Forcey (1985) found that individuals maximise similarity in wage comparisons by preferring same sex and same job over across sex and combined sex wage information.

sample of employees selected on the basis of the last two digits of their national insurance numbers. The survey contains detailed information on individuals' working hours, hourly and annual earnings, overtime payments, pension contributions and collective agreements. Information on employees is provided directly by employers from their administrative records and is therefore likely to be more accurate than earnings information collected from other sources that rely on self-reporting by employees. Unlike the NES, the ASHE includes data on individuals working for firms that are registered for VAT only as well as for PAYE, and also data on individuals entering the job market between the sample selection date and the sample reference period.

This model is operationalised in a similar way to that presented in chapter two. The difference being instead of several observations (employees) from the same workplace as in the WERS data, I have repeated observations on the same individuals. Thus, I make the commonly used assumption that satisfaction is measured by some unobservable latent variable Y^* which is determined as $Y_{it}^* = \beta'X_{it} + \varepsilon_{it}$ where X is a matrix of dimension $K \times K$ (K being the number of explanatory variables, which in this framework, does not include a constant), β is a $K \times 1$ matrix of coefficients and ε is a vector of disturbance terms. Again letting $\gamma_1 < \gamma_2 < \dots < \gamma_{Q-1}$ be unknown cut points or threshold parameters, the observed response, Y , will take the value 1 if $Y^* \leq \gamma_1$ while

$$Y = 2 \text{ if } \gamma_1 < Y^* \leq \gamma_2$$

$$Y = 3 \text{ if } \gamma_2 < Y^* \leq \gamma_3$$

...

$$Y = Q \text{ if } \gamma_{Q-1} < Y^*$$

where Q is the number of alternative responses.

Following similar logic to that presented in section five of chapter two, but replacing individuals for workplaces and time for employees as the levels in the structure of the model. The error term can be written as

$$\varepsilon_{it} = \mu_{it} + \nu_i$$

Where

ν_i is the individual-specific unobserved effect

μ_{it} is a disturbance term assumed to satisfy the usual regression model conditions.

The presence of ν_i leads to serial correlation in the ε_{it} , $E(\varepsilon_{it}, \varepsilon_{is}) = \sigma_\nu^2$ for $t \neq s$; thus, failure to account for ν_i leads, at a minimum, to incorrect standard errors and inefficient estimation. If ν_i is correlated with X_{it} , failure to account for ν_i leads to an omitted variables bias in the estimate of β . If ν_i is uncorrelated with the variables in X_{it} , then the random effects model is the appropriate estimator.

The fixed effects approach is again rejected because it cannot estimate effects of variables that vary across individuals but not over time e.g. gender. Second, it is a heavy-handed approach to controlling for omitted variables as it knocks out all cross-section variation in the dependent and independent variables. Third, the use of fixed effects can exacerbate biases from other types of specification problems, especially measurement error.

Endogenous Selection into Low Pay

One complication in modelling this relationship possibility of endogenous selection into low pay. Similar to the endogenous selection into training described in section five of chapter three, it is difficult to identify the causal effect of low-pay on worker satisfaction arises because of the potentially circular relationship between low-pay and worker satisfaction. For example,

if having low aspirations is positively correlated with low-pay and if adaptation means that low aspirations lead to higher levels of satisfaction.

Simple regression techniques will only identify the impact effect of low pay on job satisfaction if being low-paid is independent of job satisfaction given the other determinants of job satisfaction included in the regression. If low pay and job satisfaction are endogenous, other things being equal, then estimates of the effect low-pay on satisfaction will be biased upwards unless the endogenous switching process is controlled for.

As discussed in section five of chapter three, one way of dealing with this problem is to linearise the dependent variable and use the Probit Ordinary Least Squares approach (POLS) of Van Praag and Ferrer-i-Carbonell (2004). The key to using this method is finding appropriate exclusion restrictions i.e. variable or variables that are correlated with low pay but not correlated with job satisfaction.

I follow the approach of Pouliakas and Theodossiou (2005) who in their study of the relationship between low pay and job satisfaction used information on individuals' housing conditions in the selection equation, but not in the main job satisfaction equations, to implement this approach. Specifically, a set of indicator variables capturing the number of rooms that correspond to each individual of the household have been included, ranging from one to more than three rooms per person. Also included are variables referring to the presence of "good" and "bad" features in the household, for example whether the dwelling possesses hot running water or adequate heating in the former case, and whether it has shortage of space or damp walls in the latter. Information about the ownership of basic consumer durables (such as a car, microwave, telephone etc.) has also been utilized.

6. Results

Regional Differences in Job Satisfaction

Before concentrating on the differences between low-paid and high-paid workers in Wales, I compare workers in Wales with those in the Rest of the UK. Devolution of powers from Westminster to the Scottish Parliament, National Assembly for Wales and Northern Ireland Assembly has increased interest in regional disparities. Much has been written about the differences in incomes between the regions of the UK (e.g. O’Leary et al., 2005). As noted in the literature review in chapter, it would be presumptuous to equate lower average incomes with lower subjective well-being in particular low job satisfaction.

Figures 24 to 28 show the average satisfaction with different dimensions of work in different parts of Great Britain using waves 9 to 14 of the BHPS, corresponding to the period 1999 to 2005. The figures illustrate that, on average, satisfaction with all dimensions except job security is higher in Wales than in other parts of the Great Britain. In contrast, satisfaction with all dimensions except job security is lowest in London and the South East.

In **Table 11 to Table 15**, I present the results from a series of t-tests of the significance of differences in mean satisfaction levels between different regions. The null hypothesis is that the means of the two groups are equal and the alternative hypothesis is that the means are different. A t-statistic above the critical value for the appropriate degrees of freedom leads to rejection of the null hypothesis. I report the p-values associated with the test statistic. The tables confirm that mean satisfaction with job overall and with work itself is highest in Wales whilst satisfaction with hours worked is higher in Wales than in both English regions consider but not significantly higher than in Scotland. In contrast, satisfaction with job security is lower in Wales than in the English regions but again the difference with Scotland is not statistically different from zero. The only significant difference in

satisfaction with pay is between London and the South East versus the Rest of England. These findings are confirmed by the multivariate analysis documented in **Table 17**, which shows that relative to workers in London and the South East, workers in Wales are more satisfied with their job overall, the work itself and hours worked. There is no significant difference between the regions for satisfaction with pay whilst workers in London and the South East are more satisfied with their job security. Splitting the sample by gender reveals the same pattern.

There are several possible explanations as to why job satisfaction is higher in Wales than in other regions in Britain. The first is that since Wales has higher levels of inactivity than other regions of the UK, those in work may be more satisfied because work is more difficult to find or because those workers who are least satisfied with work, leave the labour market. This is consistent with the Cornell model presented by Hulin et al. (1991) which suggests that employees adjust their valuations of the fairness of the employment relation in response to local market conditions.

To test whether an individual's recent work history plays some part in explaining differences in satisfaction, two additional explanatory variables were added to the model of job satisfaction, namely the number of weeks in which an individual worker was not working in the previous year and whether the individual voluntarily quit his or her last job. Both variables were positive and statistically significant and did not remove the significance of the regional dummy variables. Wales was also split into two sub-regions – West Wales and the Valleys, where GNP is low enough to qualify for European Union Objective One funding, and the rest of Wales. Job satisfaction was higher in the West Wales and the Valleys region, but job satisfaction in the rest of was still significantly higher in the other regions of Britain.

A second explanation is that workers in Wales are less concerned about their levels of pay than workers elsewhere are. Hourly wages are only significant at the 10 per cent level in explaining the level of job satisfaction in Wales compared to the 1 per cent level in the rest of Britain and relative wages are statistically insignificant. Separate estimations for men and women showed that neither pay variable was significant for women. This confirms the general finding (e.g. Souza-Poza and Souza-Poza 2000) that pay matters less for women than men in determining the level of overall job satisfaction.

A third explanation is that the climate of industrial relations, as perceived by workers, is better in Wales than in the rest of Britain. This is consistent with the findings of Drinkwater and Ingram (2003) who using data from the British Social Attitudes Survey found that workers in Wales were significantly more likely to report good industrial relations and workplace harmony than workers in other regions. Unfortunately, the BHPS does not contain a question on the quality of industrial relations to enable testing of this hypothesis.

Another consideration is whether the higher job satisfaction in Wales is due to being Welsh or simply location. Around 20 per cent of those living in Wales were born outside of Wales. Inclusion of a variable indicating whether or not an individual was born in Wales in the model revealed that place of birth had no significant effect on the level of job satisfaction, suggesting that the higher job satisfaction in Wales is driven by location.

Low-Paid Workers Compared to High-Paid Workers in Wales

In **Figure 4** to **Figure 13** and **Table 16**, I repeat the analysis in the preceding paragraphs, this time comparing low-paid and high-paid workers in Wales. **Figure 4** illustrates that on average, low-paid workers are more satisfied with their job overall than higher-paid workers throughout the

sample period when using the first measures of low pay. **Figure 5** shows that satisfaction is higher for low-paid workers, using the second measure, in waves 12-14. Low-paid paid workers are also generally more satisfied with job security (**Figure 8** and **Figure 9**), the work itself (**Figure 10** and **Figure 11**) and hours worked (**Figure 12** and **Figure 13**). Indeed the only dimension with which higher-paid workers are consistently more satisfied is pay.

The t-test for equal means in **Table 16** show no significant difference between high-paid workers and low-paid workers in their overall job satisfaction and satisfaction with job security. Low-paid workers in Wales, on average, have significantly higher levels of satisfaction with the work itself and with their hours worked when the second low-pay measure is used. In contrast, low-paid workers in Wales have significantly lower average satisfaction with their pay than higher-paid workers whichever definition of low pay is used.

In **Table 18**, I report the estimated coefficients associated with the low pay indicators (lowpaid1 and lowpaid2), for males and females separately and for the combined sample. The results show that only satisfaction with pay is lower for low-paid workers than for their higher-paid counterparts. Moreover, when asked about the work itself, low-paid workers report higher satisfaction, other things being equal. For job security and hours worked, there is no statistically significant difference between the groups. These results hold regardless of the measure of low-pay used.

Based on likelihood ratio tests all the estimated models are statistically significant i.e. at least one of the coefficient estimates is significantly different from zero. In all models, rho is significantly different from zero indicating the appropriateness of using a framework that models unobserved heterogeneity.

Splitting the sample by gender (**Table 18**) reveals that for men being low-paid reduces satisfaction with pay when using both measures and with hours worked when using the first low pay indicator. For women, being low-paid is associated with higher overall job satisfaction which appears to be driven in part by higher satisfaction with the work itself and with hours worked. Though the results from must be interpreted with caution since the cell sizes are relatively small, for instance, there are only 244 women who are low-paid according to the second measure.

I then split the sample into high-paid and low-paid groups to examine the effect of pay on satisfaction for the different groups **Table 19**. Not surprisingly, for the all workers sample higher pay is associated with higher satisfaction with pay, moreover the measure of relative pay is negatively associated with satisfaction with implying that, on average, the more an individual's pay is below the comparison wage the less satisfied the individual is. For all the groups considered, there is no evidence of a relationship between the both the pay measure and the comparison pay measure and overall satisfaction. For the higher paid workers, pay is positively related to satisfaction with pay but for the low-paid workers the absolute level of pay has no impact on satisfaction with pay.

Controlling for Endogenous Selection into Low Pay

I then estimate a set of models that control for endogenous selection into low-pay. The results of this estimation, shown in **Table 20**, confirm the conclusions of Van Praag and Ferrer-i-Carbonell (2004), Ferrer-i-Carbonell and Fritjers, (2004), Van Praag and Ferrer-i-Carbonell, (2004), as the Probit Ordinary Least Squares approach (POLS), yields approximately the similar estimates to as a traditional ordered probit approach, apart from a multiplying factor that stems from a different normalization. Moreover, the

significance of the estimates, e.g. as evaluated by t-values, displays a the same pattern for both sets of results

Consistent with Pouliakas and Theodossiou (2005) the chosen identifying restrictions are highly correlated with low pay status, most of them at the one percent significance level or less. The Wald statistics testing the joint significance of these variables in the probit equations also testify to their high explanatory power. Thus, I find that individuals who live in more spacious households (i.e. with two or more than three rooms per person) are less likely to be low-paid, compared to those with only one room per person. Similarly, individuals living in households with fewer “good” features, more “bad” features, and those who do not possess certain basic consumer durables, face a greater likelihood of low wage employment. Thus, the finding of no relationship between low pay and overall job satisfaction is robust to considerations of selection into low pay.

The results are also consistent with the work of Leontaridi, Sloane and Jones (2005), Diaz-Serrano and Cabral Vieira (2005) and Pouliakas and Theodossiou (2005) for half of the economies in the EU including the UK. Pouliakas and Theodossiou identified a ‘two-tier’ taxonomy across the European Union, with low wage workers in some countries experiencing the full brunt of both lower-paid and bad quality jobs.

Explanations for the Absence of a Relationship Between Low Pay and Job Satisfaction

There are a number of reasons for finding no relationship between low pay and overall job satisfaction. First, there may be other factors determining job satisfaction that offset low pay and dissatisfaction with pay. Notwithstanding individual differences, Adam Smith’s (1776) idea of compensating factors suggests that higher paid works may lower the weight placed on pay in determining satisfaction and find more important aspects

of their jobs unsatisfying and secondly, that low paid workers reach a target level of earnings. Once these earnings are reached, however low, other job attributes take over in determining satisfaction. This idea is supported by the work of Sousa-Poza and Sousa-Poza (2000) who suggested that monetary compensation is only the fourth most important determinant of job satisfaction. Similarly, Clark (2005) found job security, having an interesting job, independency, social usefulness, etc are all more important to workers than having a high wage. Thus, those in low-paid jobs may value other aspect of a job more.

Low-paid workers may have low expectations, perhaps inherited from those around or developed after previous labour market experiences, which are more easily met and are therefore more satisfied in their job. Some psychologists (e.g. Tang, 1992) have questioned the extent to which low-paid workers see their pay as low. Writers such as Mirowsky (1987) have examined the idea of target wages and how individuals form such targets. He suggested that feelings of underpayment were related to a social norm based on what people ought to earn in a specified category or class. He argues that the needs and status of groups play a role in the formation of the benchmark. This idea builds on Adam's equity theory (Adams, 1963), discussed in section three of chapter two, by moving the comparison to another and additional level of abstraction, where consensus and social norms play a role in pay satisfaction through judgements of the distribution of earnings (Alves and Rossi, 1978). This reasoning can be used to support the assertion that low paid workers are complicit in maintaining their situation.

Job content is frequently cited as a key determinant of job satisfaction (Sousa-Poza and Sousa-Poza, 2000; Skalli et al., 2007 and Clark, 2005). Job redesign, job enlargement, job enrichment, and job rotation all receive much attention from human resource program technicians seeking to improve

worker satisfaction and, in the process, productivity. However, writers such as Bassett (1994) have argued that not every worker wants an enriched, more varied, more responsible, more interesting job. Workers often resist change introduced by management. Some prefer mindless simplicity in their work. When job enrichment adds responsibility, workers may believe their pay should be adjusted upward. Adding responsibility to some jobs may limit responsibility in others. Extensive job redesign may amount to a substantial redefinition of work roles that requires a major redistribution of power and responsibility within the organization. Job redesign can represent anything from a cosmetic refurbishing of old tasks to a major organizational revolution. The extent of change and the newness of the work experience may themselves become the source of considerable satisfaction or dissatisfaction.

Another possible explanation maybe that low-paying job are viewed by workers as stepping-stones to 'superior' jobs. To control partly for this, I included a variables indicating whether an individual has promotions opportunities in their job and another indicating whether they have annual increments in their wage. The coefficients on both the variables are positive and statistically significant in explaining overall satisfaction and satisfaction with pay but do not affect result that low-paid workers are no less satisfied that their higher paid counterparts. This explanation is not supported by other literature. Authors such as Stewart and Swaffield, (1999) have provided evidence of a "low pay/no pay" phenomenon where the chance of becoming low paid is significantly higher for unemployed individuals than for high-paid employees and, moreover, amongst employed individuals, the chances of entering unemployment were larger for individuals who were low-paid compared to high-paid counterparts. They also found evidence that low pay acted as a conduit to repeat unemployment as the unemployed who found a low-paid job were more likely to fall back into unemployment than those who had found a high-paid job.

Pouliakas and Theodossiou (2005) speculated that the absence of differences in job satisfaction between low-paid and high-paid workers in some countries in their study might be due to the governments in those countries ensuring that low-paid jobs are “underpinned by an infrastructure of decency and fairness with guaranteed workplace rights”. They cite the Greek and Spanish labour markets, as examples of where the weakening of employment protection systems has promoted a discrepancy between ‘good’ and ‘bad’ jobs as measured by objective characteristics and differences in satisfaction between high paid and low paid workers are apparent.

A final explanation is that there may be selection effects into the labour market so that those who gain the least satisfaction from working are less likely to be observed in employment. This may be particularly true for individuals whose characteristics mean that they would be low-paid if they entered the labour market since the opportunity cost to them of not working would be lower than someone whose characteristics mean that they would be high-paid in the labour market.

7. Conclusions

Creating ‘more and better jobs’ has become an objective for policy-makers across the world but this has raised the issue of what defines a better job. Using job satisfaction as an indicator of the quality of work, this paper has shown that low-paid workers in Great Britain in general seem to be satisfied with their work situation. In particular, workers in Wales are generally satisfied in their work and this is despite Wales being a relatively low-wage economy. To what extent this is a reflection of a history of high levels of unemployment (or inactivity) is difficult to determine, but the level of job satisfaction is higher than in England and Scotland. The claim that low-paid jobs are ones of inherent low quality appears to have no basis, at least from the perspective of workers in Wales.

This suggests that policy should focus on getting the unemployed and the inactive into employment, regardless of whether or not that employment is low-paid. This is emphasised by the almost universal finding in the literature that unemployment is associated with lower overall life satisfaction. Clark (2009), using evidence from the European Community Household Panel, rejected the idea that this association is due to a reverse causality where unhappy people who become unemployed rather than unemployment making people unhappy.

This work could be developed in a number of ways, notably testing the explanations for the lack of evidence for a relationship between low-pay and satisfaction. Methodologies for controlling for sample selection in count and ordinal variables are being developed e.g. Miranda and Rabe-Hesketh (2006) and advances in the processing power of computers means that these models can now be implemented.

One of the suggestions above was that for some people paid jobs may be a path to higher paying jobs. Thus, what matters for job satisfaction might be the expected lifetime income rather than current income. The literature on training already contains the notion that individuals are willing to give up income in the present in anticipation of income in the future. A longer series of panel data would allow the estimation of models containing observations of income in future periods to be discounted back to the current to provide estimates of expected future income in the current period. Similarly, longer panels could be used to include employment and earnings history in models relating income and satisfaction. The idea being that satisfaction for a given level of earnings might be different for those who have moved up to that level compared to those who have come down to that level. Other work could examine the impact of the economic cycle on this relationship. The analysis presented here is set in the context of 'nice' economic conditions.

Other things being equal, rising unemployment might be expected to increase the satisfaction of those workers in employment.

Examination of the regional differences in job satisfaction could be enhanced by using a extending the multilevel modelling framework to account for clustering at the regional level as well as at the individual level. Differences in price level in the different regions may be part of the explanation for higher job satisfaction in Wales despite lower average earnings. Looking at nominal wages alone may overstate the differences in material living standards between workers in Wales and their counterparts in England. The construction and use of regional price indices, especially one that accounted for differences in housing costs would provide insights into this.

8. Figures and Tables

Figure 4: Satisfaction with Job Overall by Lowpaid1

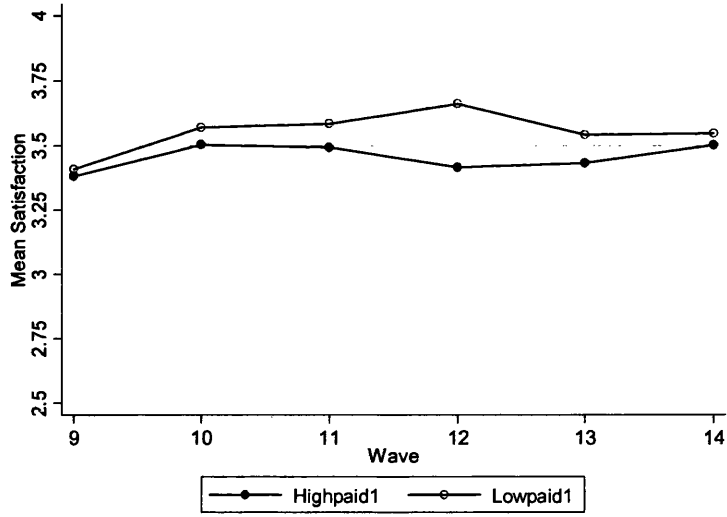


Figure 5: Satisfaction with Job Overall by Lowpaid2

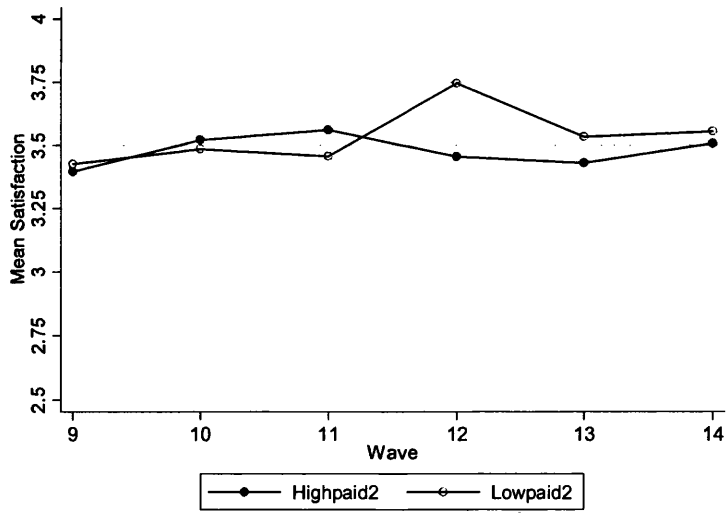


Figure 6: Satisfaction with Pay by Lowpaid1

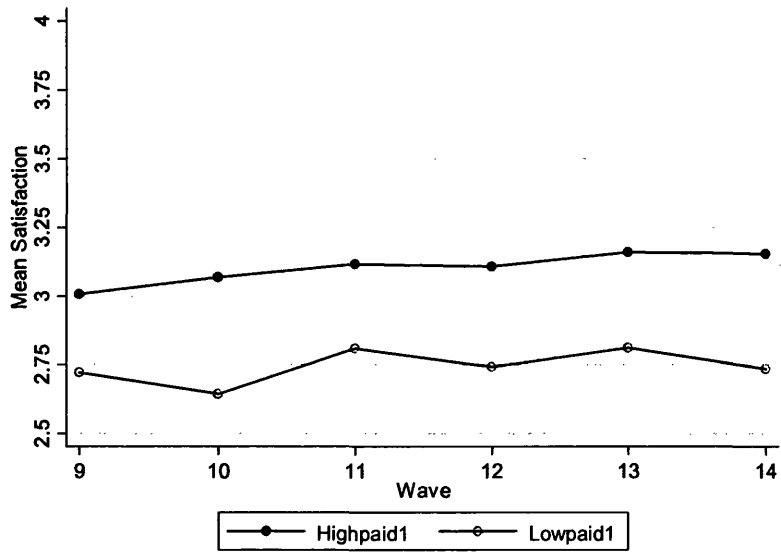


Figure 7: Satisfaction with Pay by Lowpaid2

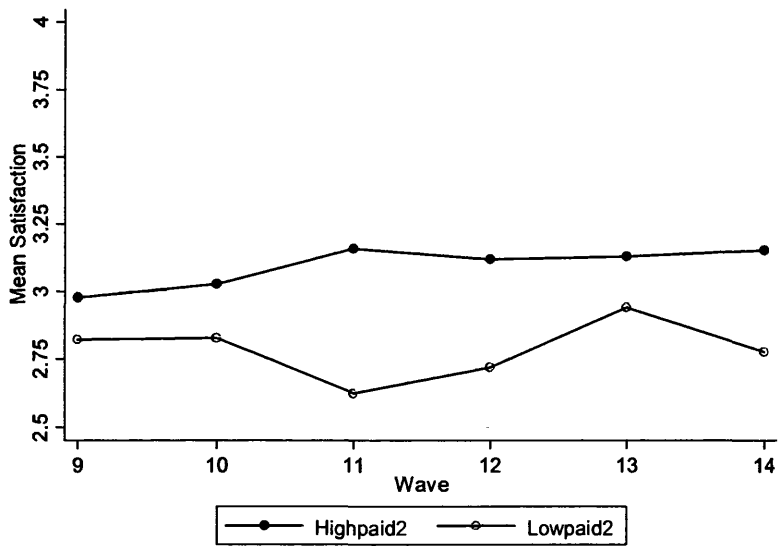


Figure 8: Satisfaction with Job Security by Lowpaid1

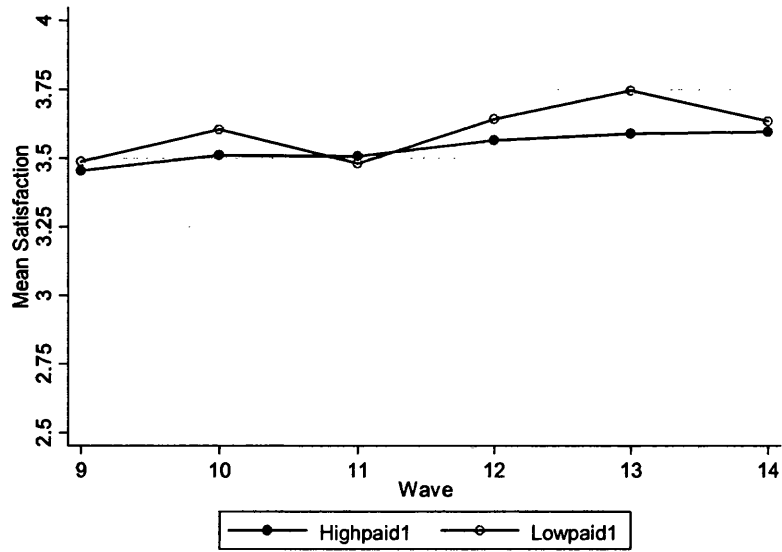


Figure 9: Satisfaction with Job Security by Lowpaid2

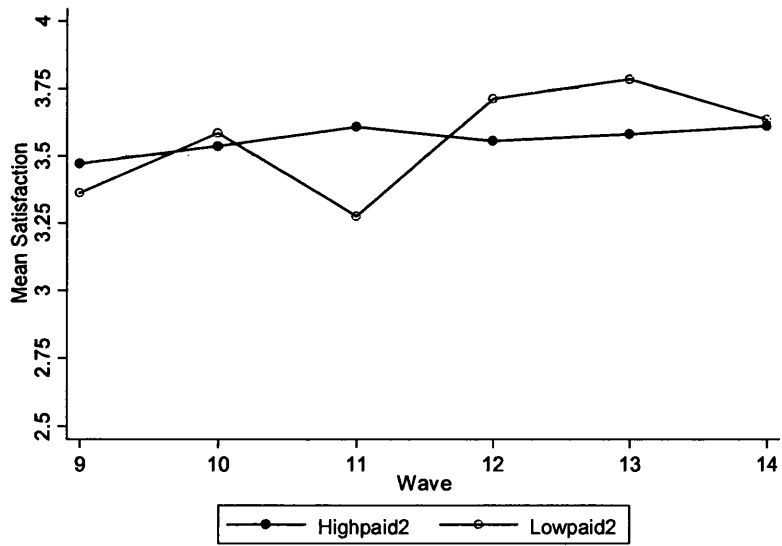


Figure 10: Satisfaction with Work Itself by Lowpaid1

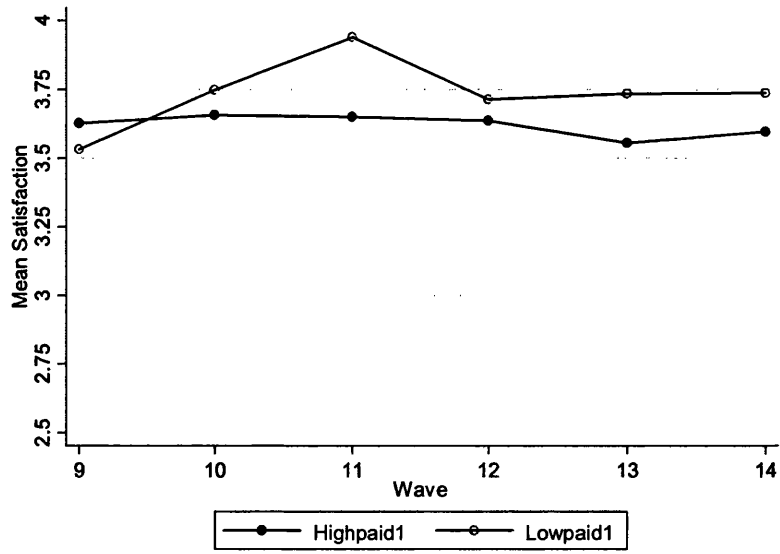


Figure 11: Satisfaction with Work Itself by Lowpaid1

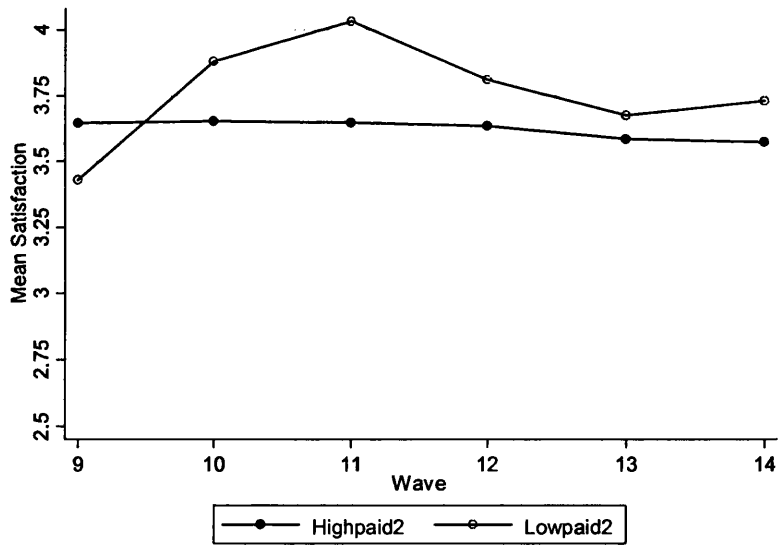


Figure 12: Satisfaction with Hours Worked by Lowpaid1

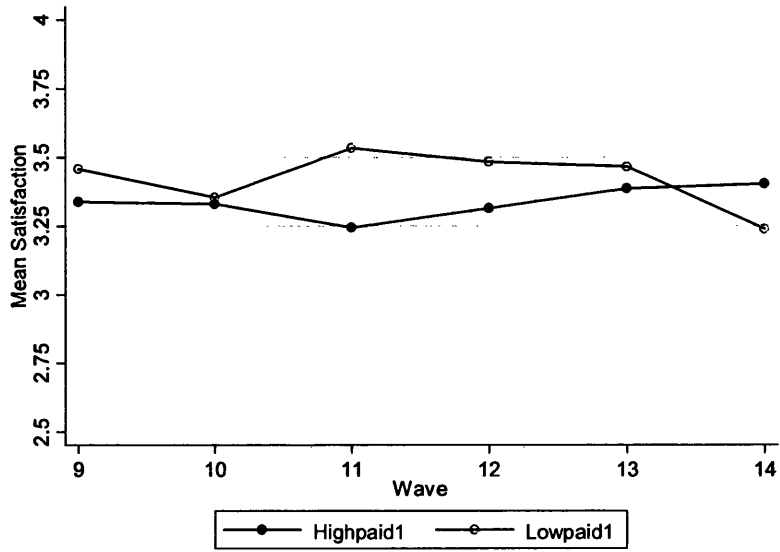


Figure 13: Satisfaction with Hours Worked by Lowpaid2

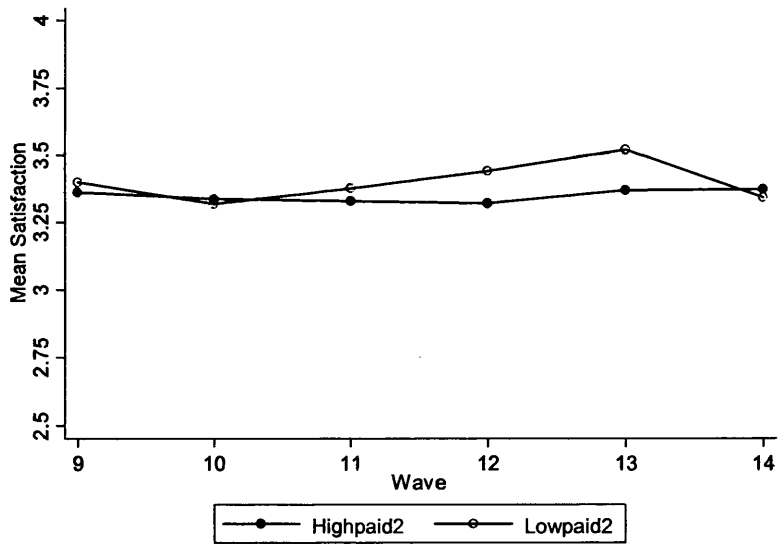


Table 11: T-Test for Differences in Overall Satisfaction

		London and the South East	Rest of England	Wales	Scotland
	Mean	3.331	3.375	3.481	3.366
	Standard Error	0.025	0.017	0.025	0.026
Comparison with					
Rest of England	Difference	-0.04			
	P-Value	0.144			
Wales	Difference	-0.150***	-0.106***		
	P-Value	0.000	0.001		
Scotland	Difference	-0.035	0.009	0.115***	
	P-Value	0.338	0.769	0.002	

Note: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 12: T-Test for Differences in Satisfaction with Pay

		London and the South East	Rest of England	Wales	Scotland
	Mean	2.982	3.071	3.046	3.017
	Standard Error	0.0319	0.023	0.030	0.031
Comparison with					
Rest of England	Difference	-0.089**			
	P-Value	0.021			
Wales	Difference	-0.064	0.025		
	P-Value	0.146	0.501		
Scotland	Difference	-0.035	0.054	0.029	
	P-Value	0.416	0.155	0.507	

Note: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 13: T-Test for Differences in Satisfaction with Job Security

		London and the South East	Rest of England	Wales	Scotland
	Mean	3.484	3.491	3.555	3.585
	Standard Error	0.028	0.018	0.032	0.026
Comparison with					
Rest of England	Difference	-0.007			
	P-Value	0.825			
Wales	Difference	-0.071*	-0.064*		
	P-Value	0.097	0.075		
Scotland	Difference	-0.101**	-0.094***	-0.030	
	Std error	0.038	0.031	0.041	
	P-Value	0.009	0.003	0.466	

Note: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 14: T-Test for Differences in Satisfaction with Work Itself

		London and the South East	Rest of England	Wales	Scotland
	Mean	3.358	3.432	3.641	3.434
	Standard Error	0.028	0.018	0.028	0.024
Comparison with					
Rest of England	Difference	-0.074**			
	P-Value	0.028			
Wales	Difference	-0.283***	-0.209***		
	P-Value	0.000	0.000		
Scotland	Difference	-0.076**	-0.001	0.207***	
	P-Value	0.042	0.949	0.000	

Note: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 15: T-Test for Differences in Satisfaction with Hours Worked

		London and the South East	Rest of England	Wales	Scotland
	Mean	3.146	3.233	3.353	3.296
	Standard Error	0.030	0.021	0.033	0.026
Comparison with					
Rest of England	Difference	-0.087**			
	P-Value	0.022			
Wales	Difference	-0.207***	-0.121***		
	P-Value	0.000	0.002		
Scotland	Difference	-0.150***	-0.063*	0.057	
	P-Value	0.000	0.061	0.173	

Note: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 16: T-Tests for Equal Means – All Workers

Satisfaction Dimension	High-paid1	Low-paid 1	Difference	High-paid2	Low-paid 2	Difference
Overall						
Mean	3.451	3.532	0.080	3.474	3.536	0.062
Standard Error	0.029	0.044	0.051	0.027	0.057	0.061
P-Value			0.120			0.309
Pay						
Mean	3.095	2.730	-0.365***	3.081	2.786	-0.295**
Standard Error	0.034	0.061	0.065	0.031	0.078	0.080
P-Value			0.000			0.000
Job Security						
Mean	3.539	3.593	0.053	3.559	3.568	0.009
Standard Error	0.036	0.048	0.050	0.033	0.058	0.056
P-Value			0.291			0.869
Work Itself						
Mean	3.620	3.721	0.101*	3.628	3.741	0.113*
Standard Error	0.034	0.049	0.055	0.031	0.059	0.066
P-Value			0.072			0.092
Hours						
Mean	3.335	3.414	0.079	3.349	3.382	0.033
Standard Error	0.038	0.069	0.074	0.033	0.083	0.079
P-Value			0.289			0.681

Notes: *denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

High-paid1: Above 2/3rds of median wage

Low-paid1: At or below 2/3rds of median wage

High-paid2: Above the minimum wage

Low-paid2: At or below the minimum wage

Table 17: Multilevel Ordered Probit Estimates of Regional Differences in Job Satisfaction

VARIABLES	Overall	Pay	Job Security	Work Itself	Hours Worked
Males and Females					
Rest of England	0.042*** (0.016)	0.099*** (0.018)	0.007 (0.018)	0.055*** (0.017)	0.078*** (0.018)
Wales	0.139*** (0.020)	0.032 (0.022)	-0.061*** (0.021)	0.250*** (0.020)	0.177*** (0.022)
Scotland	-0.003 (0.018)	0.033 (0.021)	0.028 (0.020)	0.033* (0.019)	0.116*** (0.020)
Observations	49,761	49,761	49,761	49,761	49,761
Males Only					
Rest of England	0.035 (0.024)	0.060** (0.026)	0.011 (0.026)	0.055** (0.025)	0.070*** (0.026)
Wales	0.154*** (0.029)	0.034 (0.032)	-0.073*** (0.031)	0.299*** (0.030)	0.202*** (0.032)
Scotland	0.001 (0.027)	-0.038 (0.030)	0.035 (0.030)	0.041 (0.028)	0.086*** (0.030)
Observations	23,736	23,736	23,736	23,736	23,736
Females Only					
Rest of England	0.050** (0.022)	0.170*** (0.026)	0.007 (0.024)	0.055** (0.023)	0.090*** (0.025)
Wales	0.122*** (0.027)	0.046 (0.031)	-0.069** (0.029)	0.202*** (0.028)	0.156*** (0.030)
Scotland	-0.004 (0.025)	0.036 (0.029)	0.034 (0.027)	0.027 (0.026)	0.143*** (0.028)
Observations	26,025	26,025	26,025	26,025	26,025

Notes: All models contain the full set of control variables.

Standard errors in parentheses.

* denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 18: Multilevel Ordered Probit Estimates of Estimates of the Effect of Low Pay on Job Satisfaction

	Job Overall	Total Pay	Job Security	Work Itself	Hours Worked
Males and Females					
Low-paid1	0.018 (0.053)	-0.357*** (0.074)	0.068 (0.058)	0.139** (0.065)	-0.060 (0.068)
Low-paid2	-0.038 (0.059)	-0.301*** (0.062)	0.004 (0.061)	0.118* (0.048)	-0.081 (0.071)
Females Only					
Low-paid1	0.237*** (0.075)	-0.082 (0.075)	0.153** (0.075)	0.347*** (0.076)	0.200*** (0.075)
Low-paid2	0.165** (0.082)	-0.096 (0.082)	0.104 (0.082)	0.275*** (0.083)	0.092 (0.082)
Males Only					
Low-paid1	-0.061 (0.056)	-0.414*** (0.057)	-0.109* (0.056)	-0.013 (0.056)	-0.138** (0.056)
Low-paid2	-0.020 (0.055)	-0.294*** (0.055)	-0.057 (0.055)	0.067 (0.055)	-0.065 (0.055)

Notes:

Low-paid1: At or below 2/3rds of median wage

Low-paid2: At or below the minimum wage

All models contain the full set of control variables.

Standard errors in parentheses.

* denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

Table 19: Multilevel Ordered Probit Estimates of the Effect of Pay on Job Satisfaction Dimensions by Worker Group

Group	Variable	Job Overall	Total Pay	Job Security	Work Itself	Hours Worked
All Workers	Log of average hourly earnings	0.019 (0.094)	0.499*** (0.107)	-0.149 (0.107)	-0.077 (0.097)	0.328*** (0.107)
	Comparison earnings	-0.016 (0.011)	-0.023* (0.013)	-0.023* (0.013)	-0.011 (0.012)	0.046*** (0.013)
Lowpaid1	Log of average hourly earnings	0.003 (0.171)	0.811*** (0.191)	-0.801*** (0.195)	-0.084 (0.177)	0.212 (0.195)
	Comparison earnings	-0.023 (0.017)	0.003 (0.019)	-0.086*** (0.020)	-0.016 (0.018)	0.037* (0.019)
Lowpaid1	Log of average hourly earnings	0.215 (0.336)	-0.351 (0.399)	0.137 (0.363)	0.122 (0.348)	0.074 (0.379)
	Comparison earnings	-0.047 (0.131)	-0.277* (0.156)	-0.102 (0.141)	-0.035 (0.136)	-0.125 (0.148)
Lowpaid2	Log of average hourly earnings	0.014 (0.155)	0.967*** (0.175)	-0.660*** (0.177)	-0.080 (0.161)	0.245 (0.177)
	Comparison earnings	-0.019 (0.016)	0.018 (0.018)	-0.072*** (0.018)	-0.014 (0.016)	0.038** (0.018)
Lowpaid2	Log of average hourly earnings	0.031 (0.356)	-0.638 (0.408)	-0.095 (0.379)	0.030 (0.361)	0.236 (0.401)
	Comparison earnings	-0.151 (0.143)	- 0.467*** (0.163)	-0.240 (0.150)	-0.085 (0.145)	-0.063 (0.160)

Notes:

Low-paid1: At or below 2/3rds of median wage

Low-paid2: At or below the minimum wage

Comparison earnings = Predicted real average hourly earnings – Actual real average hourly earnings

All models contain the full set of control variables described.

Standard errors in parentheses.

* denotes significant at the 10% level, ** at the 5% level and *** at the 1% level.

Table 20: Probit Ordinary Least Squares of the Effect of Low Pay on Job Satisfaction

	Job Overall	Total Pay	Job Security	Work Itself	Hours Worked
Males and Females					
Low-paid1	0.030	-0.354***	0.030	0.107**	-0.043
	(0.045)	(0.052)	(0.051)	(0.047)	(0.052)
Low-paid2	0.024	-0.287***	0.037	0.118**	-0.033
	(0.046)	(0.054)	(0.052)	(0.048)	(0.053)
Females Only					
Low-paid1	0.206***	-0.123	0.167*	0.302***	0.200**
	(0.079)	(0.089)	(0.090)	(0.079)	(0.088)
Low-paid2	0.131	-0.138	0.114	0.240***	0.073
	(0.086)	(0.097)	(0.098)	(0.088)	(0.097)
Males Only					
Low-paid1	-0.061	-0.522***	-0.095	-0.021	-0.177***
	(0.057)	(0.067)	(0.063)	(0.060)	(0.066)
Low-paid2	-0.017	-0.369***	-0.044	0.054	-0.091
	(0.056)	(0.066)	(0.062)	(0.059)	(0.065)

Notes:

Low-paid1: At or below 2/3rds of median wage

Low-paid2: At or below the minimum wage

All models contain the full set of control variables.

Standard errors in parentheses.

* denotes significant at the 10% level, ** at the 5% level and *** at the 1% level

CHAPTER 6

Conclusions

The literature on job satisfaction has expanded rapidly in the last few decades. This research has come from a range of academic disciplines and has been of interest to policy-makers, commentators and business people. From these studies, we are better able to understand the relationships between the experience of work, work-time, and well-being. In this thesis, I have presented three studies based on data from Great Britain that add to this literature.

Summary of Main Findings

The first study used data from the British 2004 Workplace Employee Relations Survey (WERS) to examine the relationship between training and job satisfaction. Using a multi-level modelling strategy that exploited the matching of workplace information to employee information, I found clear evidence that training is positively associated with all the dimensions of job satisfaction considered. Moreover, the effect increases with the volume of training and the effect varies across different groups of workers. I have also found that training is also considered a ‘positional good’ by workers as the satisfaction they receive from training also depends, in part, on the amount of training other workers receive, particularly those in the same workplace.

Implications

Conventional estimates of the rate of return to training focus on the monetary rewards to training through higher productivity and pay. This research suggests that a full evaluation of the benefits of a training programme, by firms or as a government programme, should include the positive impact of training on worker well-being. In principle, such benefits can be monetised by asking how much the earnings of the worker would

have to increase to achieve the same increase in job satisfaction as the provision of training.

The results also provide several insights into how training programmes should be implemented within firms. First, firms should consider the coverage of training provision across all its employees. An unequal distribution of training between workers will tend to reduce the satisfaction of those workers who receive relatively less training. Second, for training to be effective in increasing job satisfaction training, employers should aim to close gaps between the skills required for jobs and the skills possessed by the individuals. Providing training to those workers who already have the skills required for their jobs or who are over-skilled is associated with reductions in worker satisfaction.

The results presented in the study have several limitations. First, the above estimates are based on cross-sectional data. This means that I cannot control for unobserved worker heterogeneity and cannot claim to identify. Neglecting unobserved heterogeneity may result in biased estimates, insofar as personality traits such as extraversion, neuroticism, optimism and self-esteem have been found to be correlated with self-reported measures of satisfaction (Diener and Lucas, 1999, Judge et al., 2002). Moreover, the absence of suitable exclusion restrictions meant that I was unable to model the possible endogeneity of training. Finally, this study only considers one particular type of training.

Further research is required before models for explaining job satisfaction can be specified with certainty. The definition of training considered in this study is wide enough to capture a range of different types of training. Further research could explore in more detail the different types of training and how training is delivered affects job satisfaction. The impact of training on job satisfaction may depend on the type of skills developed by the

training, in particular whether the skills are general or specific. The portability of general skills may raise job satisfaction, as it is easier to move to other jobs where satisfaction is higher. General skills also provide an insurance against unemployment since those worker's with general skills are likely to have shorter search times than those without skills. In contrast, specific skills bind the worker to the firm and may reduce satisfaction by creating a barrier to exit, as workers will lose a portion of the return on such skills if they move. Barrett and O'Connell (1998), suggested that vocational training has the greatest impact on wages and productivity when it is specific to the firm providing it. The effect on job satisfaction may follow similar patterns.

Rowden and Conine (2003) argued that the methodology used in training employees is important. Employees are more likely to be satisfied with training that is presented in the manner they believe is most effective in helping them learn. Similarly, the funding of training and whether the training leads to a recognised qualification may all affect job satisfaction.

Moreover, is the relationship between training and job satisfaction maintained overtime? The process of adaptation identified in the well-being literature could mean that may be workers get used to having a particular amount of training and require additional training to maintain satisfaction levels. Further research, could examine how education or training affects wider aspects of well-being.

The second study also made use of the 2004 WERS data, including the new financial performance questionnaire, to examine the relationship between job satisfaction and workplace performance. I found that average job satisfaction is positively associated with subjective assessments of financial performance and labour productivity and that these associations are statistically significant at conventional test levels. I found that measures of

job satisfaction are negatively related to rates of absenteeism and voluntary employee turnover. I found that job satisfaction is positively related to gross value added per full-time equivalent employee but this association is not statistically significant when measures of absenteeism and voluntary employee turnover are included in the model. Finally, I found no significant association between job satisfaction and profitability.

Taken together these results are consistent with the findings of Zhang and Zheng (2009) and that job satisfaction-job performance relationship is mediated by employee commitment to their organisation as measured by the quit rate and the absence rate in this study. The implication for businesses is that improving employee job satisfaction can improve performance as measured by value added per employee but this works through reduced absenteeism and lower voluntary employee turnover. For workplaces with relatively low absence rate and low quit rates, potential for increasing workplace performance by raising satisfaction is appears to be limited.

This research could be usefully extended in several ways. First using panel analysis, repeated observations of the same workplace would make it easier to make causal inferences about the impact of satisfaction on performance. These data also permit analysis of the impact of the factors, which determine satisfaction, such as a higher pay, on changes in performance.

The second is the use of alternative performance measures. For instance, linking the Annual Business Inquiry to the Workplace Employee Relations Survey (WERS) would allow several years of financial performance data to be added to the establishment and employee characteristics facilitating a more detailed investigation of the satisfaction-performance relationship. The robustness of results could be tested using alternative measures of economic climate and performance.

In the third study, I used the first six waves of the Welsh boosts to the British Household Panel Survey to explain the determinants of overall job satisfaction and four facets of job satisfaction in Wales, distinguishing between female and male workers and low-paid and higher paid workers. My results showed no support for the claim that made widely in the European Union that low-paid jobs are jobs of inherently low quality, at least from the perspective of workers. Moreover, I found that despite there being disproportionately more low-paid workers in Wales than in either England or Scotland, job satisfaction is higher in Wales than in the other countries.

These results suggest that policy should focus on getting the unemployed and the inactive into employment, regardless of whether or not that employment is low-paid and there should be less concern about what policy-makers perceive to be low quality work, as this does not appear to be consistent with workers own perceptions about their jobs.

This however, is not an argument for expanding the low-paid sector at the expense of the high paid sector. Authors such as Stewart and Swaffield, (1999) have provided evidence of a “low pay/no pay” phenomenon where the chance of becoming low paid is significantly more likely for unemployed individuals than for high-paid employees and, among employed individuals, the chances of entering unemployment were larger for individuals who were low-paid rather than high-paid. They also found evidence that low pay acted as a conduit to repeat unemployment as the unemployed who found a low-paid job were more likely to fall back into unemployment than those who had found a high-paid job.

Similarly, Cappellari and Jenkins (2008) found that low-paid men are more likely to become unemployed than high-paid men, and unemployed men have a greater chance of becoming low paid than do high-paid men. They

also found evidence that the experience of low pay or unemployment itself increases the chance of being trapped in those states even after controlling for effects of individual heterogeneity.

European Commission (2003, p. 6-8) reported that placing greater emphasis on the quality of employment results in faster employment growth and higher productivity as better jobs are expected to be more attractive to non-participants or those at the margins of the labour force, especially women. Safer jobs that offer access to training are also more likely to result in productivity gains, by reducing turnover and absenteeism and by leading to the production of better goods and services, respectively.

Similarly, Fehr and Falk (2002) argue that employees are likely to reciprocate to their employer's gift-exchange offer of better working conditions by exerting greater effort. Whilst Eurofound (2001, p.7) suggested that high-quality employment is believed to contribute to the positive mental and psychological well-being of employees, thus serving as a precondition for a rich, satisfying, and productive life

The attention that the EU has paid to job quality was also stirred by the acknowledgement that the full potential of job creation couldn't be achieved if the jobs on offer are unattractive in terms of the quality of work, consequently proving difficult to fill (Eurofound, 2001, p. 4). This problem has recently become starker in European labour markets, following the marked improvements in the quality of the European labour supply (European Commission, 2001b, p. 9).

An expansion of the low-paid sector at the expense of the high-paid sector is unlikely to be desirable from society's perspective. The UK Commission for Employment and Skills (2009) highlighted the importance of high-paid,

high-skilled jobs in economic development. High paid jobs also provide a higher proportion of the tax base needed to fund public spending.

Suggestions for Further Research

In this section, I suggest a number of ways the job satisfaction research could be extended beyond the suggestions that relate specifically to the three studies in this thesis.

More and better data is a perennial request from researchers. Panel studies would make it easier to make causal inferences about the impact of satisfaction on performance. One of the main limitations of the studies presented in chapters three and four of this thesis is that causation has not been fully established because of the cross sectional nature of the data. Panel data also permit analysis of the impact of the factors that determine satisfaction, such as a higher pay, on changes in performance. This could be used to test efficiency wage hypotheses.

Several authors have questioned the wisdom of making policy changes on the basis of ex-post subjective evaluations of individual well-being (e.g. Pouliakas and Theodossiou, 2010). As noted in chapter 2 section 2, job satisfaction questions based on a likert scale satisfaction questions suffer from a number of weaknesses.

One weakness is that changes in the wording of the question can produce large and confounding changes in the results. For example, asking experiential questions ('how was work today/ yesterday for you?') and evaluative ones ('how satisfied are you overall with your job?') can change the results markedly. In the context of life satisfaction asking the former instead of the latter reduces the average satisfaction score by nine points (Waldron 2010).

A second weakness is that individual's responses to such questions are affected by a process of adaptation and coping (Brickman and Campbell 1971; Easterlin 1974, 2001; Frederick and Loewenstein 1999) and are contaminated by cognitive dissonance (Festinger 1957) or rationalization (Gilbert 2006). These psychological processes present difficulties for the evaluation of the effect of any job characteristic on individual job. Adaptation, coping and cognitive dissonance mean that the long-term impact on wellbeing of a change in the situation of an individual is expected to be smaller than one would have anticipated a priori or at the instant moment of change (Brickman and Campbell 1971; Frederick and Loewenstein 1999; Helson Kahneman et al. 1999).

Casual empiricism would nevertheless suggest that there is still a significant welfare cost that human beings experience in the period of transition from a favourable to an unfavourable state (e.g. from employment to unemployment). Thus, even though individuals might eventually adapt to unfortunate circumstances of life, mitigating the unhappiness and disruption that they experience, in the interim may be a valid objective for policy.

These ideas are already being tested using measures of life satisfaction or happiness (e.g. Kahneman, 1999; Lucas et al., 2004; Oswald and Powdthavee, 2005 and Zimmermann and Easterlin, 2006) and similar questions could be asked using job satisfaction measures. This would enable researchers to describe factors that can alter people's long-term baseline levels of job satisfaction versus those factors that only have temporary effects. Similarly, questions about what determines the set point and whether it can be changed, could be addressed.

One way of testing these ideas is to look at job satisfaction is to examine the level of satisfaction that the individual experiences at the instant moment of change in his/her circumstances. For example, Leontaridi and

Theodossiou (2004) used the BHPS to evaluate the effect of employment status on individual well-being in the period straight after a labour market transition has occurred. The authors argued that in the first period of transition it may be expected that the process of adaptation has not yet worked itself out to its full extent. With this assumption, they showed that transitions from full-time employment to joblessness or part-time work are associated with a significant reduction in individual utility.

An alternative approach is to use conjoint which is a stated or revealed preference technique known which allows the researcher to uncover the ex ante preferences of a sample of workers over a given number of attributes that are typical of most jobs. (McFadden 1973 and Hanemann, 1984)

A second way of improving the quality and quantity of data available to researchers is through the increased linking of datasets. For instance, linking WERS to the Annual Survey of Hours and Earnings (ASHE) and the Labour Force Survey (LFS) would afford opportunities for looking at the dynamics of the earnings-satisfaction relationship and a more thorough examination of local labour market conditions on job satisfaction. Similarly, matching to additional data sources may provide suitable instruments for conducting instrumental variable estimation.

More generally, many factors that influence job satisfaction and subjective well-being measures in general likely to have their effects in the broader context of people's lives. For instance, it is plausible that someone with substantial wealth is more satisfied with the same level of income from the same job than someone with little or no wealth. More data sheds some light on these factors. Other contextual influences such as values, social structure, cultural patterns expectations etc are more difficult to capture.

Most of the work on job satisfaction makes use of questionnaire-based methods of collecting data on job satisfaction. Hulin and Judge (2003) proposed that job satisfaction includes multidimensional psychological

responses to one's job, and that such responses have cognitive (evaluative), affective (or emotional), and behavioural components. Similarly, Kahneman et al., (2004) made the distinction between instantaneous utility and remembered utility. Questionnaire based methods are better suited towards collecting information on the cognitive (evaluative) or element of job satisfaction. Different data collection methods may provide different insights the affective (or emotional) dimension. For example, the Experience Sampling Method (ESM) requires participants to carry a handheld computer that prompts them several times during the course of the day (or days) to answer a set of questions immediately. This may contain questions about the participant's current assessment of their job satisfaction, as well as the activities in which they were engaged just before they were prompted and the people with whom they were interacting.

This method has the advantage of reducing some of the cognitive biases in the reported well-being. A cheaper alternative is the Day Reconstruction Method (DRM) that asks participants to fill out a diary summarising episodes of the preceding day and to report the intensity of their feelings during each of those. Similarly, biological, non-verbal, behavioural and informant report assessments may also provide new insights.

In the last decade, there has been considerable progress in developing and implementing the econometric techniques used to analyse data on job satisfaction. The multilevel modelling techniques used in this thesis have only been implemented in statistical packages in the last few years. Even now, despite the rapid advances in processing power, estimation of some of these models is slow, taking days to run, limiting the opportunity to experiment with different specifications etc. The expected operation of Moore's law in the short to medium run will enable more widespread use of existing econometric techniques and implementation of new ones.

One of the main motivations for studying job satisfaction is that an understanding of what makes people satisfied in their job can be used to design interventions to increase job satisfaction and well-being in general. Intuitively, this is a commendable aspiration. Evolutionary theory, however, suggests that emotions evolved for adaptive purposes and that positive and negative emotions have served a useful purpose in the past. Results in this thesis have confirmed that dissatisfied workers are more likely to leave their job voluntarily. Interesting questions could be asked about the future career paths of dissatisfied workers. These studies might reveal that dissatisfied workers leave for jobs that improve their job satisfaction and overall well-being, start new businesses etc. Thus, there may be a trade-off between short-run job satisfaction and processes that increase well-being in the long-run.

Appendices

Appendix 1: Additional Figures and Tables for Chapter 3

Figure 14: Satisfaction with Sense of Achievement

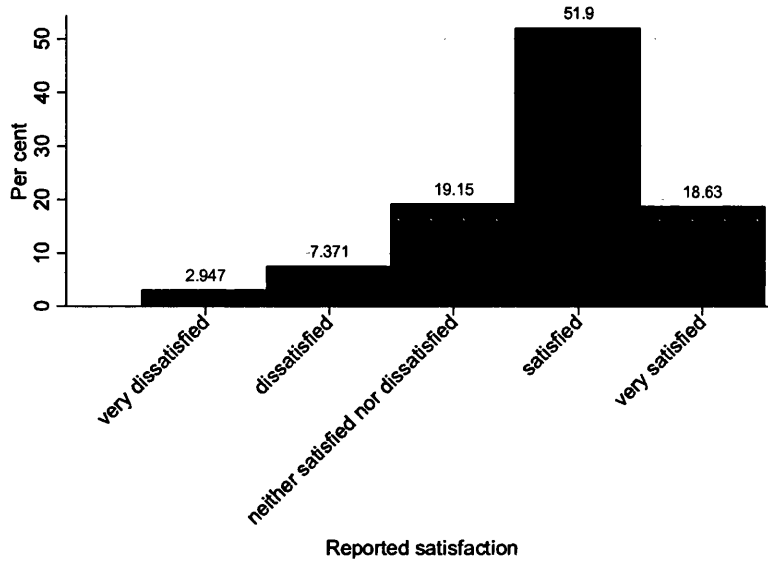


Figure 15: Satisfaction with Scope for Using Own Initiative

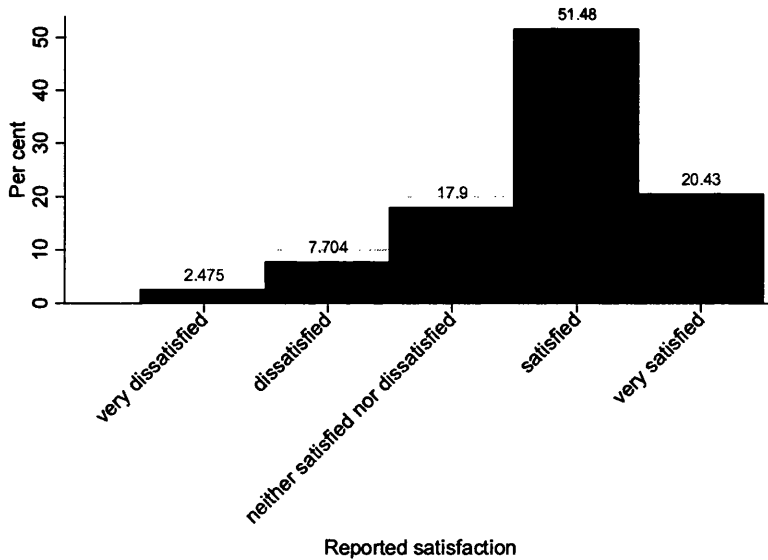


Figure 16: Satisfaction with Amount of Influence over Job

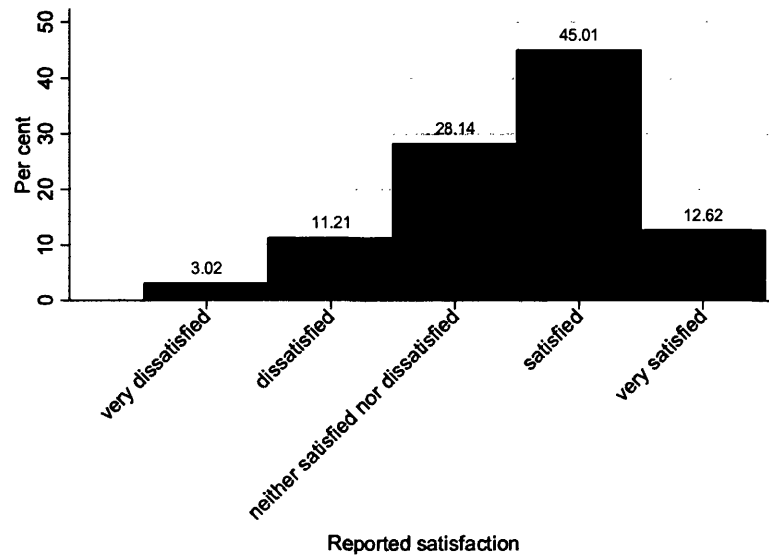


Figure 17: Satisfaction with Amount of Training Received

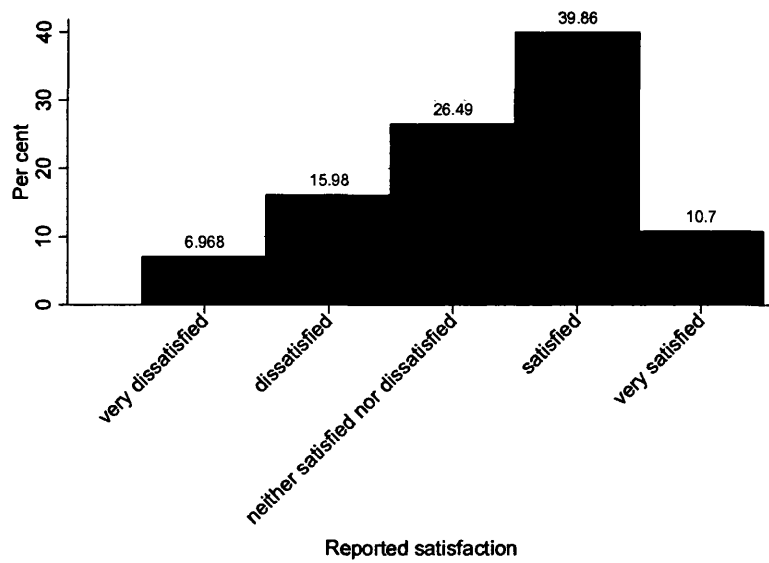


Figure 18: Satisfaction with Amount of Pay Received

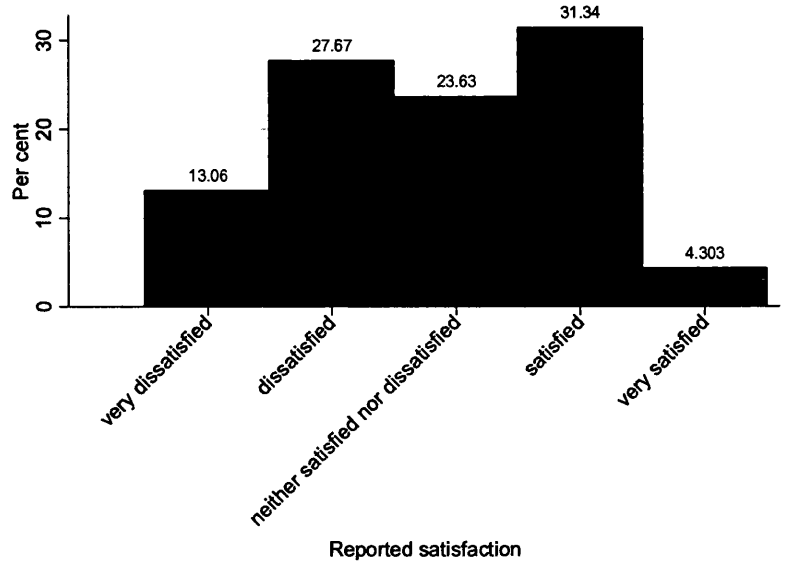


Figure 19: Satisfaction with Job Security

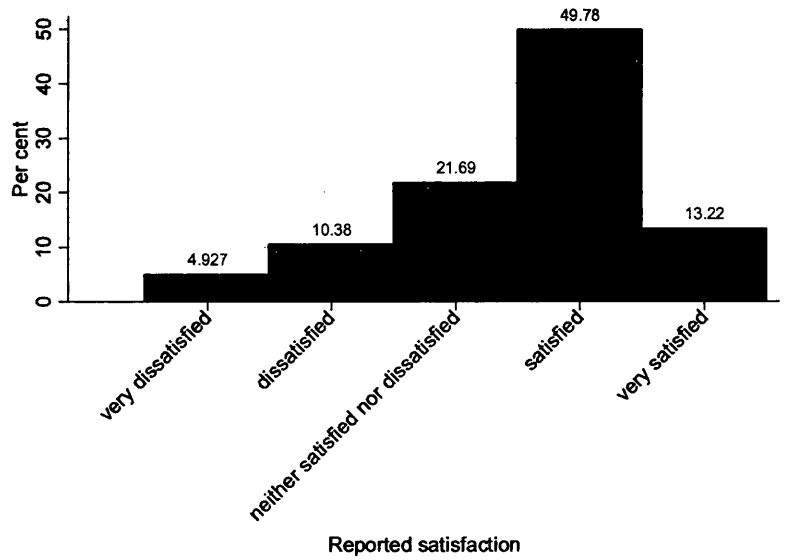


Figure 20: Satisfaction with Work Itself

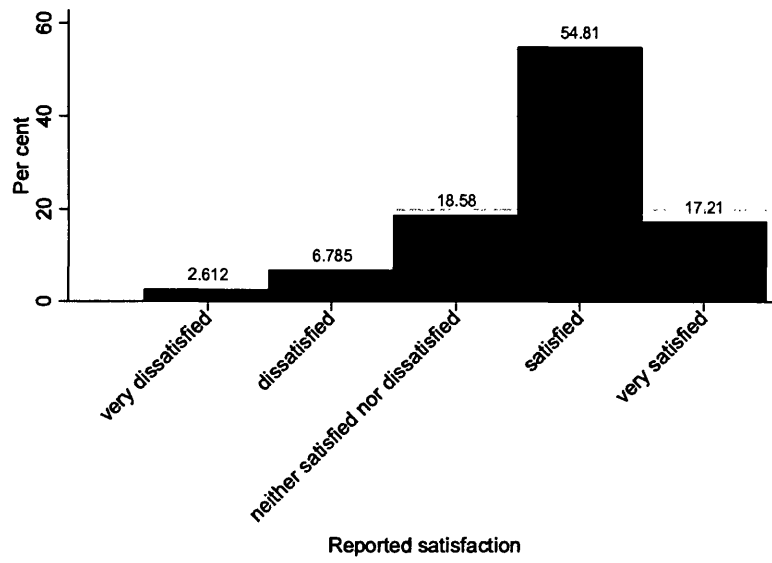


Figure 21: Share Values of Organisation

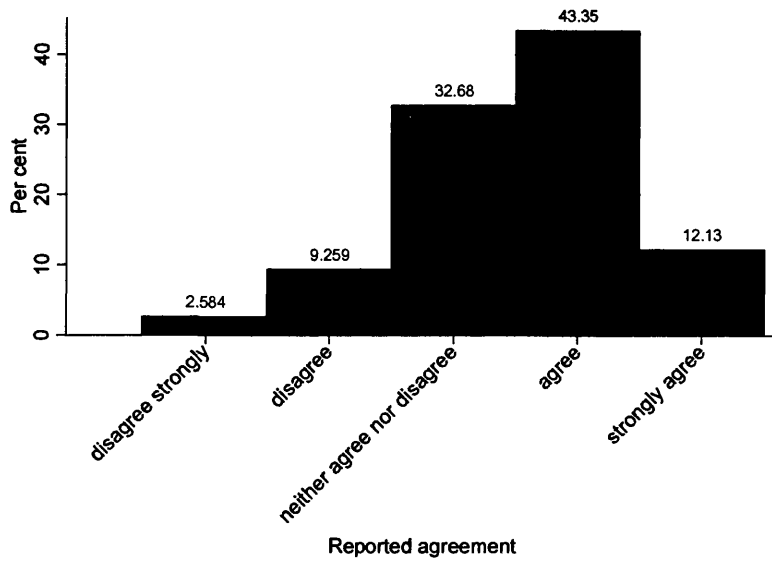


Figure 22: Loyalty to Organisation

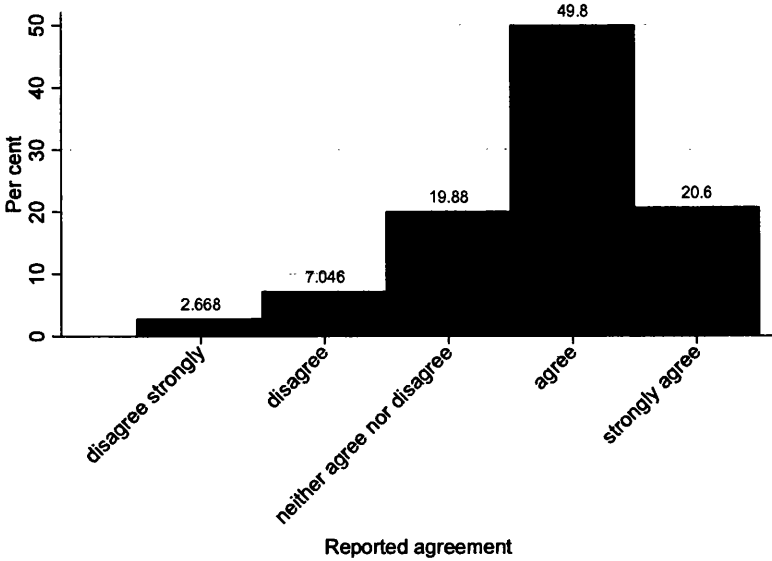


Figure 23: Organisational Pride

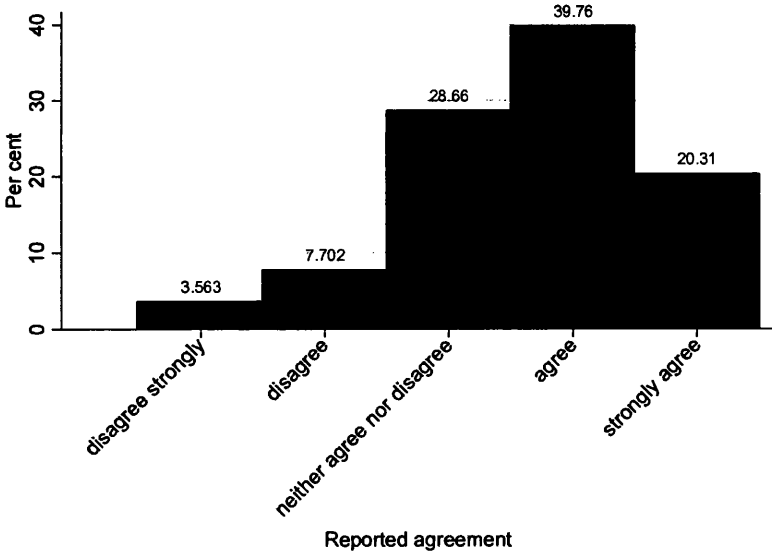


Table 21: Variable Definitions and Descriptive Statistics

Variable	Description	Mean	Standard Deviation	Min	Max	Training Incidence
Demographic Characteristics						
Gender						
Male	'1' if the individual is male; '0' otherwise.	0.485	0.499	0	1	0.634
Female	'1' if the individual is female; '0' otherwise.	0.515	0.499	0	1	0.677
Age						
16-17	'1' if the individual is aged between 16 and 17 inclusive; '0' otherwise.	0.011	0.104	0	1	0.636
18-19	'1' if the individual is aged between 18 and 19 inclusive; '0' otherwise.	0.022	0.147	0	1	0.660
20-21	'1' if the individual is aged between 20 and 21 inclusive; '0' otherwise.	0.026	0.160	0	1	0.649
22-29	'1' if the individual is aged between 22 and 29 inclusive; '0' otherwise.	0.155	0.362	0	1	0.734
30-39	'1' if the individual is aged between 30 and 39 inclusive; '0' otherwise.	0.251	0.433	0	1	0.734
40-49	'1' if the individual is aged between 40 and 49 inclusive; '0' otherwise.	0.268	0.443	0	1	0.663
50 or more	'1' if the individual is aged 50 or more inclusive; '0' otherwise.	0.266	0.442	0	1	0.596
Marital Status						
Single	'1' if the individual's marital status is single; '0' otherwise.	0.222	0.416	0	1	0.680
Widowed	'1' if the individual's marital status is widowed; '0' otherwise.	0.013	0.115	0	1	0.549
Divorced or separated	'1' if the individual's marital status is divorced or separated; '0' otherwise.	0.086	0.280	0	1	0.662
Married or cohabiting	'1' if the individual's marital status is married or cohabiting; '0' otherwise.	0.679	0.467	0	1	0.651
Ethnic Background						
White	'1' if the individual ethnic status is white; '0' otherwise.	0.941	0.236	0	1	0.656
Non-white	'1' if the individual ethnic status is non-white; '0' otherwise.	0.058	0.236	0	1	0.67
Health						
Work limiting disability	'1' if the individual has a work limiting disability; '0' otherwise.	0.045	0.208	0	1	0.57
No work limiting disability	'1' if the individual does not have a work-limiting disability; '0' otherwise.	0.955	0.208	0	1	0.681
Highest Qualification						
No qualifications	'1' if the individual has no qualifications; '0' otherwise.	0.160	0.366	0	1	0.453
Other	'1' if the individual highest qualification is other; '0' otherwise.	0.065	0.247	0	1	0.605
CSE or equivalent	'1' if the individual highest qualification is CSE or equivalent; '0' otherwise.	0.091	0.288	0	1	0.595
O level or equivalent	'1' if the individual highest qualification is 'O' Level or equivalent; '0' otherwise.	0.262	0.439	0	1	0.661
1 A level or equiv	'1' if the individual highest qualification is 1 A level or equivalent; '0' otherwise.	0.056	0.230	0	1	0.718
2+ A level or equivalent	'1' if the individual highest qualification is 2+ A level or equivalent; '0' otherwise.	0.091	0.288	0	1	0.722
Degree or equivalent	'1' if the individual highest qualification is Degree or equivalent; '0' otherwise.	0.206	0.405	0	1	0.773
Postgraduate or equivalent	'1' if the individual highest qualification is a Postgraduate degree or equivalent;	0.069	0.253	0	1	0.796

Variable	Description	Mean	Standard Deviation	Min	Max	Training Incidence
	'0' otherwise.					
Vocational qualification	'1' if the individual has a vocational qualification; '0' otherwise.	0.644	0.479	0	1	0.708
Job Characteristics						
Tenure						
Less than 1 year	'1' if the individual current job tenure is less than 1 year; '0' otherwise.	0.158	0.365	0	1	0.687
1 to less than 2 years	'1' if the individual current job tenure is 1 year to less than 2 years; '0' otherwise.	0.128	0.334	0	1	0.727
2 to less than 5 years	'1' if the individual current job tenure is 2 years to less than 5 years; '0' otherwise.	0.268	0.443	0	1	0.663
5 to less than 10 years	'1' if the individual current job tenure is 5 years to less than 10 years; '0' otherwise.	0.186	0.389	0	1	0.637
10 years or more	'1' if the individual current job tenure is 10 years or more; '0' otherwise.	0.260	0.439	0	1	0.613
Job Type						
Permanent job	'1' if the individual current job is permanent; '0' otherwise.	0.921	0.269	0	1	0.659
Temporary job	'1' if the individual current job is temporary; '0' otherwise.	0.045	0.207	0	1	0.589
Fixed term job	'1' if the individual current job is a fixed term job; '0' otherwise.	0.034	0.180	0	1	0.706
Hours of work	Usual weekly hours of work including overtime or extra hours.	39.50	15.796	0	140	
Job Done						
Only by men	'1' if the individual's job is done only by men; '0' otherwise.	0.097	0.296	0	1	0.498
Mainly by men	'1' if the individual's job is done mainly by men; '0' otherwise.	0.168	0.373	0	1	0.626
Equally by men and women	'1' if the individual's job is done equally by men and women; '0' otherwise.	0.376	0.484	0	1	0.698
Mainly by women	'1' if the individual's job is done mainly by women; '0' otherwise.	0.243	0.429	0	1	0.711
Only by women	'1' if the individual's job is done only by women; '0' otherwise.	0.057	0.231	0	1	0.586
Only person doing this type of work	'1' if the individual is the only person doing this type of work; '0' otherwise.	0.060	0.238	0	1	0.608
Member of a trade union	'1' if the individual is a member of a trade union; '0' otherwise.	0.368	0.482	0	1	0.716
Skills/Job Match						
Overskilled	'1' if the individual's skills are higher than required to do their current job; '0' otherwise.	0.537	0.499	0	1	0.643
About the same	'1' if the individual's skills are about what is required to do their current job; '0' otherwise.	0.421	0.494	0	1	0.678
Underskilled	'1' if the individual's are lower than required to do their current job; '0' otherwise.	0.051	0.220	0	1	0.650
Hourly Wage						
£4.50 or less per hour	'1' if the individual is paid is £4.51 or less per hour; '0' otherwise.	0.040	0.196	0	1	0.482
£4.51-£5.00 per hour	'1' if the individual is paid more than £4.50 but less than £5.01 per hour ; '0' otherwise.	0.088	0.283	0	1	0.521
£5.01-£14.99 per hour	'1' if the individual is paid more than £5.00 but less than £15.00 per hour; '0' otherwise.	0.734	0.442	0	1	0.653
£15.00 or more	'1' if the individual is paid is £15.00 or more per hour; '0' otherwise.	0.138	0.345	0	1	0.770

Variable	Description	Mean	Standard Deviation	Min	Max	Training Incidence
Occupational Group						
Senior managers	'1' if the individual is in the senior managers occupations group; '0' otherwise.	0.111	0.315	0	1	0.756
Professional	'1' if the individual is in the professional occupations group; '0' otherwise.	0.119	0.323	0	1	0.794
Associate professional and technical	'1' if the individual is in the associate professional and technical occupations group; '0' otherwise.	0.165	0.371	0	1	0.767
Administrative and secretarial	'1' if the individual is in the administrative and secretarial occupations group; '0' otherwise.	0.188	0.391	0	1	0.648
Skilled trades	'1' if the individual is in the skilled trades occupations group; '0' otherwise.	0.066	0.249	0	1	0.490
Personal service	'1' if the individual is in the personal service occupations group; '0' otherwise.	0.088	0.283	0	1	0.742
Sales and customer service	'1' if the individual is in the sales and customer service occupations group; '0' otherwise.	0.068	0.251	0	1	0.640
Process, plant and machine operatives	'1' if the individual is in the process, plant and machine operatives occupations group; '0' otherwise.	0.073	0.261	0	1	0.441
Elementary	'1' if the individual is in the elementary occupations group; '0' otherwise.	0.111	0.314	0	1	0.451
Working Practices						
Working only during school term times	'1' if the individual is able to work only during school term times; '0' otherwise.	0.208	0.406	0	1	0.732
Paid parental leave	'1' if the individual is able to take paid parental leave; '0' otherwise.	0.194	0.395	0	1	0.783
Childcare	'1' if the workplace nursery, or help with child care costs is available to the individual; '0' otherwise.	0.099	0.298	0	1	0.795
Flexi-Time	'1' if the individual is able to work flexible hours; '0' otherwise.	0.481	0.500	0	1	0.701
Job sharing	'1' if the individual is able to job share; '0' otherwise.	0.315	0.465	0	1	0.746
Reduced hours	'1' if the individual is able to reduce their working hours; '0' otherwise.	0.466	0.499	0	1	0.712
Increased hours	'1' if the individual is able to increase their working hours; '0' otherwise.	0.448	0.497	0	1	0.675
Home working	'1' if the individual is able to working at or from home in normal working hours; '0' otherwise.	0.166	0.372	0	1	0.787
Flexible working patterns	'1' if the individual is able to change their working patterns; '0' otherwise.	0.346	0.476	0	1	0.685
Compressed hours	'1' if the individual is able to work the same number of hours per week across fewer days; '0' otherwise.	0.274	0.446	0	1	0.711
Workplace Characteristics						
Workplace size	Number of workers on payroll at establishment	419.4	900.7	5	9873	
Organisation Size						
Less than 250	'1' if the organisation has less than 250 employees; '0' otherwise.	0.191	0.393	0	1	0.534
250-1,999	'1' if the organisation has 250 to less than 2000 employees; '0' otherwise.	0.164	0.370	0	1	0.627

Variable	Description	Mean	Standard Deviation	Min	Max	Training Incidence
2,000-9,999	'1' if the organisation has 2000 to less than 10,000 employees; '0' otherwise.	0.204	0.403	0	1	0.678
10,000+	'1' if the organisation has more than 10,000 employees; '0' otherwise.	0.305	0.461	0	1	0.725
Establishment age	How long establishment been in operation(Years)	47.232	64.519	0	900	
Industry						
Manufacturing	'1' if the establishment is in the manufacturing sector; '0' otherwise.	0.148	0.355	0	1	0.465
Electricity, gas and water	'1' if the establishment is in the electricity, gas and water sector; '0' otherwise.	0.018	0.133	0	1	0.754
Construction	'1' if the establishment is in the construction sector; '0' otherwise.	0.047	0.211	0	1	0.562
Wholesale and retail	'1' if the establishment is in the wholesale and retail sector; '0' otherwise.	0.098	0.297	0	1	0.549
Hotels and restaurants	'1' if the establishment is in the hotels and restaurants sector; '0' otherwise.	0.026	0.159	0	1	0.535
Transport and communication	'1' if the establishment is in the transport and communication sector; '0' otherwise.	0.063	0.243	0	1	0.591
Financial services	'1' if the establishment is in the financial services sector; '0' otherwise.	0.062	0.241	0	1	0.774
Other business services	'1' if the establishment is in the other business services sector; '0' otherwise.	0.114	0.318	0	1	0.643
Public administration	'1' if the establishment is in the public administration sector; '0' otherwise.	0.083	0.277	0	1	0.808
Education	'1' if the establishment is in the education sector; '0' otherwise.	0.120	0.325	0	1	0.741
Health	'1' if the establishment is in the health sector; '0' otherwise.	0.161	0.368	0	1	0.795
Other community services	'1' if the establishment is in the other community services sector; '0' otherwise.	0.060	0.237	0	1	0.630
Sector						
Private sector	'1' if the establishment is in the private sector; '0' otherwise	0.605	0.489	0	1	0.596
Public sector	'1' if the establishment is in the public sector; '0' otherwise	0.317	0.465	0	1	0.764
Other sector	'1' if the establishment is in the other sector; '0' otherwise	0.078	0.268	0	1	0.704
Workforce Composition						
Aged under 21	Proportion of employees who are aged under 21	0.088	0.435	0	0.11	
Aged 50+	Proportion of employees who are aged 50+	0.663	3.457	0	0.59	
Ethnic minority	Proportion of employees who are from an ethnic minority	0.675	4.372	0	0.90	
With disability	Proportion of employees who have a disability	0.178	1.778	0	0.59	
Union members	Proportion of employees who are members of a union	0.439	1.585	0	0.96	
Part-time	Proportion of employees who work part-time	0.250	0.255	0	1	
on fixed term contracts	Proportion of employees on fixed term contracts	0.058	0.139	0	1	
Agency staff	Proportion of employees who are agency staff	0.030	0.089	0	1	
Female	Proportion of employees who are female	0.514	0.287	0	1	
Briefing groups - training	'1' if the establishment has briefing groups that discuss training; '0' otherwise.	0.580	0.494	0	1	0.699

Variable	Description	Mean	Standard Deviation	Min	Max	Training Incidence
JCCS training	'1' if the establishment has problem-solving groups or quality circles or continuous improvement groups that discuss training; '0' otherwise.	0.326	0.469	0	1	0.699
Meeting groups - training	'1' if the establishment has meeting groups that discuss training; '0' otherwise.	0.490	0.500	0	1	0.698
Region						
Scotland	'1' if the establishment is located in Scotland; '0' otherwise.	0.112	0.315	0	1	0.677
North	'1' if the establishment is located in the North of England; '0' otherwise.	0.051	0.220	0	1	0.658
Yorkshire and Humberside	'1' if the establishment is located in Yorkshire and Humberside; '0' otherwise.	0.094	0.291	0	1	0.645
East Midlands	'1' if the establishment is located in the East Midlands; '0' otherwise.	0.067	0.251	0	1	0.625
East Anglia	'1' if the establishment is located in East Anglia; '0' otherwise.	0.042	0.201	0	1	0.619
South East	'1' if the establishment is located in the South East; '0' otherwise.	0.275	0.446	0	1	0.691
South West	'1' if the establishment is located in the South West; '0' otherwise.	0.088	0.283	0	1	0.647
West Midlands	'1' if the establishment is located in the West Midlands; '0' otherwise.	0.096	0.294	0	1	0.602
North West	'1' if the establishment is located in the North West; '0' otherwise.	0.128	0.333	0	1	0.635
Wales	'1' if the establishment is located in Wales; '0' otherwise.	0.048	0.213	0	1	0.702

Table 22: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Achievement Using Incidence Measure of Training

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.118*** (0.033)	0.018*** (0.005)	0.022*** (0.006)	-0.040*** (0.011)
Age in years (Reference group : 21 or less)				
22-29	0.146** (0.057)	-0.021*** (0.008)	-0.027** (0.011)	0.048*** (0.018)
30-39	0.228*** (0.059)	-0.033*** (0.008)	-0.042*** (0.011)	0.075*** (0.019)
40-49	0.225*** (0.061)	-0.033*** (0.008)	-0.041*** (0.011)	0.074*** (0.019)
50 or more	0.338*** (0.064)	-0.048*** (0.008)	-0.062*** (0.012)	0.110*** (0.020)
Marital Status (Reference group: Single)				
Widowed	0.198 (0.121)	-0.027* (0.014)	-0.037* (0.022)	0.064* (0.036)
Divorced or Separated	0.040 (0.053)	-0.006 (0.008)	-0.007 (0.010)	0.013 (0.018)
Married or Cohabiting	0.100*** (0.033)	-0.016*** (0.005)	-0.018*** (0.006)	0.034*** (0.012)
White	-0.096* (0.053)	0.014* (0.007)	0.018* (0.010)	-0.032* (0.017)
Work limiting disability	-0.181*** (0.055)	0.032*** (0.011)	0.033*** (0.010)	-0.064*** (0.020)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.095** (0.045)	0.016** (0.008)	0.017** (0.008)	-0.033** (0.016)
2 to less than 5 years	-0.158*** (0.039)	0.026*** (0.007)	0.029*** (0.007)	-0.055*** (0.014)
5 to less than 10 years	-0.108** (0.043)	0.018** (0.007)	0.020** (0.008)	-0.037** (0.015)
10 years or more	-0.129*** (0.043)	0.021*** (0.007)	0.024*** (0.008)	-0.045*** (0.015)
Contract Type (Reference group: Permanent)				
Temporary job	-0.080 (0.056)	0.013 (0.010)	0.015 (0.010)	-0.028 (0.020)
Fixed term job	0.020 (0.073)	-0.003 (0.011)	-0.004 (0.014)	0.007 (0.025)
Total Hours	0.001 (0.001)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.064 (0.059)	0.010 (0.010)	0.012 (0.011)	-0.022 (0.021)
CSE or equiv	-0.085* (0.050)	0.014 (0.009)	0.016* (0.009)	-0.030* (0.018)
O level or equiv	-0.142*** (0.042)	0.023*** (0.007)	0.026*** (0.008)	-0.049*** (0.015)
1 A level or equiv	-0.160*** (0.061)	0.028** (0.012)	0.029*** (0.011)	-0.057** (0.022)
2+ A level or equiv	-0.219*** (0.054)	0.039*** (0.011)	0.039*** (0.009)	-0.078*** (0.020)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Degree or equiv	-0.273*** (0.050)	0.048*** (0.010)	0.049*** (0.009)	-0.097*** (0.018)
Postgrad or equiv	-0.289*** (0.068)	0.054*** (0.015)	0.051*** (0.011)	-0.105*** (0.026)
Vocational Qualification	0.021 (0.027)	-0.003 (0.004)	-0.004 (0.005)	0.007 (0.009)
Worker-Job Skills Match				
Over-skilled	-0.242*** (0.025)	0.037*** (0.004)	0.045*** (0.005)	-0.082*** (0.008)
Under-skilled	-0.471*** (0.053)	0.097*** (0.014)	0.079*** (0.007)	-0.176*** (0.021)
Occupational Group (Reference group: Professional)				
Senior Managers	0.188*** (0.060)	-0.027*** (0.008)	-0.035*** (0.011)	0.061*** (0.019)
Associate Professional and Technical	0.052 (0.056)	-0.008 (0.008)	-0.010 (0.010)	0.018 (0.019)
Administrative and Secretarial	-0.103* (0.057)	0.017* (0.010)	0.019* (0.010)	-0.036* (0.020)
Skilled Trades	0.116* (0.069)	-0.017* (0.009)	-0.022* (0.013)	0.039* (0.022)
Personal Service	0.133** (0.067)	-0.019** (0.009)	-0.025** (0.012)	0.044** (0.021)
Sales and Customer Service	-0.178** (0.070)	0.031** (0.013)	0.032*** (0.012)	-0.063** (0.026)
Process, Plant and Machine	-0.194*** (0.067)	0.034*** (0.013)	0.035*** (0.012)	-0.069*** (0.025)
Elementary	-0.199*** (0.062)	0.034*** (0.012)	0.036*** (0.011)	-0.070*** (0.023)
Job done (Reference group: equally by men and women)				
Only by men	-0.008 (0.047)	0.001 (0.007)	0.001 (0.009)	-0.003 (0.016)
Mainly by men	-0.007 (0.039)	0.001 (0.006)	0.001 (0.007)	-0.002 (0.013)
Mainly by women	-0.090*** (0.035)	0.015** (0.006)	0.016*** (0.006)	-0.031** (0.012)
Only by women	-0.055 (0.056)	0.009 (0.009)	0.010 (0.010)	-0.019 (0.020)
I am the only person doing this type of work	0.160*** (0.060)	-0.023*** (0.008)	-0.030*** (0.011)	0.052*** (0.019)
Union Member	-0.153*** (0.031)	0.025*** (0.005)	0.028*** (0.006)	-0.053*** (0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	-0.036 (0.040)	0.006 (0.006)	0.007 (0.007)	-0.012 (0.014)
£15.00 or more per hour	0.166*** (0.062)	-0.024*** (0.008)	-0.031*** (0.011)	0.055*** (0.020)
Establishment Size	-0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	-0.000** (0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.029	0.005	0.005	-0.010

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.036)	(0.006)	(0.007)	(0.012)
2000-9999	-0.070**	0.011*	0.013**	-0.024*
	(0.035)	(0.006)	(0.006)	(0.012)
10000+	-0.069**	0.011**	0.013**	-0.024**
	(0.032)	(0.005)	(0.006)	(0.011)
Sector (Reference group: Private Sector)				
Public Sector	-0.034	0.005	0.006	-0.012
	(0.044)	(0.007)	(0.008)	(0.015)
Other Sector	-0.082	0.014	0.015	-0.029
	(0.056)	(0.010)	(0.010)	(0.020)
Establishment Age	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Union Density	-0.175***	0.027***	0.032***	-0.060***
	(0.046)	(0.007)	(0.009)	(0.016)
Performance related pay	-0.063**	0.010**	0.012**	-0.022**
	(0.028)	(0.004)	(0.005)	(0.010)
Payment by results	0.041	-0.006	-0.008	0.014
	(0.027)	(0.004)	(0.005)	(0.009)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.063	0.010	0.012	-0.022
	(0.098)	(0.017)	(0.018)	(0.035)
Construction	0.204***	-0.028***	-0.038***	0.066***
	(0.069)	(0.008)	(0.013)	(0.021)
Wholesale and retail	0.184***	-0.026***	-0.034***	0.060***
	(0.051)	(0.007)	(0.009)	(0.016)
Hotels and restaurants	0.210***	-0.029***	-0.039***	0.067***
	(0.080)	(0.009)	(0.015)	(0.024)
Transport and communication	0.064	-0.010	-0.012	0.022
	(0.052)	(0.008)	(0.010)	(0.017)
Financial services	-0.024	0.004	0.004	-0.008
	(0.059)	(0.010)	(0.011)	(0.020)
Other business services	0.058	-0.009	-0.011	0.020
	(0.049)	(0.007)	(0.009)	(0.016)
Public administration	0.081	-0.012	-0.015	0.027
	(0.066)	(0.009)	(0.012)	(0.022)
Education	0.490***	-0.057***	-0.088***	0.145***
	(0.065)	(0.006)	(0.011)	(0.016)
Health	0.359***	-0.047***	-0.066***	0.113***
	(0.058)	(0.006)	(0.010)	(0.017)
Other community services	0.310***	-0.040***	-0.057***	0.097***
	(0.063)	(0.007)	(0.011)	(0.018)
Region (Reference group: South East)				
Scotland	0.002	-0.000	-0.000	0.001
	(0.044)	(0.007)	(0.008)	(0.015)
North	0.021	-0.003	-0.004	0.007
	(0.055)	(0.008)	(0.010)	(0.019)
Yorkshire and Humberside	0.006	-0.001	-0.001	0.002
	(0.047)	(0.007)	(0.009)	(0.016)
East Midlands	0.038	-0.006	-0.007	0.013
	(0.049)	(0.007)	(0.009)	(0.016)
East Anglia	-0.031	0.005	0.006	-0.011
	(0.061)	(0.010)	(0.011)	(0.021)
South West	0.059	-0.009	-0.011	0.020
	(0.047)	(0.007)	(0.009)	(0.015)
West Midlands	0.070	-0.011	-0.013	0.024
	(0.046)	(0.007)	(0.008)	(0.015)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
North West	0.115*** (0.039)	-0.017*** (0.006)	-0.021*** (0.007)	0.038*** (0.013)
Wales	0.166*** (0.064)	-0.023*** (0.008)	-0.031*** (0.012)	0.054*** (0.020)
Training Incidence	0.166*** (0.026)	-0.027*** (0.004)	-0.030*** (0.005)	0.057*** (0.009)
Proportion of workers in firm who receive more training (*10)	-0.103*** (0.020)	0.016*** (0.003)	0.019*** (0.004)	-0.035*** (0.007)
Observations	17,371			
Log-Likelihood Full Model	-13236.6			
Log-Likelihood Constant	-13815.4			
Likelihood Ratio Test	1157.6			
P-Value	0.000			
σ^2 (Workplace Variance)	0.401***			
	0.020			

Table 23: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Initiative Using Incidence Measure of Training

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.055 (0.034)	0.009 (0.005)	0.010 (0.006)	-0.018 (0.011)
Age in years (Reference group : 21 or less)				
22-29	0.011 (0.058)	-0.002 (0.009)	-0.002 (0.010)	0.004 (0.019)
30-39	0.061 (0.060)	-0.009 (0.009)	-0.011 (0.010)	0.020 (0.019)
40-49	-0.014 (0.062)	0.002 (0.010)	0.002 (0.011)	-0.005 (0.020)
50 or more	0.005 (0.065)	-0.001 (0.010)	-0.001 (0.011)	0.002 (0.021)
Marital Status (Reference group: Single)				
Widowed	0.092 (0.109)	-0.013 (0.015)	-0.016 (0.019)	0.029 (0.034)
Divorced or Separated	0.087* (0.053)	-0.013* (0.007)	-0.015* (0.009)	0.028* (0.017)
Married or Cohabiting	0.153*** (0.034)	-0.025*** (0.006)	-0.027*** (0.006)	0.051*** (0.011)
White	-0.000 (0.052)	0.000 (0.008)	0.000 (0.009)	-0.000 (0.017)
Work limiting disability	-0.179*** (0.054)	0.031*** (0.010)	0.031*** (0.009)	-0.062*** (0.019)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.053 (0.044)	0.008 (0.007)	0.009 (0.008)	-0.018 (0.015)
2 to less than 5 years	-0.066* (0.039)	0.011* (0.006)	0.012* (0.007)	-0.022* (0.013)
5 to less than 10 years	0.016 (0.043)	-0.002 (0.007)	-0.003 (0.007)	0.005 (0.014)
10 years or more	0.035 (0.042)	-0.005 (0.006)	-0.006 (0.007)	0.012 (0.014)
Contract Type (Reference group: Permanent)				
Temporary job	-0.060 (0.059)	0.010 (0.010)	0.010 (0.010)	-0.020 (0.020)
Fixed term job	-0.049 (0.065)	0.008 (0.011)	0.009 (0.011)	-0.017 (0.022)
Total Hours	0.002** (0.001)	-0.000** (0.000)	-0.000** (0.000)	0.001** (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.064 (0.059)	0.010 (0.010)	0.011 (0.010)	-0.022 (0.020)
CSE or equiv	-0.071 (0.053)	0.011 (0.009)	0.012 (0.009)	-0.024 (0.018)
O level or equiv	-0.189*** (0.044)	0.031*** (0.008)	0.033*** (0.007)	-0.064*** (0.015)
1 A level or equiv	-0.211*** (0.065)	0.037*** (0.013)	0.036*** (0.011)	-0.073*** (0.024)
2+ A level or equiv	-0.259*** (0.055)	0.046*** (0.011)	0.044*** (0.009)	-0.091*** (0.020)
Degree or equiv	-0.289***	0.051***	0.049***	-0.100***

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.051)	(0.010)	(0.008)	(0.018)
Postgrad or equiv	-0.317***	0.059***	0.053***	-0.113***
	(0.071)	(0.016)	(0.011)	(0.027)
Vocational Qualification	0.011	-0.002	-0.002	0.004
	(0.028)	(0.004)	(0.005)	(0.009)
Worker-Job Skills Match				
Over-skilled	-0.303***	0.046***	0.053***	-0.099***
	(0.025)	(0.004)	(0.004)	(0.008)
Under-skilled	-0.387***	0.076***	0.064***	-0.140***
	(0.055)	(0.013)	(0.008)	(0.021)
Occupational Group (Reference group: Professional)				
Senior Managers	0.272***	-0.037***	-0.047***	0.084***
	(0.060)	(0.007)	(0.010)	(0.017)
Associate Professional and Technical	0.076	-0.011	-0.013	0.025
	(0.054)	(0.008)	(0.009)	(0.017)
Administrative and Secretarial	-0.066	0.011	0.011	-0.022
	(0.055)	(0.009)	(0.010)	(0.019)
Skilled Trades	-0.016	0.003	0.003	-0.005
	(0.068)	(0.011)	(0.012)	(0.023)
Personal Service	0.004	-0.001	-0.001	0.001
	(0.063)	(0.010)	(0.011)	(0.021)
Sales and Customer Service	-0.139**	0.023*	0.024**	-0.047**
	(0.068)	(0.012)	(0.012)	(0.024)
Process, Plant and Machine	-0.317***	0.058***	0.054***	-0.112***
	(0.067)	(0.014)	(0.011)	(0.025)
Elementary	-0.146**	0.024**	0.025**	-0.050**
	(0.062)	(0.011)	(0.011)	(0.022)
Job done (Reference group: equally by men and women)				
Only by men	0.003	-0.000	-0.001	0.001
	(0.049)	(0.008)	(0.009)	(0.016)
Mainly by men	0.020	-0.003	-0.003	0.007
	(0.039)	(0.006)	(0.007)	(0.013)
Mainly by women	-0.169***	0.028***	0.029***	-0.057***
	(0.035)	(0.006)	(0.006)	(0.012)
Only by women	-0.069	0.011	0.012	-0.023
	(0.057)	(0.010)	(0.010)	(0.020)
I am the only person doing this type of work	0.285***	-0.037***	-0.049***	0.086***
	(0.061)	(0.007)	(0.010)	(0.017)
Union Member	-0.102***	0.016***	0.018***	-0.034***
	(0.032)	(0.005)	(0.006)	(0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	-0.052	0.008	0.009	-0.017
	(0.041)	(0.006)	(0.007)	(0.013)
£15.00 or more per hour	0.243***	-0.033***	-0.042***	0.075***
	(0.062)	(0.008)	(0.011)	(0.018)
Establishment Size	-0.000*	0.000*	0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.029	0.005	0.005	-0.010
	(0.037)	(0.006)	(0.006)	(0.012)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
2000-9999	-0.070*	0.011*	0.012**	-0.023*
	(0.036)	(0.006)	(0.006)	(0.012)
10000+	-0.060*	0.009*	0.010*	-0.020*
	(0.032)	(0.005)	(0.006)	(0.011)
Sector (Reference group: Private Sector)				
Public Sector	-0.061	0.010	0.011	-0.020
	(0.045)	(0.007)	(0.008)	(0.015)
Other Sector	-0.037	0.006	0.006	-0.012
	(0.056)	(0.009)	(0.010)	(0.019)
Establishment Age	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Union Density	-0.186***	0.029***	0.033***	-0.061***
	(0.047)	(0.007)	(0.008)	(0.016)
Performance related pay	-0.023	0.004	0.004	-0.008
	(0.028)	(0.004)	(0.005)	(0.009)
Payment by results	-0.026	0.004	0.005	-0.009
	(0.028)	(0.004)	(0.005)	(0.009)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.040	0.006	0.007	-0.013
	(0.106)	(0.017)	(0.018)	(0.036)
Construction	0.206***	-0.028***	-0.036***	0.064***
	(0.072)	(0.009)	(0.012)	(0.021)
Wholesale and retail	0.072	-0.011	-0.013	0.023
	(0.052)	(0.008)	(0.009)	(0.017)
Hotels and restaurants	0.284***	-0.037***	-0.049***	0.086***
	(0.080)	(0.008)	(0.013)	(0.022)
Transport and communication	-0.116**	0.019**	0.020**	-0.039**
	(0.054)	(0.010)	(0.009)	(0.019)
Financial services	-0.139**	0.023**	0.024**	-0.047**
	(0.059)	(0.011)	(0.010)	(0.021)
Other business services	0.096*	-0.014**	-0.017*	0.031*
	(0.051)	(0.007)	(0.009)	(0.016)
Public administration	0.114*	-0.017*	-0.020*	0.037*
	(0.067)	(0.009)	(0.012)	(0.021)
Education	0.358***	-0.045***	-0.061***	0.106***
	(0.066)	(0.007)	(0.011)	(0.017)
Health	0.291***	-0.039***	-0.050***	0.089***
	(0.060)	(0.007)	(0.010)	(0.017)
Other community services	0.062	-0.009	-0.011	0.020
	(0.063)	(0.009)	(0.011)	(0.020)
Region (Reference group: South East)				
Scotland	-0.071	0.011	0.012	-0.024
	(0.044)	(0.007)	(0.008)	(0.015)
North	0.030	-0.005	-0.005	0.010
	(0.057)	(0.008)	(0.010)	(0.018)
Yorkshire and Humberside	-0.000	0.000	0.000	-0.000
	(0.048)	(0.007)	(0.008)	(0.016)
East Midlands	0.122**	-0.018***	-0.021**	0.039**
	(0.050)	(0.007)	(0.009)	(0.015)
East Anglia	-0.023	0.004	0.004	-0.008
	(0.059)	(0.009)	(0.010)	(0.020)
South West	-0.000	0.000	0.000	-0.000
	(0.047)	(0.007)	(0.008)	(0.016)
West Midlands	0.048	-0.007	-0.008	0.016
	(0.047)	(0.007)	(0.008)	(0.015)
North West	0.074*	-0.011*	-0.013*	0.024*

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.040)	(0.006)	(0.007)	(0.013)
Wales	0.131**	-0.019**	-0.023**	0.042**
	(0.064)	(0.008)	(0.011)	(0.020)
Training Incidence	0.140***	-0.022***	-0.024***	0.047***
	(0.026)	(0.004)	(0.005)	(0.009)
Proportion of workers in firm who receive more training (*10)	-0.123***	0.019***	0.021***	-0.041***
	(0.019)	(0.003)	(0.003)	(0.006)
Observations	17,315			
Log-Likelihood Full Model	-12864.3			
Log-Likelihood Constant	-13483.5			
Likelihood Ratio Test	1238.5			
P-Value	0.000			
σ^2 (Workplace Variance)	0.411***			
	0.034			

Table 24: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Influence Using Incidence Measure of Training

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.085*** (0.031)	0.017*** (0.006)	0.016*** (0.006)	-0.033*** (0.012)
Age in years (Reference group : 21 or less)				
22-29	0.013 (0.053)	-0.003 (0.011)	-0.002 (0.010)	0.005 (0.021)
30-39	0.049 (0.054)	-0.010 (0.011)	-0.009 (0.010)	0.019 (0.021)
40-49	0.004 (0.056)	-0.001 (0.011)	-0.001 (0.011)	0.001 (0.022)
50 or more	0.068 (0.059)	-0.014 (0.011)	-0.013 (0.011)	0.027 (0.023)
Marital Status (Reference group: Single)				
Widowed	0.105 (0.096)	-0.020 (0.017)	-0.020 (0.019)	0.040 (0.037)
Divorced or Separated	0.069 (0.049)	-0.013 (0.009)	-0.013 (0.010)	0.027 (0.019)
Married or Cohabiting	0.074** (0.031)	-0.015** (0.006)	-0.014** (0.006)	0.029** (0.012)
White	-0.063 (0.049)	0.012 (0.009)	0.012 (0.010)	-0.024 (0.019)
Work limiting disability	-0.235*** (0.054)	0.053*** (0.014)	0.039*** (0.008)	-0.093*** (0.021)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.017 (0.039)	0.003 (0.008)	0.003 (0.007)	-0.007 (0.015)
2 to less than 5 years	-0.012 (0.034)	0.002 (0.007)	0.002 (0.006)	-0.005 (0.013)
5 to less than 10 years	0.044 (0.039)	-0.009 (0.008)	-0.008 (0.007)	0.017 (0.015)
10 years or more	0.086** (0.038)	-0.017** (0.007)	-0.016** (0.007)	0.033** (0.015)
Contract Type (Reference group: Permanent)				
Temporary job	-0.094* (0.049)	0.020* (0.011)	0.017** (0.009)	-0.037* (0.019)
Fixed term job	-0.037 (0.062)	0.008 (0.013)	0.007 (0.011)	-0.015 (0.024)
Total Hours	0.001 (0.001)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.105** (0.053)	0.022* (0.012)	0.019** (0.009)	-0.041** (0.021)
CSE or equiv	-0.042 (0.048)	0.009 (0.010)	0.008 (0.009)	-0.017 (0.019)
O level or equiv	-0.197*** (0.040)	0.042*** (0.009)	0.035*** (0.007)	-0.077*** (0.016)
1 A level or equiv	-0.248*** (0.057)	0.057*** (0.015)	0.041*** (0.008)	-0.098*** (0.023)
2+ A level or equiv	-0.234*** (0.051)	0.053*** (0.013)	0.040*** (0.008)	-0.092*** (0.020)
Degree or equiv	-0.279***	0.062***	0.048***	-0.110***

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.048)	(0.012)	(0.007)	(0.019)
Postgrad or equiv	-0.297***	0.069***	0.048***	-0.117***
	(0.062)	(0.016)	(0.008)	(0.025)
Vocational Qualification	-0.005	0.001	0.001	-0.002
	(0.025)	(0.005)	(0.005)	(0.010)
Worker-Job Skills Match				
Over-skilled	-0.245***	0.049***	0.046***	-0.095***
	(0.023)	(0.005)	(0.004)	(0.009)
Under-skilled	-0.383***	0.093***	0.058***	-0.152***
	(0.050)	(0.014)	(0.006)	(0.020)
Occupational Group (Reference group: Professional)				
Senior Managers	0.338***	-0.058***	-0.068***	0.126***
	(0.055)	(0.008)	(0.012)	(0.020)
Associate Professional and Technical	0.052	-0.010	-0.010	0.020
	(0.050)	(0.010)	(0.010)	(0.019)
Administrative and Secretarial	-0.009	0.002	0.002	-0.004
	(0.051)	(0.010)	(0.010)	(0.020)
Skilled Trades	0.000	-0.000	-0.000	0.000
	(0.064)	(0.013)	(0.012)	(0.025)
Personal Service	-0.059	0.012	0.011	-0.023
	(0.058)	(0.012)	(0.010)	(0.023)
Sales and Customer Service	-0.103	0.022	0.019	-0.040
	(0.065)	(0.014)	(0.011)	(0.026)
Process, Plant and Machine	-0.205***	0.045***	0.035***	-0.081***
	(0.063)	(0.015)	(0.010)	(0.025)
Elementary	-0.062	0.013	0.011	-0.024
	(0.059)	(0.013)	(0.011)	(0.023)
Job done (Reference group: equally by men and women)				
Only by men	-0.032	0.007	0.006	-0.013
	(0.046)	(0.010)	(0.008)	(0.018)
Mainly by men	-0.043	0.009	0.008	-0.017
	(0.037)	(0.008)	(0.007)	(0.015)
Mainly by women	-0.152***	0.032***	0.027***	-0.059***
	(0.031)	(0.007)	(0.005)	(0.012)
Only by women	-0.088*	0.018	0.016*	-0.034*
	(0.052)	(0.011)	(0.009)	(0.020)
I am the only person doing this type of work	0.389***	-0.064***	-0.079***	0.143***
	(0.057)	(0.007)	(0.012)	(0.019)
Union Member	-0.157***	0.033***	0.029***	-0.061***
	(0.029)	(0.006)	(0.005)	(0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	0.018	-0.004	-0.003	0.007
	(0.038)	(0.008)	(0.007)	(0.015)
£15.00 or more per hour	0.299***	-0.053***	-0.060***	0.113***
	(0.056)	(0.009)	(0.012)	(0.020)
Establishment Size	-0.000*	0.000*	0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.051	0.010	0.009	-0.020
	(0.033)	(0.007)	(0.006)	(0.013)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
2000-9999	-0.070** (0.033)	0.015** (0.007)	0.013** (0.006)	-0.027** (0.013)
10000+	-0.096*** (0.029)	0.020*** (0.006)	0.018*** (0.005)	-0.037*** (0.011)
Sector (Reference group: Private Sector)				
Public Sector	-0.118*** (0.042)	0.025*** (0.009)	0.022*** (0.007)	-0.046*** (0.016)
Other Sector	-0.041 (0.050)	0.008 (0.010)	0.008 (0.009)	-0.016 (0.020)
Establishment Age	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Union Density	-0.120*** (0.044)	0.024*** (0.009)	0.022*** (0.008)	-0.047*** (0.017)
Performance related pay	-0.036 (0.026)	0.007 (0.005)	0.007 (0.005)	-0.014 (0.010)
Payment by results	-0.043* (0.026)	0.009* (0.005)	0.008* (0.005)	-0.017* (0.010)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	0.028 (0.099)	-0.006 (0.019)	-0.005 (0.019)	0.011 (0.038)
Construction	0.236*** (0.063)	-0.042*** (0.010)	-0.047*** (0.013)	0.089*** (0.023)
Wholesale and retail	0.113** (0.048)	-0.022** (0.009)	-0.022** (0.010)	0.044** (0.018)
Hotels and restaurants	0.204*** (0.077)	-0.037*** (0.012)	-0.041** (0.016)	0.077*** (0.028)
Transport and communication	-0.091* (0.052)	0.019* (0.012)	0.017* (0.009)	-0.036* (0.021)
Financial services	-0.201*** (0.055)	0.045*** (0.013)	0.035*** (0.008)	-0.079*** (0.022)
Other business services	0.078* (0.047)	-0.015* (0.009)	-0.015* (0.009)	0.030* (0.018)
Public administration	0.069 (0.062)	-0.013 (0.012)	-0.013 (0.012)	0.027 (0.024)
Education	0.223*** (0.060)	-0.040*** (0.010)	-0.044*** (0.012)	0.085*** (0.022)
Health	0.218*** (0.054)	-0.040*** (0.009)	-0.043*** (0.011)	0.083*** (0.020)
Other community services	0.085 (0.060)	-0.016 (0.011)	-0.016 (0.012)	0.033 (0.023)
Region (Reference group: South East)				
Scotland	-0.050 (0.041)	0.010 (0.009)	0.009 (0.007)	-0.020 (0.016)
North	0.075 (0.053)	-0.015 (0.010)	-0.014 (0.010)	0.029 (0.020)
Yorkshire and Humberside	0.020 (0.043)	-0.004 (0.009)	-0.004 (0.008)	0.008 (0.017)
East Midlands	0.093** (0.045)	-0.018** (0.008)	-0.018** (0.009)	0.036** (0.017)
East Anglia	0.010 (0.057)	-0.002 (0.011)	-0.002 (0.011)	0.004 (0.022)
South West	0.046 (0.043)	-0.009 (0.008)	-0.009 (0.008)	0.018 (0.017)
West Midlands	0.029 (0.043)	-0.006 (0.009)	-0.005 (0.008)	0.011 (0.017)
North West	0.118***	-0.023***	-0.023***	0.046***

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.037)	(0.007)	(0.007)	(0.014)
Wales	0.159***	-0.029***	-0.031**	0.061***
	(0.060)	(0.010)	(0.012)	(0.022)
Training Incidence	0.135***	-0.028***	-0.025***	0.053***
	(0.025)	(0.005)	(0.004)	(0.010)
Proportion of workers in firm who receive more training (*10)	-0.109***	0.022***	0.020***	-0.043***
	(0.020)	(0.004)	(0.004)	(0.008)
Observations	17,228			
Log-Likelihood Full Model	-15671.7			
Log-Likelihood Constant	-16313.4			
Likelihood Ratio Test	1283.4			
P-Value	0.000			
σ^2 (Workplace Variance)	0.397***			
	0.035			

Table 25: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Training Using Incidence Measure of Training

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.115*** (0.029)	0.033*** (0.008)	0.013*** (0.003)	-0.046*** (0.012)
Age in years (Reference group : 21 or less)				
22-29	-0.091 (0.057)	0.027 (0.017)	0.009* (0.006)	-0.036 (0.023)
30-39	-0.131** (0.058)	0.038** (0.018)	0.014** (0.006)	-0.052** (0.023)
40-49	-0.166*** (0.059)	0.049*** (0.018)	0.017*** (0.005)	-0.066*** (0.024)
50 or more	-0.053 (0.062)	0.015 (0.018)	0.006 (0.007)	-0.021 (0.025)
Marital Status (Reference group: Single)				
Widowed	0.137 (0.101)	-0.037 (0.026)	-0.017 (0.014)	0.054 (0.040)
Divorced or Separated	-0.034 (0.047)	0.010 (0.014)	0.004 (0.005)	-0.014 (0.019)
Married or Cohabiting	0.035 (0.031)	-0.010 (0.009)	-0.004 (0.003)	0.014 (0.012)
White	-0.092* (0.048)	0.025** (0.013)	0.011* (0.006)	-0.037* (0.019)
Work limiting disability	-0.126** (0.053)	0.038** (0.017)	0.012*** (0.005)	-0.050** (0.021)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.075* (0.041)	0.022* (0.012)	0.008* (0.004)	-0.030* (0.017)
2 to less than 5 years	-0.099*** (0.035)	0.029*** (0.010)	0.011*** (0.004)	-0.039*** (0.014)
5 to less than 10 years	-0.146*** (0.039)	0.044*** (0.012)	0.015*** (0.004)	-0.058*** (0.016)
10 years or more	-0.075* (0.039)	0.022* (0.012)	0.008** (0.004)	-0.030* (0.016)
Contract Type (Reference group: Permanent)				
Temporary job	-0.078 (0.056)	0.023 (0.017)	0.008 (0.005)	-0.031 (0.022)
Fixed term job	-0.045 (0.064)	0.013 (0.019)	0.005 (0.007)	-0.018 (0.026)
Total Hours	-0.004*** (0.001)	0.001*** (0.000)	0.000*** (0.000)	-0.002*** (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.095* (0.054)	0.028* (0.017)	0.010* (0.005)	-0.038* (0.022)
CSE or equiv	-0.205*** (0.048)	0.063*** (0.015)	0.019*** (0.003)	-0.081*** (0.019)
O level or equiv	-0.203*** (0.040)	0.060*** (0.012)	0.020*** (0.004)	-0.081*** (0.016)
1 A level or equiv	-0.298*** (0.057)	0.094*** (0.019)	0.023*** (0.003)	-0.117*** (0.022)
2+ A level or equiv	-0.268*** (0.051)	0.084*** (0.017)	0.023*** (0.003)	-0.106*** (0.020)
Degree or equiv	-0.352***	0.110***	0.029***	-0.139***

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.047)	(0.016)	(0.003)	(0.018)
Postgrad or equiv	-0.362***	0.116***	0.026***	-0.142***
	(0.060)	(0.021)	(0.002)	(0.023)
Vocational Qualification	-0.009	0.003	0.001	-0.004
	(0.025)	(0.007)	(0.003)	(0.010)
Worker-Job Skills Match				
Over-skilled	-0.208***	0.059***	0.024***	-0.083***
	(0.023)	(0.006)	(0.003)	(0.009)
Under-skilled	-0.578***	0.197***	0.024***	-0.221***
	(0.052)	(0.020)	(0.003)	(0.018)
Occupational Group (Reference group: Professional)				
Senior Managers	0.137***	-0.038***	-0.017**	0.054***
	(0.050)	(0.013)	(0.007)	(0.020)
Associate Professional and Technical	0.043	-0.012	-0.005	0.017
	(0.047)	(0.013)	(0.006)	(0.019)
Administrative and Secretarial	0.095*	-0.027**	-0.011*	0.038**
	(0.048)	(0.013)	(0.006)	(0.019)
Skilled Trades	0.183***	-0.049***	-0.023***	0.073***
	(0.062)	(0.015)	(0.009)	(0.024)
Personal Service	0.168***	-0.045***	-0.021***	0.067***
	(0.057)	(0.014)	(0.008)	(0.022)
Sales and Customer Service	0.122*	-0.034**	-0.015*	0.049*
	(0.064)	(0.017)	(0.009)	(0.025)
Process, Plant and Machine	0.289***	-0.075***	-0.039***	0.114***
	(0.063)	(0.014)	(0.010)	(0.024)
Elementary	0.277***	-0.073***	-0.037***	0.110***
	(0.057)	(0.014)	(0.009)	(0.022)
Job done (Reference group: equally by men and women)				
Only by men	-0.161***	0.049***	0.016***	-0.064***
	(0.046)	(0.014)	(0.004)	(0.018)
Mainly by men	-0.123***	0.036***	0.013***	-0.049***
	(0.035)	(0.011)	(0.003)	(0.014)
Mainly by women	-0.043	0.013	0.005	-0.017
	(0.031)	(0.009)	(0.003)	(0.013)
Only by women	-0.153***	0.046***	0.015***	-0.061***
	(0.052)	(0.016)	(0.004)	(0.020)
I am the only person doing this type of work	-0.037	0.011	0.004	-0.015
	(0.048)	(0.014)	(0.005)	(0.019)
Union Member	-0.058**	0.017**	0.006**	-0.023**
	(0.029)	(0.008)	(0.003)	(0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	-0.117***	0.033***	0.014***	-0.046***
	(0.039)	(0.011)	(0.005)	(0.016)
£15.00 or more per hour	0.027	-0.008	-0.003	0.011
	(0.054)	(0.015)	(0.006)	(0.022)
Establishment Size	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.050	0.014	0.005	-0.020
	(0.032)	(0.009)	(0.003)	(0.013)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
2000-9999	-0.062*	0.018*	0.007**	-0.025*
	(0.033)	(0.010)	(0.003)	(0.013)
10000+	-0.080***	0.023***	0.009***	-0.032***
	(0.029)	(0.009)	(0.003)	(0.012)
Sector (Reference group: Private Sector)				
Public Sector	-0.127***	0.037***	0.013***	-0.051***
	(0.041)	(0.012)	(0.004)	(0.016)
Other Sector	-0.080*	0.024	0.008*	-0.032*
	(0.048)	(0.014)	(0.005)	(0.019)
Establishment Age	0.000	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Union Density	-0.087**	0.025**	0.010**	-0.035**
	(0.044)	(0.013)	(0.005)	(0.017)
Performance related pay	-0.039	0.011	0.004	-0.016
	(0.026)	(0.007)	(0.003)	(0.010)
Payment by results	0.010	-0.003	-0.001	0.004
	(0.025)	(0.007)	(0.003)	(0.010)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	0.044	-0.012	-0.005	0.017
	(0.086)	(0.024)	(0.010)	(0.034)
Construction	0.285***	-0.073***	-0.039***	0.112***
	(0.060)	(0.014)	(0.010)	(0.023)
Wholesale and retail	0.138***	-0.038***	-0.017***	0.055***
	(0.048)	(0.013)	(0.006)	(0.019)
Hotels and restaurants	0.166**	-0.045**	-0.021**	0.066**
	(0.073)	(0.018)	(0.010)	(0.029)
Transport and communication	0.102*	-0.028**	-0.012*	0.040*
	(0.052)	(0.014)	(0.007)	(0.021)
Financial services	-0.001	0.000	0.000	-0.000
	(0.056)	(0.016)	(0.006)	(0.022)
Other business services	0.134***	-0.037***	-0.016***	0.053***
	(0.045)	(0.012)	(0.006)	(0.018)
Public administration	0.218***	-0.058***	-0.029***	0.086***
	(0.061)	(0.015)	(0.009)	(0.024)
Education	0.283***	-0.073***	-0.038***	0.112***
	(0.058)	(0.013)	(0.009)	(0.022)
Health	0.372***	-0.095***	-0.051***	0.146***
	(0.054)	(0.012)	(0.009)	(0.021)
Other community services	0.170***	-0.046***	-0.022***	0.068***
	(0.059)	(0.015)	(0.008)	(0.023)
Region (Reference group: South East)				
Scotland	-0.001	0.000	0.000	-0.000
	(0.041)	(0.012)	(0.005)	(0.016)
North	0.065	-0.018	-0.008	0.026
	(0.050)	(0.014)	(0.006)	(0.020)
Yorkshire and Humberside	0.040	-0.011	-0.005	0.016
	(0.042)	(0.012)	(0.005)	(0.017)
East Midlands	0.108**	-0.030**	-0.013**	0.043**
	(0.044)	(0.012)	(0.006)	(0.018)
East Anglia	0.070	-0.019	-0.008	0.028
	(0.056)	(0.015)	(0.007)	(0.022)
South West	0.073*	-0.020*	-0.009*	0.029*
	(0.042)	(0.011)	(0.005)	(0.017)
West Midlands	0.044	-0.012	-0.005	0.017
	(0.044)	(0.012)	(0.005)	(0.018)
North West	0.091**	-0.025**	-0.011**	0.036**

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.036)	(0.010)	(0.005)	(0.014)
Wales	0.121**	-0.033**	-0.015*	0.048**
	(0.057)	(0.015)	(0.008)	(0.022)
Training Incidence	0.562***	-0.170***	-0.051***	0.221***
	(0.024)	(0.008)	(0.002)	(0.009)
Proportion of workers in firm who receive more training (*10)	-0.276***	0.079***	0.031***	-0.110***
	(0.019)	(0.006)	(0.002)	(0.008)
Observations	17,217			
Log-Likelihood Full Model	-16691.7			
Log-Likelihood Constant	-17563.1			
Likelihood Ratio Test	1742.7			
P-Value	0.000			
σ^2 (Workplace Variance)	0.291***			
	0.039			

Table 26: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Pay Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.153*** (0.030)	0.059*** (0.011)	-0.003*** (0.001)	-0.056*** (0.011)
Age in years (Reference group : 21 or less)				
22-29	-0.335*** (0.055)	0.132*** (0.022)	-0.015*** (0.004)	-0.116*** (0.018)
30-39	-0.243*** (0.055)	0.095*** (0.022)	-0.008*** (0.003)	-0.087*** (0.019)
40-49	-0.256*** (0.057)	0.100*** (0.023)	-0.009*** (0.003)	-0.091*** (0.020)
50 or more	-0.275*** (0.060)	0.108*** (0.024)	-0.010*** (0.003)	-0.098*** (0.021)
Marital Status (Reference group: Single)				
Widowed	0.082 (0.103)	-0.031 (0.039)	0.001*** (0.000)	0.030 (0.039)
Divorced or Separated	-0.127*** (0.048)	0.050*** (0.019)	-0.004* (0.002)	-0.046*** (0.017)
Married or Cohabiting	0.028 (0.030)	-0.011 (0.012)	0.001 (0.001)	0.010 (0.011)
White	0.033 (0.049)	-0.013 (0.019)	0.001 (0.001)	0.012 (0.018)
Work limiting disability	-0.113** (0.051)	0.044** (0.020)	-0.004 (0.002)	-0.041** (0.018)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.161*** (0.039)	0.063*** (0.016)	-0.005*** (0.002)	-0.058*** (0.014)
2 to less than 5 years	-0.217*** (0.035)	0.085*** (0.014)	-0.007*** (0.002)	-0.078*** (0.012)
5 to less than 10 years	-0.202*** (0.039)	0.079*** (0.015)	-0.007*** (0.002)	-0.072*** (0.013)
10 years or more	-0.226*** (0.039)	0.088*** (0.015)	-0.007*** (0.002)	-0.081*** (0.014)
Contract Type (Reference group: Permanent)				
Temporary job	0.161*** (0.056)	-0.061*** (0.021)	0.000 (0.001)	0.061*** (0.022)
Fixed term job	0.037 (0.059)	-0.014 (0.023)	0.001 (0.001)	0.014 (0.022)
Total Hours	-0.007*** (0.001)	0.003*** (0.000)	-0.000*** (0.000)	-0.003*** (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.050 (0.052)	0.020 (0.020)	-0.001 (0.002)	-0.018 (0.019)
CSE or equiv	-0.065 (0.047)	0.025 (0.018)	-0.002 (0.002)	-0.023 (0.017)
O level or equiv	-0.068* (0.039)	0.026* (0.015)	-0.002 (0.001)	-0.025* (0.014)
1 A level or equiv	-0.017 (0.056)	0.007 (0.022)	-0.000 (0.001)	-0.006 (0.020)
2+ A level or equiv	-0.103** (0.051)	0.040** (0.020)	-0.003 (0.002)	-0.037** (0.018)
Degree or equiv	-0.112** (0.046)	0.044** (0.018)	-0.003* (0.002)	-0.041** (0.016)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Postgrad or equiv	-0.162*** (0.062)	0.063*** (0.024)	-0.006* (0.003)	-0.057*** (0.021)
Vocational Qualification	-0.041* (0.024)	0.016* (0.009)	-0.001* (0.000)	-0.015* (0.009)
Worker-Job Skills Match				
Over-skilled	-0.271*** (0.023)	0.104*** (0.009)	-0.004*** (0.001)	-0.100*** (0.008)
Under-skilled	-0.161*** (0.050)	0.063*** (0.020)	-0.006** (0.003)	-0.057*** (0.017)
Occupational Group (Reference Professional)				
Senior Managers	0.109** (0.050)	-0.042** (0.019)	0.001*** (0.000)	0.041** (0.019)
Associate Professional and Technical	0.008 (0.045)	-0.003 (0.018)	0.000 (0.001)	0.003 (0.017)
Administrative and Secretarial	0.038 (0.048)	-0.015 (0.018)	0.001 (0.001)	0.014 (0.018)
Skilled Trades	-0.050 (0.060)	0.020 (0.023)	-0.001 (0.002)	-0.018 (0.022)
Personal Service	-0.169*** (0.056)	0.066*** (0.022)	-0.006** (0.003)	-0.060*** (0.019)
Sales and Customer Service	-0.025 (0.063)	0.010 (0.025)	-0.001 (0.002)	-0.009 (0.023)
Process, Plant and Machine	-0.013 (0.060)	0.005 (0.023)	-0.000 (0.001)	-0.005 (0.022)
Elementary	0.026 (0.055)	-0.010 (0.021)	0.000 (0.001)	0.009 (0.020)
Job done (Reference group: equally by men and women)				
Only by men	0.009 (0.045)	-0.003 (0.018)	0.000 (0.001)	0.003 (0.017)
Mainly by men	0.070** (0.035)	-0.027** (0.014)	0.001*** (0.000)	0.026* (0.013)
Mainly by women	-0.143*** (0.031)	0.056*** (0.012)	-0.004*** (0.001)	-0.052*** (0.011)
Only by women	-0.198*** (0.051)	0.078*** (0.020)	-0.008** (0.003)	-0.070*** (0.017)
I am the only person doing this type of work	0.184*** (0.049)	-0.070*** (0.018)	-0.000 (0.001)	0.070*** (0.019)
Union Member	-0.076*** (0.029)	0.029*** (0.011)	-0.002** (0.001)	-0.028*** (0.010)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	0.348*** (0.039)	-0.136*** (0.015)	0.013*** (0.002)	0.123*** (0.013)
£15.00 or more per hour	0.982*** (0.056)	-0.318*** (0.014)	-0.058*** (0.007)	0.376*** (0.020)
Establishment Size	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.071** (0.032)	0.028** (0.012)	-0.002* (0.001)	-0.026** (0.012)
2000-9999	-0.132*** (0.032)	0.051*** (0.013)	-0.004*** (0.001)	-0.048*** (0.011)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
10000+	-0.153*** (0.029)	0.060*** (0.011)	-0.004*** (0.001)	-0.055*** (0.010)
Sector (Reference group: Private Sector)				
Public Sector	-0.081** (0.040)	0.031** (0.016)	-0.002 (0.001)	-0.029** (0.015)
Other Sector	-0.009 (0.048)	0.003 (0.019)	-0.000 (0.001)	-0.003 (0.018)
Establishment Age	-0.000** (0.000)	0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
Union Density	-0.043 (0.043)	0.017 (0.017)	-0.001 (0.001)	-0.016 (0.016)
Performance related pay	0.003 (0.026)	-0.001 (0.000)	0.000 (0.000)	0.001 (0.009)
Payment by results	-0.048* (0.025)	0.019* (0.010)	-0.001* (0.001)	-0.018* (0.009)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	0.155* (0.085)	-0.059* (0.031)	0.000 (0.002)	0.059* (0.033)
Construction	0.151** (0.061)	-0.057** (0.023)	0.000 (0.001)	0.057** (0.024)
Wholesale and retail	-0.037 (0.048)	0.014 (0.019)	-0.001 (0.001)	-0.013 (0.017)
Hotels and restaurants	0.132* (0.077)	-0.050* (0.029)	0.001 (0.001)	0.049* (0.030)
Transport and communication	0.092* (0.051)	-0.035* (0.019)	0.001*** (0.000)	0.034* (0.019)
Financial services	-0.164*** (0.056)	0.064*** (0.022)	-0.006** (0.003)	-0.058*** (0.019)
Other business services	0.009 (0.046)	-0.004 (0.018)	0.000 (0.001)	0.003 (0.017)
Public administration	-0.101 (0.062)	0.039 (0.024)	-0.003 (0.003)	-0.036* (0.022)
Education	0.133** (0.059)	-0.051** (0.022)	0.001 (0.001)	0.050** (0.022)
Health	0.042 (0.053)	-0.016 (0.020)	0.001 (0.001)	0.015 (0.020)
Other community services	0.054 (0.058)	-0.021 (0.022)	0.001 (0.000)	0.020 (0.022)
Region (Reference group: South East)				
Scotland	0.082** (0.041)	-0.032** (0.015)	0.001*** (0.000)	0.031** (0.015)
North	0.088* (0.053)	-0.034* (0.020)	0.001*** (0.000)	0.033 (0.020)
Yorkshire and Humberside	0.096** (0.043)	-0.037** (0.016)	0.001*** (0.000)	0.036** (0.016)
East Midlands	0.117*** (0.044)	-0.045*** (0.017)	0.001** (0.000)	0.044*** (0.017)
East Anglia	0.054 (0.056)	-0.021 (0.021)	0.001* (0.000)	0.020 (0.021)
South West	0.033 (0.042)	-0.013 (0.016)	0.001 (0.001)	0.012 (0.016)
West Midlands	0.074* (0.041)	-0.029* (0.016)	0.001*** (0.000)	0.028* (0.015)
North West	0.031 (0.037)	-0.012 (0.014)	0.001 (0.001)	0.012 (0.014)
Wales	0.118**	-0.045**	0.001	0.044**

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
	(0.050)	(0.019)	(0.000)	(0.019)
Training Incidence	0.136***	-0.053***	0.003***	0.050***
	(0.024)	(0.009)	(0.001)	(0.009)
Proportion of workers in firm who receive more training (*10)	-0.107***	0.041***	-0.002***	-0.039***
	(0.020)	(0.008)	(0.000)	(0.007)
Observations	17,326			
Log-Likelihood Full Model	-17569.5			
Log-Likelihood Constant	-18289.8			
Likelihood Ratio Test	1440.6			
P-Value	0.000			
σ^2 (Workplace Variance)	0.443***			
	0.054			

Table 27: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Job security Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.122*** (0.031)	0.025*** (0.006)	0.020*** (0.005)	-0.045*** (0.011)
Age in years (Reference group : 21 or less)				
22-29	-0.279*** (0.061)	0.064*** (0.015)	0.042*** (0.008)	-0.106*** (0.024)
30-39	-0.351*** (0.062)	0.080*** (0.016)	0.052*** (0.009)	-0.133*** (0.024)
40-49	-0.406*** (0.064)	0.094*** (0.016)	0.060*** (0.008)	-0.154*** (0.025)
50 or more	-0.338*** (0.068)	0.076*** (0.017)	0.051*** (0.009)	-0.127*** (0.026)
Marital Status (Reference group: Single)				
Widowed	0.352*** (0.098)	-0.059*** (0.013)	-0.060*** (0.017)	0.119*** (0.030)
Divorced or Separated	-0.073 (0.051)	0.016 (0.011)	0.012 (0.008)	-0.027 (0.019)
Married or Cohabiting	0.058* (0.032)	-0.012* (0.007)	-0.009* (0.005)	0.022* (0.012)
White	0.017 (0.048)	-0.003 (0.010)	-0.003 (0.008)	0.006 (0.018)
Work limiting disability	-0.262*** (0.056)	0.062*** (0.015)	0.038*** (0.007)	-0.100*** (0.022)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.057 (0.044)	0.012 (0.010)	0.009 (0.007)	-0.021 (0.016)
2 to less than 5 years	-0.054 (0.038)	0.011 (0.008)	0.009 (0.006)	-0.020 (0.014)
5 to less than 10 years	-0.040 (0.042)	0.008 (0.009)	0.006 (0.007)	-0.015 (0.015)
10 years or more	-0.068 (0.042)	0.014 (0.009)	0.011 (0.007)	-0.025 (0.016)
Contract Type (Reference group: Permanent)				
Temporary job	-0.724*** (0.055)	0.206*** (0.019)	0.076*** (0.003)	-0.282*** (0.021)
Fixed term job	-0.727*** (0.066)	0.209*** (0.024)	0.075*** (0.003)	-0.283*** (0.025)
Total Hours	-0.002*** (0.001)	0.000*** (0.000)	0.000*** (0.000)	-0.001*** (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.022 (0.058)	0.005 (0.012)	0.003 (0.009)	-0.008 (0.021)
CSE or equiv	-0.096* (0.051)	0.021* (0.011)	0.015* (0.008)	-0.036* (0.019)
O level or equiv	-0.223*** (0.043)	0.049*** (0.010)	0.035*** (0.006)	-0.084*** (0.016)
1 A level or equiv	-0.272*** (0.062)	0.064*** (0.017)	0.040*** (0.008)	-0.104*** (0.024)
2+ A level or equiv	-0.186*** (0.055)	0.042*** (0.013)	0.028*** (0.008)	-0.070*** (0.021)
Degree or equiv	-0.281*** (0.050)	0.064*** (0.012)	0.042*** (0.007)	-0.106*** (0.019)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Postgrad or equiv	-0.307*** (0.065)	0.074*** (0.018)	0.044*** (0.008)	-0.118*** (0.026)
Vocational Qualification	-0.040 (0.027)	0.008 (0.005)	0.006 (0.004)	-0.015 (0.010)
Worker-Job Skills Match				
Over-skilled	-0.115*** (0.024)	0.024*** (0.005)	0.018*** (0.004)	-0.042*** (0.009)
Under-skilled	-0.301*** (0.054)	0.072*** (0.015)	0.043*** (0.007)	-0.115*** (0.021)
Occupational Group (Reference Professional)				
Senior Managers	0.090* (0.052)	-0.018* (0.010)	-0.015* (0.009)	0.033* (0.019)
Associate Professional and Technical	0.019 (0.049)	-0.004 (0.010)	-0.003 (0.008)	0.007 (0.018)
Administrative and Secretarial	0.062 (0.051)	-0.013 (0.010)	-0.010 (0.008)	0.023 (0.019)
Skilled Trades	0.009 (0.064)	-0.002 (0.013)	-0.001 (0.010)	0.003 (0.024)
Personal Service	-0.054 (0.059)	0.012 (0.013)	0.009 (0.009)	-0.020 (0.022)
Sales and Customer Service	-0.012 (0.067)	0.002 (0.014)	0.002 (0.011)	-0.004 (0.025)
Process, Plant and Machine	0.129** (0.064)	-0.025** (0.012)	-0.021** (0.011)	0.046** (0.023)
Elementary	0.142** (0.060)	-0.028** (0.011)	-0.023** (0.010)	0.051** (0.021)
Job done (Reference group: equally by men and women)				
Only by men	-0.014 (0.047)	0.003 (0.010)	0.002 (0.008)	-0.005 (0.018)
Mainly by men	-0.063* (0.037)	0.013* (0.008)	0.010* (0.006)	-0.023* (0.014)
Mainly by women	-0.001 (0.033)	0.000 (0.007)	0.000 (0.005)	-0.000 (0.012)
Only by women	0.021 (0.055)	-0.004 (0.011)	-0.003 (0.009)	0.008 (0.020)
I am the only person doing this type of work	0.038 (0.053)	-0.008 (0.011)	-0.006 (0.009)	0.014 (0.019)
Union Member	-0.133*** (0.030)	0.028*** (0.007)	0.021*** (0.005)	-0.049*** (0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	-0.024 (0.042)	0.005 (0.009)	0.004 (0.007)	-0.009 (0.016)
£15.00 or more per hour	0.204*** (0.058)	-0.039*** (0.010)	-0.034*** (0.010)	0.073*** (0.020)
Establishment Size	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.160*** (0.034)	0.035*** (0.008)	0.025*** (0.005)	-0.060*** (0.013)
2000-9999	-0.103*** (0.034)	0.022*** (0.008)	0.016*** (0.005)	-0.038*** (0.013)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
10000+	-0.172*** (0.031)	0.037*** (0.007)	0.027*** (0.005)	-0.064*** (0.012)
Sector (Reference group: Private Sector)				
Public Sector	0.035 (0.043)	-0.007 (0.009)	-0.006 (0.007)	0.013 (0.016)
Other Sector	-0.018 (0.053)	0.004 (0.011)	0.003 (0.008)	-0.006 (0.020)
Establishment Age	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Union Density	-0.146*** (0.045)	0.030*** (0.009)	0.024*** (0.007)	-0.054*** (0.017)
Performance related pay	-0.036 (0.026)	0.008 (0.006)	0.006 (0.004)	-0.013 (0.010)
Payment by results	0.007 (0.026)	-0.001 (0.005)	-0.001 (0.004)	0.002 (0.010)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.031 (0.087)	0.006 (0.019)	0.005 (0.014)	-0.011 (0.033)
Construction	0.354*** (0.068)	-0.060*** (0.009)	-0.060*** (0.012)	0.120*** (0.021)
Wholesale and retail	0.448*** (0.051)	-0.077*** (0.007)	-0.075*** (0.009)	0.152*** (0.015)
Hotels and restaurants	0.441*** (0.085)	-0.071*** (0.010)	-0.074*** (0.014)	0.146*** (0.024)
Transport and communication	0.098* (0.054)	-0.019* (0.010)	-0.016* (0.009)	0.035* (0.019)
Financial services	-0.127** (0.057)	0.028** (0.013)	0.020** (0.008)	-0.048** (0.022)
Other business services	0.154*** (0.047)	-0.030*** (0.008)	-0.025*** (0.008)	0.055*** (0.016)
Public administration	0.076 (0.066)	-0.015 (0.013)	-0.012 (0.011)	0.028 (0.024)
Education	0.460*** (0.062)	-0.076*** (0.008)	-0.077*** (0.010)	0.153*** (0.018)
Health	0.430*** (0.057)	-0.074*** (0.008)	-0.072*** (0.010)	0.146*** (0.018)
Other community services	0.301*** (0.060)	-0.053*** (0.009)	-0.051*** (0.010)	0.104*** (0.019)
Region (Reference group: South East)				
Scotland	0.031 (0.043)	-0.006 (0.009)	-0.005 (0.007)	0.011 (0.016)
North	0.049 (0.057)	-0.010 (0.011)	-0.008 (0.009)	0.018 (0.021)
Yorkshire and Humberside	0.094** (0.045)	-0.019** (0.008)	-0.015** (0.007)	0.034** (0.016)
East Midlands	0.083* (0.049)	-0.016* (0.009)	-0.014* (0.008)	0.030* (0.018)
East Anglia	-0.095* (0.057)	0.021 (0.013)	0.015* (0.009)	-0.035 (0.022)
South West	0.037 (0.044)	-0.007 (0.009)	-0.006 (0.007)	0.013 (0.016)
West Midlands	-0.014 (0.045)	0.003 (0.009)	0.002 (0.007)	-0.005 (0.016)
North West	0.026 (0.039)	-0.005 (0.008)	-0.004 (0.006)	0.010 (0.014)
Wales	0.065 (0.060)	-0.013 (0.012)	-0.011 (0.010)	0.023 (0.022)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Training Incidence	0.174*** (0.026)	-0.037*** (0.006)	-0.028*** (0.004)	0.065*** (0.010)
Proportion of workers in firm who receive more training (*10)	-0.078*** (0.021)	0.016*** (0.004)	0.013*** (0.003)	-0.029*** (0.008)
Observations	17,060			
Log-Likelihood Full Model	-14221.9			
Log-Likelihood Constant	-14777.1			
Likelihood Ratio Test	1110.3			
P-Value	0.000			
σ^2 (Workplace Variance)	0.397***			
	0.031			

Table 28: Multilevel Ordered Probit Estimates of the Effect of Training on Satisfaction with Work Itself Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.181*** (0.033)	0.027*** (0.005)	0.033*** (0.006)	-0.060*** (0.011)
Age in years (Reference group : 21 or less)				
22-29	-0.011 (0.058)	0.002 (0.009)	0.002 (0.011)	-0.004 (0.019)
30-39	0.032 (0.060)	-0.005 (0.009)	-0.006 (0.011)	0.010 (0.020)
40-49	0.041 (0.063)	-0.006 (0.009)	-0.008 (0.012)	0.014 (0.021)
50 or more	0.150** (0.066)	-0.021** (0.009)	-0.027** (0.012)	0.049** (0.021)
Marital Status (Reference group: Single)				
Widowed	0.308*** (0.110)	-0.037*** (0.010)	-0.055*** (0.019)	0.092*** (0.029)
Divorced or Separated	0.069 (0.055)	-0.010 (0.007)	-0.013 (0.010)	0.022 (0.017)
Married or Cohabiting	0.124*** (0.034)	-0.019*** (0.005)	-0.023*** (0.006)	0.042*** (0.012)
White	-0.020 (0.051)	0.003 (0.007)	0.004 (0.009)	-0.007 (0.017)
Work limiting disability	-0.152*** (0.054)	0.025*** (0.010)	0.028*** (0.010)	-0.052*** (0.019)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.096** (0.046)	0.015** (0.007)	0.018** (0.008)	-0.033** (0.016)
2 to less than 5 years	-0.112*** (0.040)	0.017*** (0.006)	0.021*** (0.007)	-0.038*** (0.014)
5 to less than 10 years	-0.084* (0.044)	0.013* (0.007)	0.015* (0.008)	-0.028* (0.015)
10 years or more	-0.137*** (0.044)	0.021*** (0.007)	0.025*** (0.008)	-0.046*** (0.015)
Contract Type (Reference group: Permanent)				
Temporary job	-0.088 (0.061)	0.014 (0.010)	0.016 (0.011)	-0.030 (0.021)
Fixed term job	-0.014 (0.070)	0.002 (0.011)	0.002 (0.013)	-0.005 (0.023)
Total Hours	-0.001 (0.001)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.111* (0.057)	0.017* (0.010)	0.020* (0.010)	-0.038* (0.020)
CSE or equiv	-0.167*** (0.052)	0.027*** (0.009)	0.030*** (0.009)	-0.058*** (0.018)
O level or equiv	-0.189*** (0.044)	0.030*** (0.007)	0.034*** (0.008)	-0.064*** (0.015)
1 A level or equiv	-0.224*** (0.063)	0.038*** (0.012)	0.040*** (0.011)	-0.078*** (0.023)
2+ A level or equiv	-0.306*** (0.055)	0.054*** (0.011)	0.055*** (0.009)	-0.108*** (0.020)
Degree or equiv	-0.335*** (0.051)	0.057*** (0.010)	0.060*** (0.009)	-0.117*** (0.019)
Postgrad or equiv	-0.433*** (0.069)	0.082*** (0.016)	0.075*** (0.011)	-0.157*** (0.027)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Vocational Qualification	-0.012 (0.027)	0.002 (0.004)	0.002 (0.005)	-0.004 (0.009)
Worker-Job Skills Match				
Over-skilled	-0.242*** (0.025)	0.035*** (0.004)	0.044*** (0.005)	-0.079*** (0.008)
Under-skilled	-0.424*** (0.054)	0.081*** (0.013)	0.073*** (0.008)	-0.154*** (0.021)
Occupational Group (Reference Professional)				
Senior Managers	0.159*** (0.058)	-0.022*** (0.007)	-0.029*** (0.011)	0.051*** (0.018)
Associate Professional and Technical	0.085 (0.053)	-0.012* (0.007)	-0.016 (0.010)	0.028 (0.017)
Administrative and Secretarial	-0.067 (0.054)	0.010 (0.008)	0.012 (0.010)	-0.022 (0.018)
Skilled Trades	0.088 (0.067)	-0.012 (0.009)	-0.016 (0.012)	0.029 (0.021)
Personal Service	0.099 (0.065)	-0.014 (0.009)	-0.018 (0.012)	0.032 (0.020)
Sales and Customer Service	-0.095 (0.070)	0.015 (0.012)	0.017 (0.013)	-0.032 (0.024)
Process, Plant and Machine	-0.092 (0.066)	0.014 (0.011)	0.017 (0.012)	-0.031 (0.023)
Elementary	-0.152** (0.062)	0.024** (0.011)	0.028** (0.011)	-0.052** (0.022)
Job done (Reference group: equally by men and women)				
Only by men	-0.012 (0.048)	0.002 (0.007)	0.002 (0.009)	-0.004 (0.016)
Mainly by men	-0.014 (0.038)	0.002 (0.006)	0.003 (0.007)	-0.005 (0.013)
Mainly by women	-0.133*** (0.035)	0.021*** (0.006)	0.024*** (0.006)	-0.045*** (0.012)
Only by women	-0.046 (0.060)	0.007 (0.009)	0.008 (0.011)	-0.015 (0.020)
I am the only person doing this type of work	0.114* (0.059)	-0.016** (0.008)	-0.021* (0.011)	0.037** (0.018)
Union Member	-0.113*** (0.031)	0.017*** (0.005)	0.021*** (0.006)	-0.038*** (0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	-0.018 (0.042)	0.003 (0.006)	0.003 (0.008)	-0.006 (0.014)
£15.00 or more per hour	0.175*** (0.061)	-0.024*** (0.008)	-0.032*** (0.011)	0.056*** (0.019)
Establishment Size	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Organization size (Reference group: less than 250)				
250-1999	0.002 (0.036)	-0.000 (0.005)	-0.000 (0.007)	0.001 (0.012)
2000-9999	-0.045 (0.035)	0.007 (0.005)	0.008 (0.006)	-0.015 (0.012)
10000+	-0.068** (0.032)	0.010** (0.005)	0.012** (0.006)	-0.023** (0.011)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Sector (Reference group: Private Sector)				
Public Sector	-0.041 (0.045)	0.006 (0.007)	0.007 (0.008)	-0.014 (0.015)
Other Sector	-0.058 (0.055)	0.009 (0.009)	0.011 (0.010)	-0.019 (0.019)
Establishment Age	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Union Density	-0.155*** (0.047)	0.023*** (0.007)	0.028*** (0.009)	-0.051*** (0.015)
Performance related pay	-0.045 (0.027)	0.007 (0.004)	0.008 (0.005)	-0.015 (0.009)
Payment by results	0.037 (0.027)	-0.005 (0.004)	-0.007 (0.005)	0.012 (0.009)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	0.000 (0.094)	-0.000 (0.014)	-0.000 (0.017)	0.000 (0.031)
Construction	0.172** (0.067)	-0.023*** (0.008)	-0.031*** (0.012)	0.054*** (0.020)
Wholesale and retail	0.215*** (0.052)	-0.029*** (0.006)	-0.039*** (0.009)	0.068*** (0.015)
Hotels and restaurants	0.322*** (0.082)	-0.038*** (0.008)	-0.058*** (0.014)	0.096*** (0.022)
Transport and communication	0.050 (0.055)	-0.007 (0.008)	-0.009 (0.010)	0.016 (0.018)
Financial services	-0.130** (0.058)	0.021** (0.010)	0.024** (0.010)	-0.044** (0.020)
Other business services	0.082* (0.049)	-0.012* (0.007)	-0.015* (0.009)	0.027* (0.015)
Public administration	0.100 (0.067)	-0.014 (0.009)	-0.018 (0.012)	0.032 (0.021)
Education	0.468*** (0.067)	-0.052*** (0.005)	-0.082*** (0.011)	0.134*** (0.016)
Health	0.337*** (0.059)	-0.042*** (0.006)	-0.061*** (0.010)	0.103*** (0.016)
Other community services	0.343*** (0.063)	-0.040*** (0.006)	-0.061*** (0.011)	0.102*** (0.016)
Region (Reference group: South East)				
Scotland	0.021 (0.044)	-0.003 (0.006)	-0.004 (0.008)	0.007 (0.014)
North	0.046 (0.057)	-0.007 (0.008)	-0.009 (0.010)	0.015 (0.018)
Yorkshire and Humberside	0.049 (0.048)	-0.007 (0.007)	-0.009 (0.009)	0.016 (0.015)
East Midlands	0.083* (0.050)	-0.012* (0.007)	-0.015* (0.009)	0.027* (0.016)
East Anglia	0.110* (0.063)	-0.015* (0.008)	-0.020* (0.011)	0.035* (0.020)
South West	0.125*** (0.046)	-0.017*** (0.006)	-0.023*** (0.008)	0.040*** (0.014)
West Midlands	0.063 (0.047)	-0.009 (0.006)	-0.012 (0.009)	0.021 (0.015)
North West	0.086** (0.040)	-0.012** (0.005)	-0.016** (0.007)	0.028** (0.013)
Wales	0.161** (0.063)	-0.021*** (0.007)	-0.029*** (0.011)	0.051*** (0.019)
Training Incidence	0.193*** (0.026)	-0.029*** (0.004)	-0.035*** (0.005)	0.065*** (0.009)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Proportion of workers in firm who receive more training (*10)	-0.107***	0.016***	0.020***	-0.035***
	(0.020)	(0.003)	(0.004)	(0.007)
Observations	17,336			
Log-Likelihood Full Model	-12851.6			
Log-Likelihood Constant	-13361.8			
Likelihood Ratio Test	1020.2			
P-Value	0.000			
σ^2 (Workplace Variance)	0.301***			
	0.026			

Table 29: Multilevel Ordered Probit Estimates of the Effect of Training on Shared Values Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.021 (0.031)	0.004 (0.006)	0.005 (0.007)	-0.008 (0.012)
Age in years (Reference group: 21 or less)				
22-29	0.009 (0.055)	-0.002 (0.010)	-0.002 (0.012)	0.003 (0.022)
30-39	0.141** (0.056)	-0.024*** (0.009)	-0.032** (0.013)	0.056** (0.022)
40-49	0.244*** (0.058)	-0.040*** (0.009)	-0.055*** (0.014)	0.095*** (0.022)
50 or more	0.353*** (0.061)	-0.057*** (0.009)	-0.081*** (0.014)	0.137*** (0.023)
Marital Status (Reference group: Single)				
Widowed	0.046 (0.086)	-0.008 (0.014)	-0.010 (0.019)	0.018 (0.034)
Divorced or Separated	-0.027 (0.048)	0.005 (0.009)	0.006 (0.010)	-0.011 (0.019)
Married or Cohabiting	0.113*** (0.031)	-0.021*** (0.006)	-0.024*** (0.007)	0.045*** (0.012)
White	-0.082* (0.049)	0.014* (0.008)	0.018 (0.011)	-0.032* (0.019)
Work limiting disability	-0.136** (0.056)	0.026** (0.012)	0.028*** (0.011)	-0.054** (0.022)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.098** (0.043)	0.018** (0.008)	0.021** (0.009)	-0.039** (0.017)
2 to less than 5 years	-0.104*** (0.036)	0.019*** (0.007)	0.022*** (0.008)	-0.041*** (0.014)
5 to less than 10 years	-0.122*** (0.040)	0.023*** (0.008)	0.026*** (0.008)	-0.049*** (0.016)
10 years or more	-0.202*** (0.040)	0.038*** (0.008)	0.042*** (0.008)	-0.080*** (0.016)
Contract Type (Reference group: Permanent)				
Temporary job	-0.037 (0.056)	0.007 (0.010)	0.008 (0.012)	-0.015 (0.022)
Fixed term job	0.080 (0.067)	-0.014 (0.011)	-0.018 (0.015)	0.031 (0.026)
Total Hours	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.022 (0.053)	0.004 (0.010)	0.005 (0.011)	-0.009 (0.021)
CSE or equiv	0.032 (0.046)	-0.006 (0.008)	-0.007 (0.010)	0.013 (0.018)
O level or equiv	0.051 (0.039)	-0.009 (0.007)	-0.011 (0.009)	0.020 (0.016)
1 A level or equiv	0.032 (0.056)	-0.006 (0.010)	-0.007 (0.012)	0.013 (0.022)
2+ A level or equiv	0.073 (0.052)	-0.012 (0.009)	-0.016 (0.012)	0.029 (0.020)
Degree or equiv	0.103** (0.048)	-0.018** (0.008)	-0.023** (0.011)	0.041** (0.019)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Postgrad or equiv	0.120*	-0.020*	-0.027*	0.047*
	(0.069)	(0.011)	(0.016)	(0.027)
Vocational Qualification	0.008	-0.001	-0.002	0.003
	(0.025)	(0.004)	(0.005)	(0.010)
Worker-Job Skills Match				
Over-skilled	-0.112***	0.020***	0.025***	-0.044***
	(0.023)	(0.004)	(0.005)	(0.009)
Under-skilled	-0.293***	0.061***	0.055***	-0.116***
	(0.052)	(0.013)	(0.008)	(0.020)
Occupational Group (Reference Professional)				
Senior Managers	0.266***	-0.042***	-0.062***	0.103***
	(0.057)	(0.008)	(0.014)	(0.022)
Associate Professional and Technical	-0.014	0.003	0.003	-0.006
	(0.051)	(0.009)	(0.011)	(0.020)
Administrative and Secretarial	-0.063	0.012	0.014	-0.025
	(0.052)	(0.010)	(0.011)	(0.021)
Skilled Trades	-0.155**	0.030**	0.032***	-0.062**
	(0.065)	(0.013)	(0.012)	(0.026)
Personal Service	0.029	-0.005	-0.006	0.011
	(0.062)	(0.011)	(0.014)	(0.024)
Sales and Customer Service	-0.164**	0.032**	0.034***	-0.065**
	(0.066)	(0.014)	(0.012)	(0.026)
Process, Plant and Machine	-0.259***	0.053***	0.051***	-0.103***
	(0.062)	(0.014)	(0.011)	(0.025)
Elementary	-0.202***	0.039***	0.041***	-0.080***
	(0.058)	(0.012)	(0.011)	(0.023)
Job done (Reference group: equally by men and women)				
Only by men	-0.159***	0.030***	0.033***	-0.063***
	(0.046)	(0.010)	(0.009)	(0.018)
Mainly by men	-0.061*	0.011	0.013*	-0.024
	(0.037)	(0.007)	(0.008)	(0.015)
Mainly by women	-0.076**	0.014**	0.016**	-0.030**
	(0.032)	(0.006)	(0.007)	(0.013)
Only by women	-0.110**	0.021**	0.023**	-0.044**
	(0.051)	(0.010)	(0.010)	(0.020)
I am the only person doing this type of work	0.066	-0.011	-0.015	0.026
	(0.053)	(0.009)	(0.012)	(0.021)
Union Member	-0.085***	0.015***	0.018***	-0.034***
	(0.030)	(0.006)	(0.006)	(0.012)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	0.046	-0.008	-0.010	0.018
	(0.038)	(0.007)	(0.008)	(0.015)
£15.00 or more per hour	0.291***	-0.045***	-0.068***	0.113***
	(0.058)	(0.008)	(0.014)	(0.022)
Establishment Size	-0.000**	0.000**	0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.209***	0.041***	0.043***	-0.083***
	(0.033)	(0.007)	(0.006)	(0.013)
2000-9999	-0.140***	0.026***	0.029***	-0.056***
	(0.033)	(0.007)	(0.007)	(0.013)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
10000+	-0.150***	0.028***	0.032***	-0.059***
	(0.030)	(0.006)	(0.006)	(0.012)
Sector (Reference group: Private Sector)				
Public Sector	-0.033	0.006	0.007	-0.013
	(0.042)	(0.008)	(0.009)	(0.017)
Other Sector	0.083	-0.014	-0.019	0.033
	(0.053)	(0.009)	(0.012)	(0.021)
Establishment Age	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Union Density	-0.009	0.002	0.002	-0.004
	(0.046)	(0.008)	(0.010)	(0.018)
Performance related pay	0.044*	-0.008*	-0.010*	0.018*
	(0.026)	(0.005)	(0.006)	(0.010)
Payment by results	0.040	-0.007	-0.009	0.016
	(0.026)	(0.004)	(0.006)	(0.010)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.156*	0.031	0.032*	-0.062*
	(0.091)	(0.020)	(0.017)	(0.036)
Construction	0.200***	-0.032***	-0.046***	0.078***
	(0.064)	(0.009)	(0.015)	(0.024)
Wholesale and retail	0.180***	-0.030***	-0.041***	0.071***
	(0.047)	(0.007)	(0.011)	(0.018)
Hotels and restaurants	0.280***	-0.042***	-0.066***	0.108***
	(0.072)	(0.009)	(0.018)	(0.027)
Transport and communication	0.059	-0.010	-0.013	0.023
	(0.051)	(0.009)	(0.012)	(0.020)
Financial services	-0.060	0.011	0.013	-0.024
	(0.058)	(0.011)	(0.012)	(0.023)
Other business services	0.073	-0.013	-0.016	0.029
	(0.047)	(0.008)	(0.011)	(0.018)
Public administration	0.005	-0.001	-0.001	0.002
	(0.063)	(0.011)	(0.014)	(0.025)
Education	0.466***	-0.064***	-0.111***	0.175***
	(0.063)	(0.007)	(0.015)	(0.022)
Health	0.265***	-0.042***	-0.061***	0.103***
	(0.055)	(0.008)	(0.013)	(0.021)
Other community services	0.290***	-0.043***	-0.068***	0.112***
	(0.062)	(0.008)	(0.015)	(0.023)
Region (Reference group: South East)				
Scotland	-0.048	0.009	0.010	-0.019
	(0.042)	(0.008)	(0.009)	(0.017)
North	-0.035	0.006	0.008	-0.014
	(0.055)	(0.010)	(0.012)	(0.022)
Yorkshire and Humberside	0.028	-0.005	-0.006	0.011
	(0.045)	(0.008)	(0.010)	(0.018)
East Midlands	-0.050	0.009	0.011	-0.020
	(0.046)	(0.009)	(0.010)	(0.018)
East Anglia	-0.178***	0.035***	0.036***	-0.071***
	(0.054)	(0.012)	(0.010)	(0.021)
South West	0.039	-0.007	-0.009	0.015
	(0.043)	(0.007)	(0.010)	(0.017)
West Midlands	-0.071*	0.013*	0.015*	-0.028*
	(0.041)	(0.008)	(0.009)	(0.016)
North West	0.034	-0.006	-0.008	0.014
	(0.038)	(0.007)	(0.008)	(0.015)
Wales	0.225***	-0.035***	-0.052***	0.088***
	(0.058)	(0.008)	(0.014)	(0.022)

Variable	Coefficient Estimates	Marginal Effects		
		P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Training Incidence	0.315*** (0.025)	-0.059*** (0.005)	-0.066*** (0.005)	0.125*** (0.010)
Proportion of workers in firm who receive more training (*10)	-0.095*** (0.019)	0.017*** (0.003)	0.021*** (0.004)	-0.038*** (0.007)
Observations	16,857			
Log-Likelihood Full Model	-15006.4			
Log-Likelihood Constant	-15687.7			
Likelihood Ratio Test	1362.6			
P-Value	0.000			
σ^2 (Workplace Variance)	0.374***			
	0.035			

Table 30: Multilevel Ordered Probit Estimates of the Effect of Training on Loyalty Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.175*** (0.033)	0.027*** (0.005)	0.033*** (0.006)	-0.060*** (0.011)
Age in years (Reference group : 21 or less)				
22-29	-0.090 (0.058)	0.014 (0.010)	0.017 (0.011)	-0.031 (0.020)
30-39	-0.010 (0.059)	0.002 (0.009)	0.002 (0.011)	-0.003 (0.020)
40-49	0.062 (0.061)	-0.009 (0.009)	-0.012 (0.011)	0.021 (0.021)
50 or more	0.140** (0.065)	-0.021** (0.009)	-0.026** (0.012)	0.047** (0.021)
Marital Status (Reference group: Single)				
Widowed	0.071 (0.106)	-0.010 (0.015)	-0.013 (0.020)	0.024 (0.035)
Divorced or Separated	0.031 (0.053)	-0.005 (0.008)	-0.006 (0.010)	0.011 (0.018)
Married or Cohabiting	0.152*** (0.032)	-0.024*** (0.005)	-0.028*** (0.006)	0.052*** (0.011)
White	-0.279*** (0.055)	0.036*** (0.006)	0.052*** (0.010)	-0.088*** (0.016)
Work limiting disability	-0.135** (0.056)	0.023** (0.010)	0.025** (0.010)	-0.048** (0.020)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.009 (0.043)	0.001 (0.007)	0.002 (0.008)	-0.003 (0.015)
2 to less than 5 years	-0.056 (0.038)	0.009 (0.006)	0.010 (0.007)	-0.019 (0.013)
5 to less than 10 years	-0.051 (0.042)	0.008 (0.007)	0.010 (0.008)	-0.018 (0.015)
10 years or more	-0.023 (0.042)	0.004 (0.007)	0.004 (0.008)	-0.008 (0.014)
Contract Type (Reference group: Permanent)				
Temporary job	-0.028 (0.058)	0.004 (0.009)	0.005 (0.011)	-0.010 (0.020)
Fixed term job	-0.125* (0.065)	0.021* (0.012)	0.023* (0.012)	-0.044* (0.024)
Total Hours	0.002* (0.001)	-0.000* (0.000)	-0.000* (0.000)	0.001* (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.026 (0.056)	0.004 (0.009)	0.005 (0.010)	-0.009 (0.019)
CSE or equiv	0.009 (0.050)	-0.001 (0.008)	-0.002 (0.009)	0.003 (0.017)
O level or equiv	-0.062 (0.043)	0.010 (0.007)	0.012 (0.008)	-0.021 (0.015)
1 A level or equiv	-0.053 (0.061)	0.008 (0.010)	0.010 (0.011)	-0.018 (0.021)
2+ A level or equiv	-0.104* (0.055)	0.017* (0.010)	0.019* (0.010)	-0.036* (0.020)
Degree or equiv	-0.163*** (0.050)	0.027*** (0.009)	0.030*** (0.009)	-0.057*** (0.018)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Postgrad or equiv	-0.216*** (0.067)	0.038*** (0.013)	0.039*** (0.012)	-0.077*** (0.025)
Vocational Qualification	-0.001 (0.027)	0.000 (0.004)	0.000 (0.005)	-0.000 (0.009)
Worker-Job Skills Match				
Over-skilled	-0.181*** (0.025)	0.028*** (0.004)	0.034*** (0.005)	-0.061*** (0.008)
Under-skilled	-0.317*** (0.054)	0.059*** (0.012)	0.057*** (0.009)	-0.116*** (0.021)
Occupational Group (Reference Professional)				
Senior Managers	0.245*** (0.059)	-0.033*** (0.007)	-0.046*** (0.011)	0.079*** (0.018)
Associate Professional and Technical	0.039 (0.054)	-0.006 (0.008)	-0.007 (0.010)	0.013 (0.018)
Administrative and Secretarial	0.065 (0.056)	-0.010 (0.008)	-0.012 (0.010)	0.022 (0.019)
Skilled Trades	-0.149** (0.068)	0.025** (0.012)	0.028** (0.012)	-0.053** (0.025)
Personal Service	0.154** (0.065)	-0.022*** (0.008)	-0.029** (0.012)	0.050** (0.020)
Sales and Customer Service	-0.033 (0.070)	0.005 (0.011)	0.006 (0.013)	-0.011 (0.024)
Process, Plant and Machine	-0.212*** (0.068)	0.037*** (0.013)	0.039*** (0.012)	-0.076*** (0.025)
Elementary	-0.057 (0.063)	0.009 (0.010)	0.011 (0.012)	-0.020 (0.022)
Job done (Reference group: equally by men and women)				
Only by men	-0.083* (0.048)	0.013* (0.008)	0.016* (0.009)	-0.029* (0.017)
Mainly by men	0.028 (0.038)	-0.004 (0.006)	-0.005 (0.007)	0.009 (0.013)
Mainly by women	-0.067* (0.034)	0.011* (0.006)	0.013** (0.006)	-0.023* (0.012)
Only by women	-0.068 (0.058)	0.011 (0.010)	0.013 (0.011)	-0.024 (0.021)
I am the only person doing this type of work	0.231*** (0.058)	-0.031*** (0.007)	-0.043*** (0.011)	0.074*** (0.017)
Union Member	-0.097*** (0.031)	0.015*** (0.005)	0.018*** (0.006)	-0.033*** (0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	0.075* (0.041)	-0.012* (0.007)	-0.014* (0.008)	0.026* (0.014)
£15.00 or more per hour	0.269*** (0.061)	-0.036*** (0.007)	-0.050*** (0.011)	0.086*** (0.018)
Establishment Size	-0.000** (0.000)	0.000** (0.000)	0.000** (0.000)	-0.000** (0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.213*** (0.035)	0.036*** (0.006)	0.039*** (0.006)	-0.075*** (0.013)
2000-9999	-0.150*** (0.035)	0.025*** (0.006)	0.028*** (0.007)	-0.052*** (0.013)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
10000+	-0.178*** (0.032)	0.029*** (0.005)	0.033*** (0.006)	-0.062*** (0.011)
Sector (Reference group: Private Sector)				
Public Sector	-0.018 (0.044)	0.003 (0.007)	0.003 (0.008)	-0.006 (0.015)
Other Sector	0.033 (0.054)	-0.005 (0.008)	-0.006 (0.010)	0.011 (0.018)
Establishment Age	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Union Density	-0.127*** (0.047)	0.020*** (0.007)	0.024*** (0.009)	-0.043*** (0.016)
Performance related pay	-0.002 (0.028)	0.000 (0.004)	0.000 (0.005)	-0.001 (0.009)
Payment by results	0.045 (0.027)	-0.007* (0.004)	-0.008 (0.005)	0.015* (0.009)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.211** (0.101)	0.037* (0.020)	0.038** (0.018)	-0.076** (0.038)
Construction	0.217*** (0.068)	-0.029*** (0.008)	-0.041*** (0.013)	0.070*** (0.020)
Wholesale and retail	0.130** (0.052)	-0.019*** (0.007)	-0.024** (0.010)	0.043** (0.017)
Hotels and restaurants	0.238*** (0.083)	-0.031*** (0.009)	-0.044*** (0.015)	0.076*** (0.024)
Transport and communication	-0.002 (0.056)	0.000 (0.009)	0.000 (0.010)	-0.001 (0.019)
Financial services	-0.237*** (0.060)	0.042*** (0.012)	0.043*** (0.010)	-0.085*** (0.022)
Other business services	0.011 (0.049)	-0.002 (0.008)	-0.002 (0.009)	0.004 (0.017)
Public administration	-0.195*** (0.066)	0.034*** (0.013)	0.036*** (0.012)	-0.069*** (0.024)
Education	0.378*** (0.066)	-0.047*** (0.006)	-0.070*** (0.012)	0.116*** (0.018)
Health	0.148** (0.058)	-0.021*** (0.008)	-0.028** (0.011)	0.049*** (0.019)
Other community services	0.165** (0.066)	-0.023*** (0.008)	-0.031** (0.012)	0.054*** (0.021)
Region (Reference group: South East)				
Scotland	-0.074* (0.044)	0.012 (0.007)	0.014* (0.008)	-0.026* (0.015)
North	-0.068 (0.058)	0.011 (0.010)	0.013 (0.011)	-0.024 (0.020)
Yorkshire and Humberside	0.060 (0.046)	-0.009 (0.007)	-0.011 (0.009)	0.020 (0.015)
East Midlands	0.010 (0.048)	-0.002 (0.007)	-0.002 (0.009)	0.003 (0.016)
East Anglia	-0.057 (0.060)	0.009 (0.010)	0.011 (0.011)	-0.020 (0.021)
South West	0.107** (0.045)	-0.016** (0.006)	-0.020** (0.009)	0.036** (0.015)
West Midlands	0.091* (0.047)	-0.013** (0.006)	-0.017* (0.009)	0.030** (0.015)
North West	0.109*** (0.039)	-0.016*** (0.005)	-0.020*** (0.007)	0.036*** (0.013)
Wales	0.186*** (0.063)	-0.025*** (0.008)	-0.035*** (0.012)	0.060*** (0.019)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Training Incidence	0.238*** (0.026)	-0.038*** (0.004)	-0.044*** (0.005)	0.082*** (0.009)
Proportion of workers in firm who receive more training (*10)	-0.115*** (0.020)	0.018*** (0.003)	0.022*** (0.004)	-0.039*** (0.007)
Observations	17,250			
Log-Likelihood Full Model	-13212.7			
Log-Likelihood Constant	-13719.2			
Likelihood Ratio Test	1012.8			
P-Value	0.000			
σ^2 (Workplace Variance)	0.397***			
	0.037			

Table 31: Multilevel Ordered Probit Estimates of the Effect of Training on Pride Using Incidence Measure of Training

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Male	-0.142*** (0.031)	0.024*** (0.005)	0.031*** (0.007)	-0.055*** (0.012)
Age in years (Reference group : 21 or less)				
22-29	-0.039 (0.057)	0.007 (0.010)	0.008 (0.012)	-0.015 (0.022)
30-39	-0.017 (0.059)	0.003 (0.010)	0.004 (0.013)	-0.007 (0.023)
40-49	-0.001 (0.060)	0.000 (0.010)	0.000 (0.013)	-0.000 (0.023)
50 or more	0.073 (0.063)	-0.012 (0.010)	-0.016 (0.014)	0.028 (0.024)
Marital Status (Reference group: Single)				
Widowed	0.236** (0.111)	-0.034** (0.014)	-0.053** (0.026)	0.087** (0.039)
Divorced or Separated	0.037 (0.048)	-0.006 (0.008)	-0.008 (0.010)	0.014 (0.018)
Married or Cohabiting	0.135*** (0.031)	-0.024*** (0.006)	-0.029*** (0.006)	0.052*** (0.012)
White	-0.324*** (0.054)	0.045*** (0.006)	0.073*** (0.012)	-0.118*** (0.018)
Work limiting disability	-0.114** (0.052)	0.021** (0.010)	0.024** (0.010)	-0.044** (0.020)
Tenure (Reference group: less than 1 year)				
1 to less than 2 years	-0.132*** (0.042)	0.024*** (0.008)	0.028*** (0.009)	-0.051*** (0.017)
2 to less than 5 years	-0.191*** (0.036)	0.034*** (0.007)	0.040*** (0.007)	-0.074*** (0.014)
5 to less than 10 years	-0.230*** (0.040)	0.043*** (0.008)	0.047*** (0.008)	-0.090*** (0.016)
10 years or more	-0.273*** (0.039)	0.050*** (0.008)	0.056*** (0.008)	-0.107*** (0.015)
Contract Type (Reference group: Permanent)				
Temporary job	-0.058 (0.058)	0.010 (0.010)	0.012 (0.012)	-0.023 (0.023)
Fixed term job	-0.011 (0.066)	0.002 (0.011)	0.002 (0.014)	-0.004 (0.025)
Total Hours	0.001 (0.001)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Highest Qualification (Reference group: No qualifications)				
Other	-0.032 (0.055)	0.006 (0.010)	0.007 (0.012)	-0.012 (0.021)
CSE or equiv	-0.079 (0.048)	0.014 (0.009)	0.017* (0.010)	-0.031 (0.019)
O level or equiv	-0.122*** (0.040)	0.021*** (0.007)	0.026*** (0.008)	-0.047*** (0.016)
1 A level or equiv	-0.096 (0.060)	0.017 (0.011)	0.020 (0.012)	-0.037 (0.024)
2+ A level or equiv	-0.239*** (0.052)	0.046*** (0.011)	0.048*** (0.010)	-0.094*** (0.021)
Degree or equiv	-0.218*** (0.048)	0.040*** (0.010)	0.045*** (0.009)	-0.085*** (0.019)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Postgrad or equiv	-0.265*** (0.063)	0.052*** (0.014)	0.052*** (0.011)	-0.104*** (0.025)
Vocational Qualification	-0.008 (0.025)	0.001 (0.004)	0.002 (0.005)	-0.003 (0.010)
Worker-Job Skills Match				
Over-skilled	-0.238*** (0.023)	0.040*** (0.004)	0.051*** (0.005)	-0.091*** (0.009)
Under-skilled	-0.346*** (0.049)	0.071*** (0.012)	0.065*** (0.008)	-0.137*** (0.020)
Occupational Group (Reference Professional)				
Senior Managers	0.198*** (0.054)	-0.030*** (0.007)	-0.044*** (0.012)	0.074*** (0.020)
Associate Professional and Technical	0.089* (0.051)	-0.014* (0.008)	-0.020* (0.011)	0.034* (0.019)
Administrative and Secretarial	0.031 (0.052)	-0.005 (0.008)	-0.007 (0.011)	0.012 (0.020)
Skilled Trades	-0.070 (0.064)	0.012 (0.012)	0.015 (0.013)	-0.027 (0.025)
Personal Service	0.223*** (0.060)	-0.033*** (0.008)	-0.050*** (0.014)	0.083*** (0.022)
Sales and Customer Service	-0.029 (0.065)	0.005 (0.011)	0.006 (0.014)	-0.011 (0.025)
Process, Plant and Machine	-0.170*** (0.064)	0.031** (0.013)	0.035*** (0.012)	-0.066*** (0.025)
Elementary	-0.103* (0.059)	0.018* (0.011)	0.022* (0.012)	-0.040* (0.023)
Job done (Reference group: equally by men and women)				
Only by men	-0.041 (0.046)	0.007 (0.008)	0.009 (0.010)	-0.016 (0.018)
Mainly by men	0.043 (0.036)	-0.007 (0.006)	-0.009 (0.008)	0.016 (0.014)
Mainly by women	-0.083** (0.033)	0.015** (0.006)	0.018*** (0.007)	-0.032** (0.013)
Only by women	-0.068 (0.052)	0.012 (0.010)	0.015 (0.011)	-0.027 (0.020)
I am the only person doing this type of work	0.165*** (0.053)	-0.025*** (0.007)	-0.037*** (0.012)	0.062*** (0.019)
Union Member	-0.137*** (0.029)	0.024*** (0.005)	0.029*** (0.006)	-0.053*** (0.011)
Average hourly earnings (Reference group: £5.00 or less per hour)				
£5.01-£14.99 per hour	0.102*** (0.039)	-0.018** (0.007)	-0.022*** (0.008)	0.039*** (0.015)
£15.00 or more per hour	0.385*** (0.057)	-0.054*** (0.007)	-0.087*** (0.013)	0.141*** (0.019)
Establishment Size	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Organization size (Reference group: less than 250)				
250-1999	-0.149*** (0.032)	0.027*** (0.006)	0.031*** (0.007)	-0.058*** (0.013)
2000-9999	-0.046 (0.034)	0.008 (0.006)	0.010 (0.007)	-0.018 (0.013)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
10000+	-0.120*** (0.030)	0.021*** (0.005)	0.026*** (0.006)	-0.047*** (0.012)
Sector (Reference group: Private Sector)				
Public Sector	-0.104** (0.042)	0.018** (0.008)	0.022** (0.009)	-0.040** (0.016)
Other Sector	0.111** (0.055)	-0.018** (0.008)	-0.024* (0.012)	0.042** (0.021)
Establishment Age	0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Union Density	-0.066 (0.045)	0.011 (0.008)	0.014 (0.010)	-0.026 (0.017)
Performance related pay	0.064** (0.026)	-0.011** (0.004)	-0.014** (0.006)	0.024** (0.010)
Payment by results	0.031 (0.025)	-0.005 (0.004)	-0.007 (0.006)	0.012 (0.010)
Industry (Reference group: Manufacturing)				
Electricity, gas and water	-0.211** (0.084)	0.041** (0.018)	0.042*** (0.015)	-0.083** (0.033)
Construction	0.241*** (0.063)	-0.035*** (0.008)	-0.054*** (0.015)	0.089*** (0.022)
Wholesale and retail	0.139*** (0.047)	-0.022*** (0.007)	-0.031*** (0.011)	0.053*** (0.018)
Hotels and restaurants	0.309*** (0.079)	-0.043*** (0.009)	-0.070*** (0.018)	0.113*** (0.027)
Transport and communication	0.018 (0.051)	-0.003 (0.008)	-0.004 (0.011)	0.007 (0.020)
Financial services	-0.208*** (0.056)	0.040*** (0.012)	0.042*** (0.010)	-0.082*** (0.022)
Other business services	0.127*** (0.047)	-0.020*** (0.007)	-0.028*** (0.011)	0.048*** (0.017)
Public administration	-0.173*** (0.063)	0.032** (0.013)	0.035*** (0.012)	-0.068*** (0.025)
Education	0.486*** (0.062)	-0.062*** (0.006)	-0.110*** (0.014)	0.172*** (0.020)
Health	0.213*** (0.055)	-0.033*** (0.008)	-0.047*** (0.013)	0.080*** (0.020)
Other community services	0.312*** (0.061)	-0.044*** (0.007)	-0.071*** (0.014)	0.114*** (0.021)
Region (Reference group: South East)				
Scotland	0.003 (0.041)	-0.001 (0.007)	-0.001 (0.009)	0.001 (0.016)
North	0.018 (0.054)	-0.003 (0.009)	-0.004 (0.012)	0.007 (0.021)
Yorkshire and Humberside	0.029 (0.044)	-0.005 (0.007)	-0.006 (0.010)	0.011 (0.017)
East Midlands	-0.016 (0.045)	0.003 (0.008)	0.003 (0.010)	-0.006 (0.017)
East Anglia	-0.026 (0.058)	0.005 (0.010)	0.006 (0.012)	-0.010 (0.022)
South West	0.117*** (0.043)	-0.018*** (0.006)	-0.026*** (0.010)	0.044*** (0.016)
West Midlands	0.066 (0.044)	-0.011 (0.007)	-0.015 (0.010)	0.025 (0.017)
North West	0.066* (0.037)	-0.011* (0.006)	-0.014* (0.008)	0.025* (0.014)
Wales	0.204*** (0.057)	-0.030*** (0.007)	-0.046*** (0.013)	0.076*** (0.020)

Variable	Marginal Effects			
	Coefficient Estimates	P(Dissatisfied or very dissatisfied)	P(Neither dissatisfied nor satisfied)	P(Satisfied or very satisfied)
Training Incidence	0.250*** (0.025)	-0.044*** (0.005)	-0.053*** (0.005)	0.097*** (0.010)
Proportion of workers in firm who receive more training (*10)	-0.112*** (0.019)	0.019*** (0.003)	0.024*** (0.004)	-0.043*** (0.007)
Observations	17,255			
Log-Likelihood Full Model	-14788.5			
Log-Likelihood Constant	-15360.7			
Likelihood Ratio Test	1144.2			
P-Value	0.000			
σ^2 (Workplace Variance)	0.355***			

Appendix 2: Additional Figures and Tables for Chapter 4

Table 32: Variable Descriptions and Descriptive Statistics

Variable	Description	Mean	Standard Deviation
Dependent Variables			
Labour Productivity	Value-added per full-time equivalent	808.023	9348.72
Profit	Profit/surplus per full-time equivalent	98.657	1792.012
Subjective financial Performance	'1' if financial performance is assessed as being below average for industry; '2' if financial performance is assessed as being average for industry; '3' if financial performance is assessed as being above average for industry.	2.447	0.665
Subjective labour productivity	'1' if labour productivity is assessed as being below average for industry; '2' if labour productivity is assessed as being average for industry; '3' if labour productivity is assessed as being above average for industry.	2.386	0.618
Quit rate	Proportion of employees who have stopped working at establishment because they left or resigned voluntarily.	0.127	0.142
Absence rate	Proportion of workdays was lost through employee sickness or absence at establishment over the last twelve months.	4.976	6.717
Satisfaction Measures			
Sense of achievement	Average satisfaction with sense of achievement	3.787	0.439
Scope for using own initiative	Average satisfaction with scope for using own initiative	3.836	0.392
Influence over the job	Average satisfaction with influence over the job	3.571	0.422
Training received	Average satisfaction with training received	3.335	0.500
Amount of pay received	Average satisfaction with amount of pay received	2.900	0.532
Job security	Average satisfaction with job security	3.597	0.549
Control Variables			
Workplace Characteristics			
Number of employees at workplace	Number of workers on payroll at establishment	31.35	121.82
Organization size:			
0-249	'1' if the organisation has less than 250 employees; '0' otherwise.	0.463	0.499
250-1999	'1' if the organisation has 250 to less than 2000 employees; '0' otherwise.	0.101	0.302
2000-9999	'1' if the organisation has 2000 to less than 10,000 employees; '0' otherwise.	0.127	0.333
10000+	'1' if the organisation has more than 10,000 employees; '0' otherwise.	0.2191	0.414

Variable	Description	Mean	Standard Deviation
Establishment age	How long establishment been in operation (Years)	36.3155	70.943
Capital to Labour Ratio divided by 1000	Capital to Labour Ratio divided by 1000	5.529	59.570
Region:			
Scotland	'1' if the establishment is located in Scotland; '0' otherwise.	0.106	0.308
North	'1' if the establishment is located in the North of England; '0' otherwise.	0.051	0.220
Yorkshire and Humberside	'1' if the establishment is located in Yorkshire and Humberside; '0' otherwise.	0.104	0.305
East Midlands	'1' if the establishment is located in the East Midlands; '0' otherwise.	0.053	0.225
East Anglia	'1' if the establishment is located in East Anglia; '0' otherwise.	0.048	0.214
South East	'1' if the establishment is located in the South East; '0' otherwise.	0.281	0.449
South West	'1' if the establishment is located in the South West; '0' otherwise.	0.099	0.299
West Midlands	'1' if the establishment is located in the West Midlands; '0' otherwise.	0.078	0.268
North West	'1' if the establishment is located in the North West; '0' otherwise.	0.125	0.331
Wales	'1' if the establishment is located in Wales; '0' otherwise.	0.052	0.223
Industry:			
Manufacturing	'1' if the establishment is in the manufacturing sector; '0' otherwise	0.087	0.282
Electricity, gas and water	'1' if the establishment is in the electricity, gas and water sector; '0' otherwise.	0.000	0.023
Construction	'1' if the establishment is in the construction sector; '0' otherwise.	0.043	0.203
Wholesale and retail	'1' if the establishment is in the wholesale and retail sector; '0' otherwise.	0.250	0.433
Hotels and restaurants	'1' if the establishment is in the hotels and restaurants sector; '0' otherwise.	0.064	0.246
Transport and communication	'1' if the establishment is in the transport and communication sector; '0' otherwise.	0.058	0.235
Financial services	'1' if the establishment is in the financial services sector; '0' otherwise	0.054	0.226
Other business services	'1' if the establishment is in the other business services sector; '0' otherwise.	0.165	0.371
Public administration	'1' if the establishment is in the public administration sector; '0' otherwise.	0.027	0.164
Education	'1' if the establishment is in the education sector; '0' otherwise.	0.046	0.210
Health	'1' if the establishment is in the health sector; '0' otherwise.	0.123	0.329
Other community services	'1' if the establishment is in the other community services sector; '0' otherwise.	0.077	0.267
Workforce Composition			

Variable	Description	Mean	Standard Deviation
Occupational composition:			
Managerial	Proportion of employees in the senior managers occupations group.	0.117	0.119
Professional	Proportion of employees in the professional occupations group.	0.076	0.164
Associate professional and technical	Proportion of employees in the associate professional and technical occupations group.	0.082	0.166
Administrative and Secretarial	Proportion of employees in the administrative and secretarial occupations group.	0.143	0.204
Skilled Trade	Proportion of employees in the skilled trades occupations group.	0.080	0.175
Personal Service	Proportion of employees in the personal service occupations group.	0.071	0.216
Sales	Proportion of employees in the sales and customer service occupations group.	0.172	0.294
Process, Plant and Machine Operatives	Proportion of employees in the process, plant and machine operatives occupations group.	0.112	0.233
Elementary	Proportion of employees in the elementary occupations group.	0.144	0.267
Proportion of workforce:			
aged under 21	Proportion of employees who are aged under 21.	0.110	0.208
aged 50+	Proportion of employees who are aged 50+.	0.292	1.641
from an ethnic minority	Proportion of employees who are from an ethnic minority.	0.124	1.778
with a disability	Proportion of employees with a disability.	0.039	1.195
members of a union	Proportion of employees who are members of a union.	0.2975	0.332
Female	Proportion of employees who are female.	0.549	0.321
work part-time	Proportion of employees who work part-time.	0.338	0.309
on fixed term contracts	Proportion of employees who are on fixed term contracts.	0.050	0.158
agency staff	Proportion of employees who are agency staff.	0.014	0.064
Market Characteristics			
Number of Competitors:			
none/organisation dominates market	'1' if the establishment has no competitors or dominates market; '0' otherwise.	0.01	0.099
few competitors	'1' if the establishment has few competitors; '0' otherwise.	0.162	0.368
some	'1' if the establishment has some competitors; '0' otherwise.	0.493	0.249
many competitors	'1' if the establishment has many competitors; '0' otherwise.	0.334	0.472

Variable	Description	Mean	Standard Deviation
Competitive Market	'1' if the market the establishment is operating in is described as competitive or very competitive; '0' otherwise.	0.756	0.430
State of Market:			
Growing	'1' if the market the establishment is operating in is described as growing '0' otherwise.	0.486	0.500
Mature	'1' if the market the establishment is operating in is described as mature '0' otherwise.	0.231	0.422
Declining	'1' if the market the establishment is operating in is described as declining '0' otherwise.	0.093	0.291
Turbulent	'1' if the market the establishment is operating in is described as turbulent '0' otherwise.	0.189	0.392

Table 33: Estimates of the Relationship between Satisfaction and Workplace Performance Measures

Dependent Variable	Value Added	Profits	Subjective Financial Performance	Subjective Labour Productivity	Quit Rate	Absence Rate
Estimation Method	Least Squares	Least Squares	Ordered Probit	Ordered Probit	Tobit	Tobit
Workplace Characteristics						
Number of employees at workplace/1000	-0.001	0.019	0.043	0.100*	-0.006	-0.063
	(0.021)	(0.012)	(0.031)	(0.033)	(0.004)	(0.222)
Organization size:						
250-1999	0.147***	0.072***	0.323***	0.021	-0.004	0.895**
	(0.033)	(0.020)	(0.057)	(0.058)	(0.007)	(0.368)
2000-9999	0.077**	0.070***	0.215***	-0.088	0.033***	1.475***
	(0.036)	(0.022)	(0.060)	(0.061)	(0.008)	(0.398)
10000+	0.072**	0.038*	0.259***	0.001	0.016**	0.748**
	(0.033)	(0.020)	(0.055)	(0.058)	(0.007)	(0.356)
Establishment age	0.189**	0.240*	0.411*	0.256	-0.043	0.935
	(0.028)	(0.136)	(0.382)	(0.413)	(0.052)	(0.543)
Capital to Labour Ratio/1000	0.013**	0.011***	0.042***	0.016**	0.012**	0.031**
	(0.004)	(0.002)	(0.011)	(0.006)	(0.009)	(0.009)
Industry:						
Electricity, gas and water	-0.012	-0.027	0.622***	0.390***	-0.010	-1.637**
	(0.079)	(0.045)	(0.138)	(0.147)	(0.018)	(0.822)
Construction	0.068	0.050*	0.242***	-0.107	0.044***	-0.054
	(0.051)	(0.030)	(0.090)	(0.093)	(0.011)	(0.590)
Wholesale and retail	0.044	0.009	-0.178**	-0.192**	0.048***	-1.370***
	(0.046)	(0.028)	(0.080)	(0.082)	(0.010)	(0.503)
Hotels and restaurants	0.210***	0.050	0.157	0.376***	0.185***	-1.906***
	(0.067)	(0.042)	(0.115)	(0.116)	(0.015)	(0.723)
Transport and communication	-0.063	-0.035	-0.091	0.264***	0.008	2.144***
	(0.055)	(0.034)	(0.093)	(0.095)	(0.012)	(0.566)
Financial services	0.638***	0.308***	0.257**	-0.042	-0.003	2.323***
	(0.071)	(0.042)	(0.112)	(0.113)	(0.014)	(0.694)
Other business services	0.236***	0.161***	-0.266***	0.109	0.066***	1.558***
	(0.049)	(0.030)	(0.082)	(0.084)	(0.010)	(0.518)
Public administration	-0.041	-0.020	0.078	0.442**	0.037	1.757
	(0.142)	(0.080)	(0.180)	(0.198)	(0.023)	(1.186)
Education	0.255***	0.114**	0.424***	0.193	0.097***	0.951
	(0.084)	(0.049)	(0.131)	(0.138)	(0.017)	(0.857)
Health	0.282***	0.044	0.282***	0.377***	0.031**	2.486***
	(0.062)	(0.037)	(0.109)	(0.111)	(0.014)	(0.692)
Other community services	0.108**	0.031	-0.074	0.257**	0.038***	1.394**
	(0.055)	(0.034)	(0.100)	(0.102)	(0.012)	(0.649)
Occupational composition:						

Dependent Variable	Value Added	Profits	Subjective Financial Performance	Subjective Labour Productivity	Quit Rate	Absence Rate
Estimation Method	Least Squares	Least Squares	Ordered Probit	Ordered Probit	Tobit	Tobit
Managerial	0.515*** (0.108)	-0.099 (0.068)	-0.492*** (0.182)	0.232 (0.188)	- 0.095*** (0.023)	0.764 (1.172)
Professional	0.259*** (0.100)	0.329*** (0.060)	0.268* (0.159)	0.232 (0.165)	0.117*** (0.021)	-9.186*** (1.076)
Associate professional and technical	-0.033 (0.087)	0.005 (0.053)	-0.471*** (0.150)	-0.139 (0.150)	-0.003 (0.019)	-5.323*** (0.948)
Administrative and Secretarial	0.194*** (0.074)	0.353*** (0.046)	-0.211* (0.126)	-0.089 (0.131)	-0.022 (0.017)	-3.251*** (0.834)
Skilled Trade	0.214*** (0.077)	-0.017 (0.048)	-0.769*** (0.138)	-0.388*** (0.140)	-0.039** (0.018)	-2.891*** (0.865)
Personal Service	0.429*** (0.080)	0.110** (0.049)	-0.748*** (0.138)	-0.286** (0.142)	0.071*** (0.018)	-4.123*** (0.922)
Sales	0.149** (0.065)	0.061 (0.042)	-0.246** (0.110)	-0.171 (0.115)	0.094*** (0.015)	-2.105*** (0.717)
Process, Plant and Machine Operatives	0.124* (0.072)	0.028 (0.044)	-0.120 (0.122)	0.022 (0.125)	0.034** (0.016)	-3.443*** (0.779)
Skills Composition						
Other	0.180*** (0.006)	-0.022 (0.080)	0.096 (0.331)	-0.410*** (0.008)	1.054 (1.298)	0.070 (0.044)
CSE or equiv	-0.124 (0.159)	-0.059 (0.065)	-0.301*** (0.085)	-0.232 (0.154)	2.011 (1.481)	-0.009 (0.030)
O level or equiv	0.231*** (0.040)	0.142*** (0.020)	-0.090 (0.191)	-0.217** (0.094)	3.291 (0.826)	-0.018 (0.028)
1 A level or equiv	0.086 (0.239)	0.116*** (0.037)	-0.203 (0.296)	-0.084 (0.118)	-4.054 (2.325)	-0.187*** (0.006)
2+ A level or equiv	0.390*** (0.055)	0.432*** (0.055)	-0.015 (0.268)	0.009 (0.234)	-1.670 (1.781)	0.124*** (0.023)
Degree or equiv	0.041*** (0.014)	0.023 (0.025)	-0.035 (0.120)	-0.299 (0.231)	-1.561 (0.783)	0.002 (0.014)
Postgrad or equiv	0.114*** (0.033)	0.096*** (0.033)	0.586*** (0.197)	0.737*** (0.229)	-2.021 (0.223)	-0.047*** (0.022)
Industrial Relations and Human Resources Characteristics						
Financial Participation	0.129*** (0.024)	0.039** (0.025)	0.004 (0.021)	-0.103** (0.023)	-0.009* (0.025)	-0.446* (0.224)
Union Density	-0.001 (0.0001)	0.000 (0.000)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.000)	0.005 (0.005)
Training Rate	0.237** (0.030)	0.189*** (0.030)	0.026*** (0.031)	0.024*** (0.031)	-0.051** (0.030)	-0.055** (0.029)
Market Characteristics						
Many competitors	-0.024	-0.047*	0.001	-0.067	-	0.543**

Dependent Variable	Value Added	Profits	Subjective Financial Performance	Subjective Labour Productivity	Quit Rate	Absence Rate
Estimation Method	Least Squares	Least Squares	Ordered Probit	Ordered Probit	Tobit	Tobit
					0.024***	
	(0.015)	(0.024)	(0.042)	(0.041)	(0.005)	(0.265)
Competitive Market	-0.019	-0.109***	-0.321***	-0.030	0.012**	0.011
	(0.017)	(0.028)	(0.049)	(0.048)	(0.006)	(0.300)
Average Satisfaction	0.512*	0.189	0.191**	0.183**	-0.566*	-0.031**
	(0.226)	(0.247)	(0.077)	(0.075)	(0.305)	(0.015)
Observations	563	563	563	563	563	563
F-Statistic	13.245	12.345	11.856	12.841	11.137	12.705
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000

Appendix 3: Additional Figures and Tables for Chapter 5

Figure 24: Satisfaction with Job Overall by Region

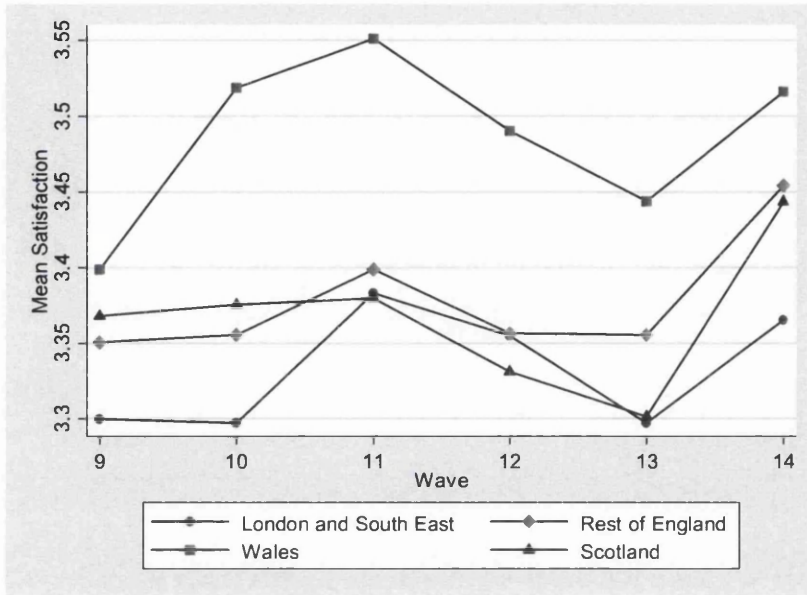


Figure 25: Satisfaction with Pay by Region

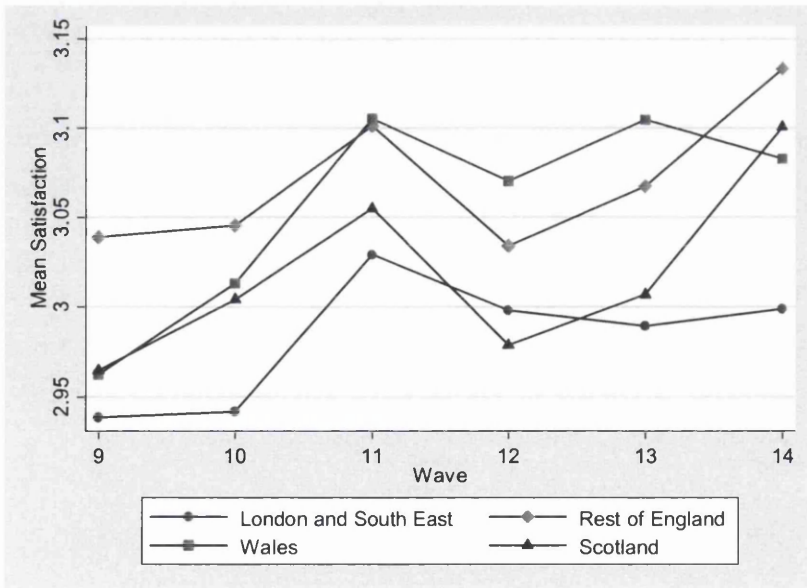


Figure 26: Satisfaction with Job Security by Region

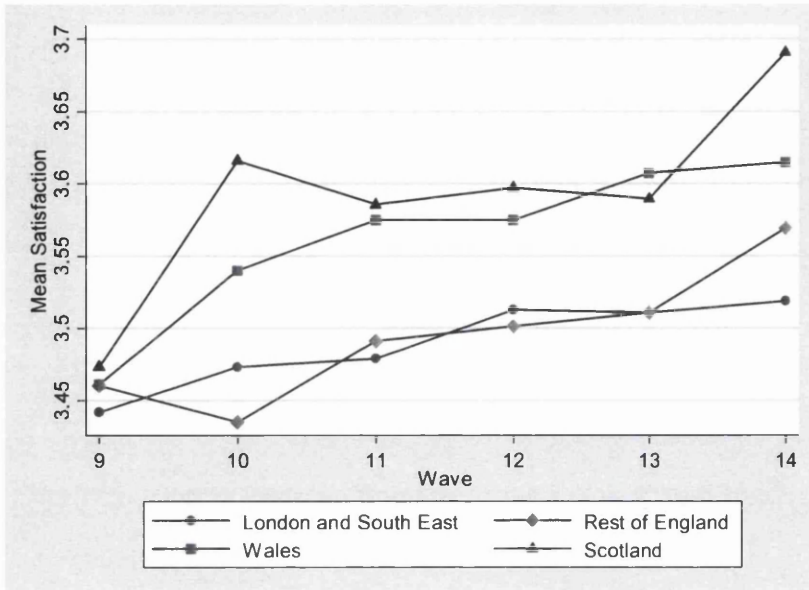


Figure 27: Satisfaction with Work Itself by Region

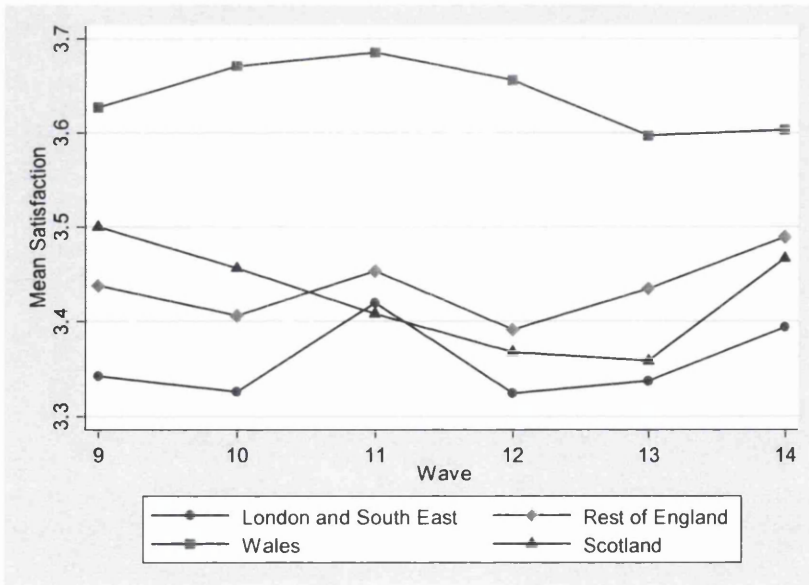


Figure 28: Satisfaction with Hours Worked by Region

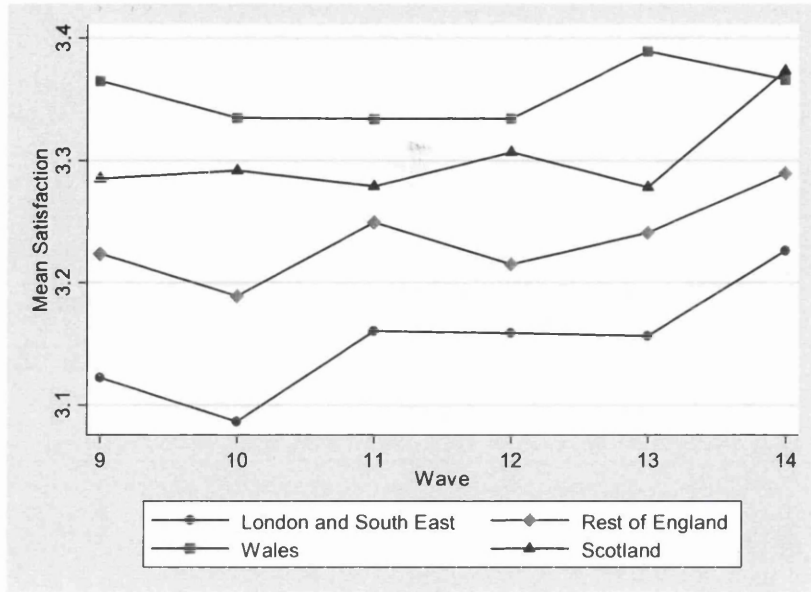


Table 34: Variable Definitions and Descriptive Statistics

Variable	Description	All		High-paid 1		Low-paid 1		High-paid 2		Low-paid 2	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Male	'1' if the individual is male; '0' otherwise.	0.521	0.500	0.537	0.499	0.317	0.466	0.550	0.498	0.285	0.452
Age											
18 to 21	'1' if the individual is aged between 18 and 21 inclusive; '0' otherwise.	0.075	0.264	0.042	0.200	0.250	0.433	0.065	0.246	0.163	0.370
22 to 29	'1' if the individual is aged between 22 and 29 inclusive; '0' otherwise.	0.167	0.373	0.183	0.386	0.182	0.386	0.163	0.369	0.203	0.403
30 to 39	'1' if the individual is aged between 30 and 39 inclusive; '0' otherwise.	0.279	0.448	0.297	0.457	0.220	0.414	0.284	0.451	0.238	0.426
40 to 49	'1' if the individual is aged between 40 and 49 inclusive; '0' otherwise.	0.262	0.440	0.282	0.450	0.175	0.380	0.269	0.444	0.203	0.403
50-retirement	'1' if the individual is aged 50 or more inclusive; '0' otherwise.	0.217	0.412	0.196	0.397	0.173	0.379	0.220	0.414	0.192	0.394
Marital Status											
Married	'1' if the individual's marital status is married or cohabiting; '0' otherwise.	0.596	0.491	0.604	0.489	0.428	0.495	0.611	0.487	0.468	0.499
Separated	'1' if the individual's marital status is separated; '0' otherwise.	0.020	0.138	0.019	0.137	0.021	0.143	0.019	0.138	0.022	0.146
Divorced	'1' if the individual's marital status is divorced; '0' otherwise.	0.093	0.291	0.091	0.288	0.102	0.303	0.091	0.287	0.114	0.318
Widowed	'1' if the individual's marital status is widowed; '0' otherwise.	0.010	0.098	0.010	0.098	0.015	0.124	0.009	0.092	0.019	0.137
Single	'1' if the individual's marital status is single; '0' otherwise.	0.282	0.450	0.277	0.447	0.434	0.496	0.270	0.444	0.377	0.485
Poor Health	'1' if the individual has poor health (self-assessed);	0.054	0.226	0.050	0.219	0.076	0.265	0.051	0.221	0.078	0.269

Variable	Description	All		High-paid 1		Low-paid 1		High-paid 2		Low-paid 2	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
	'0' otherwise.										
Highest Qualification											
Degree or equivalent	'1' if the individual highest qualification is a Degree, Post Graduate Degree or equivalent; '0' otherwise.	0.441	0.497	0.509	0.500	0.197	0.398	0.468	0.499	0.214	0.410
'A' level or equivalent	'1' if the individual highest qualification is A level or equivalent; '0' otherwise.	0.138	0.345	0.130	0.336	0.203	0.403	0.132	0.338	0.187	0.390
'O' level or equivalent	'1' if the individual highest qualification is 'O' Level or equivalent; '0' otherwise.	0.204	0.403	0.192	0.394	0.237	0.425	0.201	0.401	0.228	0.420
Other qualifications or equivalent	'1' if the individual highest qualification is other; '0' otherwise.	0.081	0.273	0.063	0.244	0.125	0.330	0.075	0.263	0.132	0.339
No Qualifications	'1' if the individual has no qualifications; '0' otherwise.	0.136	0.343	0.106	0.308	0.239	0.426	0.124	0.329	0.239	0.427
Hours	Usual hours of work per week	33.485	11.257	35.238	8.990	29.107	13.983	34.158	10.612	28.774	14.153
Workplace Size											
less than 25	'1' if the individual's workplace has less than 250 employees; '0' otherwise.	0.366	0.482	0.309	0.462	0.558	0.497	0.338	0.473	0.563	0.496
25-49	'1' if the individual's workplace has 25 to less than 50 employees; '0' otherwise.	0.129	0.336	0.130	0.336	0.139	0.346	0.128	0.334	0.137	0.344
50-199	'1' if the individual's workplace has 50 to less than 200 employees; '0' otherwise.	0.203	0.402	0.222	0.416	0.149	0.356	0.211	0.408	0.147	0.354
200-499	'1' if the individual's workplace has 200 to less than 500 employees; '0' otherwise.	0.119	0.323	0.134	0.341	0.074	0.262	0.125	0.331	0.075	0.263

Variable	Description	All		High-paid 1		Low-paid 1		High-paid 2		Low-paid 2	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
500+	'1' if the individual's workplace has more than 499 employees; '0' otherwise.	0.161	0.367	0.190	0.392	0.057	0.231	0.176	0.381	0.054	0.227
Job Tenure											
Less than 1 year	'1' if the individual current job tenure is less than 1 year; '0' otherwise.	0.222	0.416	0.196	0.397	0.310	0.463	0.207	0.405	0.330	0.471
1 to less than 2 years	'1' if the individual current job tenure is 1 year to less than 2 years; '0' otherwise.	0.191	0.393	0.185	0.388	0.230	0.421	0.185	0.389	0.234	0.423
2 to less than 5 years	'1' if the individual current job tenure is 2 years to less than 5 years; '0' otherwise.	0.273	0.446	0.279	0.448	0.279	0.448	0.276	0.447	0.254	0.436
5 to less than 10 years	'1' if the individual current job tenure is 5 years to less than 10 years; '0' otherwise.	0.153	0.360	0.162	0.369	0.115	0.319	0.157	0.364	0.120	0.325
10 to less than 20 years	'1' if the individual current job tenure is 10 years to less than 20 years; '0' otherwise.	0.121	0.326	0.135	0.341	0.054	0.227	0.131	0.337	0.052	0.221
20 years or more	'1' if the individual current job tenure is 20 years or more; '0' otherwise.	0.255	0.436	0.149	0.356	0.108	0.310	0.271	0.445	0.125	0.331
Sector											
Private Sector	'1' if the individual's workplace is the private sector; '0' otherwise	0.645	0.478	0.594	0.491	0.850	0.358	0.618	0.486	0.835	0.371
Other Sector	'1' if the individual's workplace is the other sector; '0' otherwise	0.034	0.181	0.037	0.188	0.025	0.155	0.035	0.185	0.024	0.153
Public Sector	'1' if the individual's workplace is the public sector; '0' otherwise	0.321	0.467	0.369	0.483	0.126	0.332	0.346	0.476	0.141	0.348

Variable	Description	All		High-paid 1		Low-paid 1		High-paid 2		Low-paid 2	
		Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Managerial Responsibilities	'1' if the individual has managerial responsibilities; '0' otherwise.	0.176	0.381	0.205	0.404	0.047	0.213	0.194	0.396	0.046	0.209
Foreman	'1' if the individual is a foreman; '0' otherwise.	0.162	0.369	0.182	0.386	0.108	0.310	0.169	0.375	0.113	0.317
Travel to Work Time (Minutes)	Travel to Work Time in minutes	20.032	17.396	21.256	17.626	14.202	12.106	20.953	17.891	13.756	11.776
Annual Pay Rise	'1' if the individual receives an annual pay rise; '0' otherwise.	0.438	0.496	0.487	0.500	0.250	0.433	0.467	0.499	0.237	0.426
Promotion Opportunities	'1' if the individual has opportunity for promotion in current job; '0' otherwise.	0.495	0.500	0.529	0.499	0.387	0.487	0.514	0.500	0.359	0.480
Employment rate	Employment rate in standard statistical region	69.949	1.554	70.040	1.572	69.922	1.523	69.900	1.539	70.349	1.620
Wave 9	'1' if the interview took place in wave 9; '0' otherwise.	0.177	0.381	0.171	0.377	0.181	0.386	0.182	0.386	0.131	0.338
Wave 10	'1' if the interview took place in wave 10; '0' otherwise.	0.175	0.380	0.175	0.380	0.189	0.391	0.180	0.384	0.131	0.338
Wave 11	'1' if the interview took place in wave 11; '0' otherwise.	0.172	0.377	0.150	0.357	0.149	0.356	0.176	0.381	0.138	0.345
Wave 12	'1' if the interview took place in wave 12; '0' otherwise.	0.160	0.367	0.163	0.369	0.179	0.383	0.159	0.366	0.165	0.371
Wave 13	'1' if the interview took place in wave 13; '0' otherwise.	0.159	0.365	0.170	0.375	0.150	0.358	0.156	0.363	0.179	0.384
Wave 14	'1' if the interview took place in wave 14; '0' otherwise.	0.158	0.365	0.171	0.377	0.152	0.359	0.146	0.353	0.256	0.437

Table 35: Multilevel Ordered Probit Estimates of the Determinants of Job Satisfaction in the UK – Males and Females

	Overall	Pay	Job Security	Work Itself	Hours Worked
Male	-0.153***	-0.115***	-0.159***	-0.083***	-0.063***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Age	-0.022***	0.001	-0.055***	-0.005	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Age Squared	0.000***	0.000	0.001***	0.000***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital Status (Omitted Group: Single)					
Married	0.140***	0.123***	0.079***	0.136***	0.029*
	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)
Separated/ Divorced/ Widowed	0.071***	0.004	0.071***	0.073***	-0.015
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Poor Health	-0.265***	-0.213***	-0.198***	-0.167***	-0.173***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Highest Qualification (Omitted Group: No Qualifications)					
Degree or equivalent	-0.224***	-0.112***	-0.132***	-0.144***	-0.173***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
'A' level or equivalent	-0.192***	-0.108***	-0.138***	-0.131***	-0.079***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
'O' level or equivalent	-0.114***	-0.084***	-0.029	-0.085***	-0.066***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Other qualifications or equivalent	-0.099***	-0.025	-0.075***	-0.064**	-0.063**
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
Hours	-0.007***	-0.007***	-0.001**	-0.001**	-0.017***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Workplace Size (Omitted Group: less than 25)					
	-0.074***	-0.032*	-0.086***	-0.088***	-0.074***
	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)
50-199	-0.201***	-0.079***	-0.159***	-0.226***	-0.114***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
200-499	-0.227***	-0.042**	-0.169***	-0.274***	-0.065***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
500+	-0.200***	-0.017	-0.224***	-0.263***	-0.044**
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Job Tenure (Omitted Group: Less than 1 year)					
1 to less than 2 years	-0.067***	-0.090***	0.094***	-0.059***	-0.015
	(0.019)	(0.018)	(0.019)	(0.018)	(0.018)
2 to less than 5 years jtenure3	-0.151***	-0.108***	0.125***	-0.158***	-0.067***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
5 to less than 10 years jtenure4	-0.183***	-0.125***	0.145***	-0.195***	-0.101***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
10 to less than 20 years jtenure5	-0.224***	-0.124***	0.120***	-0.247***	-0.091***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
20 years or more jtenure6	-0.187***	-0.091***	0.216***	-0.218***	-0.079**
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Sector (Omitted Group: Private Sector)					
Other Sector	0.132***	0.050*	0.083***	0.201***	0.117***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
Public Sector	0.043***	-0.066***	0.146***	0.046***	0.014
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Managerial Responsibilities	0.111***	0.260***	0.188***	0.142***	-0.163***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Foreman	0.027*	0.015	0.120***	0.055***	-0.061***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Travel to Work Time (Minutes)	-0.001***	0.001**	-0.003***	-0.001**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

	Overall	Pay	Job Security	Work Itself	Hours Worked
Annual Pay Rise	0.140***	0.130***	0.175***	0.091***	0.130***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Promotion Opportunities	0.181***	0.125***	0.252***	0.118***	0.060***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Employment rate	-0.029	-0.035	-0.057**	0.017	0.016
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Wave (Omitted Group: Wave 9)					
Wave 10	-0.008	-0.010	0.037	-0.053**	-0.061***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Wave 11	0.014	0.023	0.022	-0.012	-0.012
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Wave 12	0.011	0.019	0.099***	-0.062**	-0.031
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Wave 13	0.080	0.146	0.282***	-0.118	-0.079
	(0.094)	(0.093)	(0.094)	(0.093)	(0.093)
Wave 14	0.122	0.142	0.269***	-0.096	-0.036
	(0.088)	(0.087)	(0.088)	(0.087)	(0.087)
Day of the week (Omitted Group: Monday)					
Sunday	0.087***	0.031	0.055**	0.049*	0.006
	(0.028)	(0.028)	(0.028)	(0.027)	(0.027)
Tuesday	0.045**	0.030*	0.015	0.039**	0.037**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Wednesday	0.021	0.010	0.010	0.039**	0.028
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Thursday	0.039**	0.031*	0.031*	0.034*	0.040**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Friday	0.072***	0.043**	0.067***	0.051**	0.037*
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Saturday	0.094***	0.074***	0.062**	0.065***	0.032
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Region (Omitted Group: London and the South East)					
Rest of England	0.042***	0.099***	0.007	0.055***	0.078***
	(0.016)	(0.018)	(0.018)	(0.017)	(0.018)
Wales	0.139***	0.032	-0.061***	0.250***	0.177***
	(0.020)	(0.022)	(0.021)	(0.020)	(0.022)
Scotland	-0.003	0.033	0.028	0.033*	0.116***
	(0.018)	(0.021)	(0.020)	(0.019)	(0.020)
Cut 1	-3.997***	-3.288**	-6.133***	-0.186	-0.719
	(1.739)	(1.734)	(1.741)	(1.730)	(1.724)
Cut 2	-3.668***	-3.065**	-5.814***	0.148	-0.385
	(1.739)	(1.734)	(1.741)	(1.730)	(1.724)
Cut 3	-2.978**	-2.377**	-5.253***	0.790	0.243
	(1.739)	(1.734)	(1.741)	(1.730)	(1.724)
Cut 4	-1.480	-1.066	-4.129***	2.103	1.465
	(1.739)	(1.734)	(1.741)	(1.730)	(1.724)
Observations	36,043	36,011	35,817	36,023	36,022
Log-Likelihood Full Model	-48551.1	-51162.5	-50969.9	-50292.5	-52212.9
Log-Likelihood Constants Only	-49520.9	-51788.0	-52038.2	-51085.0	-53383.1
Chi-Squared	1939.6	1251.0	2136.7	1585.1	2340.4
Prob > chi2	0.000	0.000	0.000	0.000	0.000

Table 36: Multilevel Ordered Probit Estimates of the Determinants of Job Satisfaction in the UK – Males Only

	Overall	Pay	Job Security	WorkItself	Hours Worked
Age	-0.035***	-0.005	-0.067***	-0.014***	-0.026***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Age Squared	0.000***	0.000	0.001***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital Status (Omitted Group: Single)					
Married	0.095***	0.131***	0.051**	0.096***	-0.025
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Separated/ Divorced/ Widowed	0.082**	0.070**	0.091***	0.102***	-0.007
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Poor Health	-0.327***	-0.277***	-0.257***	-0.273***	-0.175***
	(0.037)	(0.037)	(0.037)	(0.037)	(0.036)
Highest Qualification (Omitted Group: No Qualifications)					
Degree or equivalent	-0.203***	-0.097***	-0.192***	-0.173***	-0.152***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.029)
'A' level or equivalent	-0.209***	-0.133***	-0.191***	-0.169***	-0.096***
	(0.035)	(0.035)	(0.035)	(0.034)	(0.034)
'O' level or equivalent	-0.099***	-0.109***	-0.073**	-0.103***	-0.084**
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Other qualifications or equivalent	-0.103**	-0.035	-0.106***	-0.105***	-0.100**
	(0.041)	(0.041)	(0.041)	(0.041)	(0.040)
Hours	-0.004***	-0.004***	0.004***	0.001	-0.014***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Workplace Size (Omitted Group: less than 25)					
	-0.104***	-0.066**	-0.106***	-0.083***	-0.065**
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
50-199	-0.182***	-0.092***	-0.100***	-0.199***	-0.084***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.022)
200-499	-0.213***	-0.053**	-0.150***	-0.222***	-0.056**
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
500+	-0.194***	0.023	-0.255***	-0.227***	-0.008
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Job Tenure (Omitted Group: Less than 1 year)					
1 to less than 2 years	-0.070**	-0.086***	0.101***	-0.060**	-0.029
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
2 to less than 5 years jtenure3	-0.154***	-0.116***	0.108***	-0.164***	-0.087***
	(0.026)	(0.025)	(0.026)	(0.025)	(0.025)
5 to less than 10 years jtenure4	-0.194***	-0.122***	0.126***	-0.193***	-0.093***
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
10 to less than 20 years jtenure5	-0.157***	-0.097***	0.142***	-0.190***	-0.054*
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
20 years or more jtenure6	-0.164***	-0.123***	0.186***	-0.192***	-0.106**
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Sector (Omitted Group: Private Sector)					
Other Sector	0.162***	-0.011	0.130**	0.315***	0.140***
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
Public Sector	0.022	-0.145***	0.197***	0.004	0.063***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Managerial Responsibilities	0.174***	0.321***	0.234***	0.188***	-0.120***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Foreman	0.054**	0.035	0.127***	0.074***	-0.039*
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Travel to Work Time (Minutes)	-0.001**	0.000	-0.002***	0.000	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Annual Pay Rise	0.152***	0.137***	0.202***	0.108***	0.149***

	Overall	Pay	Job Security	Work Itself	Hours Worked
	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)
Promotion Opportunities	0.223***	0.133***	0.267***	0.156***	0.086***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Employment rate	-0.026	-0.010	-0.020	0.028	0.026
	(0.037)	(0.037)	(0.037)	(0.037)	(0.036)
Wave (Omitted Group: Wave 9)					
Wave 10	0.007	-0.020	-0.002	-0.075**	-0.081**
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Wave 11	-0.017	0.004	-0.014	-0.048*	-0.035
	(0.028)	(0.028)	(0.028)	(0.028)	(0.027)
Wave 12	0.002	0.022	0.040	-0.099***	-0.033
	(0.036)	(0.036)	(0.036)	(0.036)	(0.036)
Wave 13	0.047	0.057	0.108	-0.188	-0.103
	(0.136)	(0.136)	(0.136)	(0.135)	(0.135)
Wave 14	0.068	0.069	0.107	-0.190	-0.085
	(0.127)	(0.127)	(0.127)	(0.127)	(0.126)
Day of the week (Omitted Group: Monday)					
Sunday	0.161***	0.123***	0.086**	0.111***	0.028
	(0.039)	(0.039)	(0.039)	(0.039)	(0.038)
Tuesday	0.060**	0.073***	0.010	0.055**	0.035
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Wednesday	0.035	0.041	0.036	0.058**	0.013
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Thursday	0.024	0.036	0.048*	0.036	0.016
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Friday	0.099***	0.082***	0.092***	0.097***	0.045
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Saturday	0.116***	0.124***	0.092***	0.066*	-0.003
	(0.035)	(0.035)	(0.035)	(0.035)	(0.034)
Region (Omitted Group: London and the South East)					
Rest of England	0.035	0.060**	0.011	0.055**	0.070***
	(0.024)	(0.026)	(0.026)	(0.025)	(0.026)
Wales	0.154***	0.034	-0.073***	0.299***	0.202***
	(0.029)	(0.032)	(0.031)	(0.030)	(0.032)
Scotland	0.001	-0.038	0.035	0.041	0.086***
	(0.027)	(0.030)	(0.030)	(0.028)	(0.030)
Cut 1	-3.715	-1.560	-3.495	0.536	-0.259
	(2.523)	(2.526)	(2.525)	(2.512)	(2.502)
Cut 2	-3.335	-1.303	-3.145	0.914	0.130
	(2.523)	(2.526)	(2.525)	(2.512)	(2.502)
Cut 3	-2.631	-0.588	-2.579	1.556	0.758
	(2.523)	(2.526)	(2.525)	(2.512)	(2.502)
Cut 4	-1.118	0.759	-1.452	2.889	2.011
	(2.522)	(2.526)	(2.525)	(2.512)	(2.502)
Observations	17,241	17,231	17,158	17,233	17,234
Log-Likelihood Full Model	-23667.2	-24470.6	-24865.5	-24261.6	-25345.6
Log-Likelihood Constants Only	-24068.3	-24811.9	-25452.5	-24673.7	-25712.0
Chi-Squared	802.1	682.5	1173.8	824.1	732.9
Prob > chi2	0.000	0.000	0.000	0.000	0.000

Table 37: Multilevel Ordered Probit Estimates of the Determinants of Job Satisfaction in the UK – Females Only

	Overall	Pay	Job Security	Work Itself	Hours Worked
Age	-0.012**	0.002	-0.047***	0.001	0.013**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age Squared	0.000**	0.000	0.001***	0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital Status (Omitted Group: Single)					
Married	0.164***	0.098***	0.088***	0.156***	0.065***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Separated/ Divorced/ Widowed	0.063**	-0.050*	0.050*	0.056*	-0.017
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Poor Health	-0.214***	-0.163***	-0.152***	-0.087***	-0.168***
	(0.032)	(0.032)	(0.032)	(0.032)	(0.031)
Highest Qualification (Omitted Group: No Qualifications)					
Degree or equivalent	-0.247***	-0.123***	-0.053*	-0.120***	-0.185***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
'A' level or equivalent	-0.178***	-0.074**	-0.073**	-0.093***	-0.055
	(0.035)	(0.034)	(0.035)	(0.034)	(0.034)
'O' level or equivalent	-0.130***	-0.063**	0.022	-0.070**	-0.056*
	(0.032)	(0.031)	(0.032)	(0.032)	(0.031)
Other qualifications or equivalent	-0.105***	-0.018	-0.045	-0.037	-0.036
	(0.040)	(0.040)	(0.040)	(0.040)	(0.039)
Hours	-0.007***	-0.008***	-0.003***	-0.001*	-0.018***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Workplace Size (Omitted Group: less than 25)					
	-0.049**	-0.011	-0.062**	-0.092***	-0.073***
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
50-199	-0.214***	-0.057***	-0.204***	-0.240***	-0.138***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
200-499	-0.236***	-0.014	-0.165***	-0.320***	-0.066**
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
500+	-0.198***	-0.046*	-0.165***	-0.285***	-0.069***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Job Tenure (Omitted Group: Less than 1 year)					
1 to less than 2 years	-0.066***	-0.095***	0.084***	-0.058**	-0.006
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
2 to less than 5 years jtenure3	-0.146***	-0.101***	0.138***	-0.151***	-0.051**
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
5 to less than 10 years jtenure4	-0.174***	-0.129***	0.158***	-0.199***	-0.111***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
10 to less than 20 years jtenure5	-0.284***	-0.157***	0.097***	-0.301***	-0.120***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
20 years or more jtenure6	-0.200***	-0.026	0.283***	-0.242***	-0.009
	(0.055)	(0.055)	(0.056)	(0.055)	(0.055)
Sector (Omitted Group: Private Sector)					
Other Sector	0.123***	0.095***	0.052	0.153***	0.100***
	(0.036)	(0.035)	(0.036)	(0.036)	(0.035)
Public Sector	0.060***	-0.008	0.102***	0.075***	-0.010
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Managerial Responsibilities	0.049**	0.198***	0.151***	0.097***	-0.201***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Foreman	0.006	0.003	0.118***	0.041*	-0.070***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Travel to Work Time (Minutes)	-0.002***	0.001*	-0.003***	-0.002***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Annual Pay Rise	0.129***	0.123***	0.149***	0.073***	0.112***

	Overall	Pay	Job Security	Work Itself	Hours Worked
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Promotion Opportunities	0.149***	0.124***	0.239***	0.088***	0.037**
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Employment rate	-0.033	-0.056	-0.093***	0.011	0.009
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Wave (Omitted Group: Wave 9)					
Wave 10	-0.023	-0.005	0.073**	-0.037	-0.044
	(0.032)	(0.032)	(0.032)	(0.032)	(0.031)
Wave 11	0.040	0.037	0.056**	0.016	0.009
	(0.027)	(0.026)	(0.027)	(0.026)	(0.026)
Wave 12	0.022	0.015	0.154***	-0.032	-0.028
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Wave 13	0.109	0.218*	0.442***	-0.064	-0.064
	(0.129)	(0.128)	(0.129)	(0.128)	(0.128)
Wave 14	0.170	0.203*	0.419***	-0.020	0.004
	(0.121)	(0.120)	(0.121)	(0.120)	(0.120)
Day of the week (Omitted Group: Monday)					
Sunday	0.009	-0.060	0.024	-0.018	-0.021
	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)
Tuesday	0.030	-0.008	0.018	0.025	0.035
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Wednesday	0.009	-0.015	-0.014	0.023	0.040
	(0.025)	(0.025)	(0.025)	(0.024)	(0.024)
Thursday	0.053**	0.028	0.016	0.033	0.059**
	(0.025)	(0.025)	(0.025)	(0.025)	(0.025)
Friday	0.049*	0.013	0.044	0.013	0.032
	(0.030)	(0.029)	(0.030)	(0.029)	(0.029)
Saturday	0.074**	0.027	0.036	0.066*	0.064*
	(0.035)	(0.035)	(0.035)	(0.035)	(0.035)
Region (Omitted Group: London and the South East)					
Rest of England	0.055**	0.138***	0.008	0.053**	0.081***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Wales	0.145***	0.116***	0.087***	0.218***	0.161***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Scotland	0.002	0.073***	0.041*	0.024	0.118***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Cut 1	-4.025	-4.642	-8.353	-0.541	-0.820
	(2.406)	(2.389)	(2.408)	(2.389)	(2.382)
Cut 2	-3.750	-4.452	-8.068	-0.250	-0.545
	(2.406)	(2.389)	(2.408)	(2.389)	(2.382)
Cut 3	-3.074	-3.785	-7.507	0.395	0.085
	(2.406)	(2.389)	(2.408)	(2.389)	(2.382)
Cut 4	-1.579	-2.494	-6.381	1.697	1.290
	(2.405)	(2.389)	(2.408)	(2.389)	(2.382)
Observations	18,802	18,780	18,659	18,790	18,788
Log-Likelihood Full Model	-24775.6	-26570.3	-26012.1	-25933.7	-26738.0
Log-Likelihood Constants Only	-25193.5	-26849.6	-26414.7	-26323.8	-27362.0
Chi-Squared	835.837	558.504	805.280	780.316	1247.999
Prob > chi2	0.000	0.000	0.000	0.000	0.000

Table 38: Multilevel Ordered Probit Estimates of the Determinants of Job Satisfaction in the Wales – Using Lowpaid 1

	Job Overall	Total Pay	Job Security	Work Itself	Hours Worked
Male	-0.146***	-0.085**	-0.245***	-0.040	-0.010
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Age	-0.030***	-0.005	-0.061***	-0.010	0.001
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Age Squared	0.000***	0.000	0.001***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital Status (Omitted Group: Single)					
Married	0.187***	0.102**	0.150***	0.216***	0.024
	(0.045)	(0.045)	(0.045)	(0.045)	(0.044)
Separated/ Divorced/ Widowed	0.101*	-0.039	0.111*	0.175***	0.028
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Poor Health	-0.292***	-0.257***	-0.202***	-0.199***	-0.280***
	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
Highest Qualification (Omitted Group: No Qualifications)					
Degree or equivalent	-0.119**	-0.173***	-0.122**	-0.040	-0.099*
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
'A' level or equivalent	-0.080	-0.057	-0.174***	-0.101*	0.006
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
'O' level or equivalent	0.033	-0.085	-0.029	0.020	0.008
	(0.054)	(0.054)	(0.054)	(0.054)	(0.054)
Other qualifications or equivalent	-0.023	-0.015	-0.090	0.061	0.029
	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Hours	-0.005***	-0.010***	-0.000	0.001	-0.020***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Workplace Size (Omitted Group: less than 25)					
	-0.131***	-0.062	-0.098**	-0.075	-0.151***
	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
50-199	-0.163***	-0.141***	-0.197***	-0.127***	-0.169***
	(0.042)	(0.042)	(0.042)	(0.042)	(0.041)
200-499	-0.165***	0.021	-0.134***	-0.120**	0.013
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
500+	-0.177***	0.005	-0.163***	-0.182***	-0.024
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Job Tenure (Omitted Group: Less than 1 year)					
1 to less than 2 years	-0.012	-0.026	0.107**	0.018	0.043
	(0.051)	(0.050)	(0.051)	(0.051)	(0.050)
2 to less than 5 years jtenure3	-0.123***	-0.121***	0.128***	-0.153***	-0.079*
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
5 to less than 10 years jtenure4	-0.173***	-0.082	0.219***	-0.169***	-0.085
	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
10 to less than 20 years jtenure5	-0.251***	-0.110*	0.248***	-0.250***	-0.020
	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
20 years or more jtenure6	-0.128	-0.164**	0.310***	-0.140*	0.111
	(0.082)	(0.082)	(0.083)	(0.082)	(0.081)
Sector (Omitted Group: Private Sector)					
Other Sector	0.203**	0.229***	0.003	0.134	0.090
	(0.082)	(0.082)	(0.081)	(0.082)	(0.081)
Public Sector	-0.004	-0.096***	0.022	0.008	-0.041
	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
Managerial Responsibilities	-0.024	0.182***	0.105**	0.003	-0.170***
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)

Foreman	0.074*	0.066	0.041	0.094**	-0.071*
	(0.042)	(0.041)	(0.041)	(0.041)	(0.041)
Travel to Work Time (Minutes)	-0.002**	-0.001	-0.001	-0.001*	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Pay Rise	0.208***	0.102***	0.214***	0.160***	0.171***
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Promotion Opportunities	0.171***	0.215***	0.246***	0.072**	0.052
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
Employment rate	-0.012	-0.031	-0.097	0.007	0.041
	(0.063)	(0.062)	(0.062)	(0.062)	(0.062)
Wave (Omitted Group: Wave 9)					
Wave 10	0.092*	0.004	0.048	0.016	-0.052
	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
Wave 11	0.117**	0.095*	0.051	0.058	-0.012
	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
Wave 12	0.079	0.046	0.160**	-0.002	-0.038
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
Wave 13	0.032	0.179	0.482**	-0.116	-0.164
	(0.228)	(0.228)	(0.228)	(0.227)	(0.227)
Wave 14	0.058	0.125	0.387*	-0.080	-0.160
	(0.211)	(0.210)	(0.211)	(0.210)	(0.210)
Day of the week (Omitted Group: Monday)					
Sunday					
	-0.010	-0.007	0.080	-0.002	-0.026
	(0.074)	(0.074)	(0.073)	(0.073)	(0.073)
Tuesday					
	0.019	0.019	0.058	0.008	0.022
	(0.048)	(0.048)	(0.048)	(0.048)	(0.047)
Wednesday					
	-0.010	-0.039	0.042	0.014	0.001
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Thursday					
	0.017	0.015	0.115**	0.032	0.018
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Friday					
	0.084	0.051	0.085	-0.015	0.077
	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
Saturday					
	0.099	-0.005	0.123**	0.094	0.057
	(0.062)	(0.061)	(0.061)	(0.061)	(0.061)
lowpaid1					
	0.018	-0.357***	0.068	0.139**	-0.060
	(0.053)	(0.074)	(0.058)	(0.065)	(0.068)
cut1					
	-2.754	-3.292	-8.698**	-0.873	1.039
	(4.305)	(4.287)	(4.298)	(4.286)	(4.277)
cut2					
	-2.441	-3.077	-8.435**	-0.565	1.303
	(4.305)	(4.287)	(4.298)	(4.286)	(4.277)
cut3					
	-1.798	-2.430	-7.893*	0.032	1.883
	(4.305)	(4.287)	(4.298)	(4.286)	(4.277)
cut4					
	-0.322	-1.137	-6.834	1.277	3.035
	(4.305)	(4.287)	(4.298)	(4.286)	(4.277)
Rho					
	0.394***	0.421***	0.455***	0.438***	0.442***
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)
Observations	5,397	5,394	5,372	5,395	5,391
Log-Likelihood Full Model	-7195.3	-7644.1	-7641.4	-7411.6	-7757.6
Log-Likelihood Constants Only	-7345.5	-7791.1	-7801.6	-7506.5	-7945.2
Chi-Squared	300.3	293.9	320.4	189.7	375.2
Prob > chi2	0.000	0.000	0.000	0.000	0.000

Table 39: Multilevel Ordered Probit Estimates of the Determinants of Job Satisfaction in the UK – Using Lowpaid2

	Job Overall	Total Pay	Job Security	Work Itself	Hours Worked
Male	-0.163***	-0.103***	-0.267***	-0.044	-0.035
	(0.031)	(0.031)	(0.032)	(0.031)	(0.031)
Age	-0.036***	-0.003	-0.064***	-0.014	-0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Age Squared	0.001***	0.000	0.001***	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Marital Status (Omitted Group: Single)					
Married	0.161***	0.083**	0.132***	0.191***	0.033
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Separated/ Divorced/ Widowed	0.068	-0.071	0.088	0.136**	0.017
	(0.055)	(0.055)	(0.055)	(0.055)	(0.055)
Poor Health	-0.275***	-0.251***	-0.193***	-0.180***	-0.236***
	(0.055)	(0.056)	(0.056)	(0.055)	(0.055)
Highest Qualification (Omitted Group: No Qualifications)					
Degree or equivalent	-0.130***	-0.144***	-0.109**	-0.025	-0.117**
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
'A' level or equivalent	-0.128**	-0.092*	-0.184***	-0.114**	-0.036
	(0.055)	(0.055)	(0.055)	(0.055)	(0.055)
'O' level or equivalent	0.034	-0.038	-0.006	0.049	-0.004
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Other qualifications or equivalent	-0.044	-0.030	-0.077	0.038	-0.012
	(0.062)	(0.062)	(0.062)	(0.062)	(0.062)
Hours	-0.005***	-0.009***	0.001	-0.000	-0.016***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Workplace Size (Omitted Group: less than 25)					
	-0.140***	-0.063	-0.108**	-0.086*	-0.160***
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
50-199	-0.163***	-0.140***	-0.216***	-0.127***	-0.147***
	(0.039)	(0.038)	(0.039)	(0.038)	(0.038)
200-499	-0.151***	0.046	-0.133***	-0.149***	-0.005
	(0.047)	(0.046)	(0.047)	(0.046)	(0.046)
500+	-0.203***	-0.004	-0.165***	-0.220***	-0.061
	(0.043)	(0.042)	(0.043)	(0.042)	(0.042)
Job Tenure (Omitted Group: Less than 1 year)					
1 to less than 2 years	0.026	0.021	0.121***	0.025	0.069
	(0.047)	(0.046)	(0.047)	(0.047)	(0.047)
2 to less than 5 years jtenure3	-0.093**	-0.066	0.153***	-0.130***	-0.060
	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)
5 to less than 10 years jtenure4	-0.122**	-0.029	0.270***	-0.145***	-0.061
	(0.048)	(0.048)	(0.049)	(0.048)	(0.048)
10 to less than 20 years jtenure5	-0.197***	-0.066	0.280***	-0.208***	-0.001
	(0.053)	(0.052)	(0.053)	(0.052)	(0.052)
20 years or more jtenure6	-0.100	-0.099	0.329***	-0.118	0.107
	(0.074)	(0.074)	(0.075)	(0.074)	(0.073)
Sector (Omitted Group: Private Sector)					
Other Sector	0.173**	0.212***	-0.001	0.134*	0.103
	(0.077)	(0.076)	(0.076)	(0.077)	(0.076)
Public Sector	-0.017	-0.087***	0.003	-0.021	-0.044
	(0.034)	(0.034)	(0.034)	(0.034)	(0.034)
Managerial Responsibilities	0.007	0.187***	0.147***	0.028	-0.172***
	(0.039)	(0.039)	(0.039)	(0.039)	(0.039)

Foreman	0.105***	0.066*	0.055	0.100***	-0.066*
	(0.039)	(0.038)	(0.039)	(0.039)	(0.038)
Travel to Work Time (Minutes)	-0.002**	-0.001	-0.001	-0.001	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Annual Pay Rise	0.195***	0.089***	0.228***	0.136***	0.157***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Promotion Opportunities	0.156***	0.198***	0.230***	0.073**	0.044
	(0.030)	(0.029)	(0.030)	(0.029)	(0.029)
Employment rate	-0.011	-0.031	-0.092	0.024	0.021
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Wave (Omitted Group: Wave 9)					
Wave 10	0.080*	0.013	0.054	0.003	-0.039
	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
Wave 11	0.118**	0.081*	0.081*	0.014	-0.016
	(0.048)	(0.047)	(0.048)	(0.048)	(0.047)
Wave 12	0.075	0.067	0.153***	-0.021	-0.033
	(0.059)	(0.059)	(0.059)	(0.059)	(0.058)
Wave 13	0.014	0.196	0.470**	-0.206	-0.102
	(0.216)	(0.215)	(0.216)	(0.215)	(0.215)
Wave 14	0.058	0.161	0.390*	-0.181	-0.097
	(0.199)	(0.199)	(0.199)	(0.199)	(0.198)
Day of the week (Omitted Group: Monday)					
Sunday	0.020	-0.022	0.069	0.016	0.004
	(0.069)	(0.069)	(0.069)	(0.068)	(0.068)
Tuesday	0.047	0.024	0.062	0.031	0.045
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Wednesday	0.007	-0.043	0.057	0.029	0.018
	(0.043)	(0.043)	(0.043)	(0.043)	(0.042)
Thursday	0.035	0.006	0.082*	0.051	0.022
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Friday	0.095*	0.037	0.089*	0.029	0.093*
	(0.049)	(0.049)	(0.050)	(0.049)	(0.049)
Saturday	0.118**	-0.014	0.105*	0.107*	0.064
	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
Lowpaid2	-0.038	-0.301***	0.004	0.118*	-0.081
	(0.059)	(0.062)	(0.061)	(0.048)	(0.071)
cut1	-2.788	-3.143	-8.375**	0.188	-0.311
	(4.080)	(4.064)	(4.079)	(4.071)	(4.055)
cut2	-2.468	-2.927	-8.108**	0.495	-0.050
	(4.080)	(4.064)	(4.079)	(4.071)	(4.055)
cut3	-1.815	-2.277	-7.568*	1.084	0.526
	(4.080)	(4.064)	(4.079)	(4.071)	(4.055)
cut4	-0.363	-1.020	-6.513	2.322	1.673
	(4.080)	(4.064)	(4.078)	(4.071)	(4.055)
Rho	0.394***	0.421***	0.455***	0.438***	0.442***
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)
Observations	6,261	6,253	6,225	6,255	6,250
Log-Likelihood Full Model	-8379.2	-8931.3	-8836.7	-8605.1	-9021.6
Log-Likelihood Constants Only	-8553.3	-9082.9	-9036.2	-8712.5	-9210.8
Chi-Squared	348.1	303.2	398.9	214.8	378.4
Prob > chi2	0.000	0.000	0.000	0.000	0.000

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