Skills in Focus

Patterns of Under-utilization in the Recession

Professor Alan Felstead
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About the Author

Professor Alan Felstead is based in the University of Cardiff. His research focuses on: the quality of work; training, skills and learning; non-standard employment and the spaces and places of work. Alan is regularly called upon to give labour market advice to a range of policy-makers, including the UK Commission for Employment and Skills, the devolved UK administrations, the European Centre for the Development of Vocational Training (CEDEFOP) and the Japanese Institute of Labour. He has also acted as an advisor to the Work Foundation and Samsung. He is currently a Visiting Professor at the ESRC Centre for Learning and Life Chances in Knowledge Economies and Societies (LLAKES), Institute of Education, University of London.

About Skills in Focus

The Skills in Focus series is intended to support informed debate around current and future skills issues. The Skills Committee is jointly sponsored by the Scottish Funding Council and Skills Development Scotland. The Committee works closely with the Scottish Government, employers, business organisations and students to ensure that Scotland has the right high-level skills and an employable and adaptive workforce.

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Introduction

Paul McKelvie OBE is Vice Chair of the Board of the Scottish Funding Council (SFC) and Chair of the Skills Committee. He is also a member of the Board of Skills Development Scotland (SDS).

The Skills Committee is a statutory committee of the Funding Council. It operates as a joint Committee advising the Boards of SFC and SDS on skills policy. The Committee also has a central role in stimulating debate about skills issues in Scotland. The Skills in Focus seminar series is part of the Skills Committee's contribution to that debate.

Foreword

Professor Alan Felstead is an internationally-renowned expert on skills and the nature of work, based at the Cardiff School of Social Sciences.

Professor Felstead reminds us that Scotland was at the forefront of discussions in the UK in 2007 around the skills agenda. That is, as well as looking as the supply of skills, the debate in Scotland examined the demand for skills and the nature of work. The debate around the Scottish skills system recognised the importance of skills under-utilization. But Professor Felstead also reminds us that under-utilization is about more than skills.

To set the scene for his paper, Professor Felstead poses the question as to why unemployment in the UK has not yet risen as high as many forecasters had predicted post-recession. Given the severe decline in economic output during the recession, many expected a subsequent, similar rise in unemployment. Wage moderation, recruitment freezes, unpaid leave and reduced working hours have all had a part to play, as has the suggestion that some employers have been 'hoarding' labour waiting for the upturn.

His paper then focuses on three aspects of labour under-utilization and how this affects different social groups. That is, looking at the probability of:

- becoming unemployed,
- working fewer hours in a job than you would like, and
- taking a part-time job when you would prefer to work full-time.

Young people, those with low or no qualifications, those from an ethnic minority background and people with a disability are all disproportionately affected in terms of labour under-utilization. That is, they are more likely to be unemployed or underemployed than the average.

All three forms of under-utilization have also risen as a result of the 2008 recession. However, what Professor Felstead's work tells us is that the relative effect varies across the

social groups considered. A particular concern must be the 'triple whammy' faced by young people – steeper increases in all forms of labour under-utilization as a result of the recession.

I would like to thank Professor Felstead for his incisive analysis of under-utilization in the labour market. His analysis highlights that the current economic conditions suggest that, as well as skills under-utilization, there are challenges around labour under-utilization more generally.

Paul McKelvie OBE
Chair of the Skills Committee

Disclaimer

Executive Summary

Not so long ago forecasters were issuing gloomy predictions that unemployment would reach at least 3 million by 2010 and then decline slowly. However, the actual rise has not been as dramatic. Unemployment is now around 2.5 million, although most agree that it will start rising once again as public expenditure cuts start to bite. So why have forecasters got it so wrong? Or to put it another way, what are the possible explanations for declining output failing to be translated into falling headcounts?

So far the explanations given have tended to revolve around the enhanced flexibility of today's labour markets compared to those of the past. Most notably, in this recession there has been a swift slowdown in wage growth, speedy and widespread use of recruitment freezes, hoarding of difficult to replace labour, and extended use of short-time working, lengthier holidays and unpaid leave.

Prior to the recession, there was considerable interest in the mismatch of skills required for the job and the skills possessed by the job-holder (Felstead *et al*., 2007; Scottish Government, 2008; Quintini, 2011). This debate continues (and rightly so) to focus the minds of policy-makers on the 'need to invest as much effort on raising employer ambition, on stimulating demand, as it does on enhancing skills supply' (UKCES, 2009: 10), so that mismatches are minimized. The Scottish Government has been at the forefront of this debate (Scottish Government, 2007). However, the 2008-09 recession has highlighted that production of any type – skill mismatched or otherwise – is in short supply. This is manifested most visibly in rising levels of unemployment (the loss of jobs) and less visibly in underemployment (the shrinking of jobs). In times of recession, then, unemployment represents the tip of a large and growing *labour* under-utilization iceberg. It also underlines the point that under-utilization refers to more than skills alone.

This paper examines how one of these forms – labour under-utilization – has changed from 2000 to 2010 as measured by unemployment, constraints on working time (i.e. preferences to work longer hours) and involuntary part-time working. By analyzing the effect that the recession has on the probability of particular social groups being among these three categories of under-utilized labour, the paper contributes to a live, topical and policy relevant debate (see Tam, 2010; Walling and Clancy, 2010; Bell and Blanchflower, 2011). It addresses the specific question of whether, in the current recession, groups which are at greatest risk of becoming unemployed also face a high risk of being unable to find full-time work or find themselves in jobs where they would prefer to work additional hours. The paper uses cross-sectional techniques to analyze data from successive quarterly Labour Force Surveys (LFS) carried out from 2000 to 2010. Based on this evidence, the paper argues that the discussion of skills utilization should not lose sight of the growing number of individuals who – in recession and for sometime thereafter – find themselves out of work, working fewer hours than they would prefer or involuntarily working part-time.

1. Introduction

Not so long ago forecasters were making gloomy predictions about the state of the UK labour market. In particular, they were predicting that unemployment would reach 3 million sometime in 2010 and remain high for several years thereafter (see, e.g., *Financial Times*, 13 July 2009). However, the actual rise has not been as dramatic. Instead, unemployment has hovered around 2.5 million (or 8% of the workforce) since the early part of 2009. Moreover, when compared with previous recessions, the unemployment rate in this recession has remained lower, despite a more dramatic fall in output[1]. In the second quarter of 2010 – that is, the ninth quarter following the onset of the 2008-09 recession – the unemployment rate was 2.6 percentage points lower than the same point in the recovery from the 1980-1981 recession, and 2.1 percentage points lower than in the ninth quarter following the onset of the recession in the early 1990s (ONS, 2010).

So why did forecasters get it wrong? Or to put it another way, what are the possible explanations for *rapidly* declining output failing to be translated into *rapidly* falling headcounts? So far the explanations given have tended to revolve around the enhanced flexibility of today's labour markets compared to those of the past. Most notably, in this recession there has been a swift slowdown in wage growth, speedy and widespread use of recruitment freezes, hoarding of difficult to replace labour, and extended use of short-time working, lengthier holidays and unpaid leave (Lambert, 2010). In other parts of Europe, governments have given financial support to working time reduction schemes which cushion the effect of the economic downturn on levels of unemployment (Wilthagan, 2010). In Germany, for example, unemployment remained flat during the recession with most of the slack taken by reducing the number of hours worked (Hurley *et al*., 2009). For a number of reasons, government-backed short-time working schemes were used to a lesser extent in France and so unemployment levels there rose more dramatically (Bosch, 2010).

While it has long been recognized that reductions in working time shares out declining volumes of employment, this recession has shown that this process can dampen considerably the rise in unemployment. Such a labour market response has received government backing in the case of Germany, and to a less extent France, and has happened without it in the case of the UK. This has led to a renewal of interest in 'underemployment' (Walling and Clancy, 2010). However, the concept of underemployment has several meanings which can serve to confuse. It can, for example, refer to mismatches between the skills of job-holders and the skills required at work – summarized as the 'skills utilization' debate (Felstead, 2007). While this particular form of underemployment continues to focus the minds of policy-makers on the goal of

[1] Similar observations have been made across Europe with the elasticity of employment to the fall in GDP being far less pronounced than in previous recessions (Hijman, 2009).

producing 'a skilled population and an economy and society that makes full and productive use of these skills' (Scottish Government, 2007: 3), in times of recession production of any type is in short supply. This is reflected in the growing mismatch between the demand and supply of labour with latter exceeding the former, and manifested most visibly in rising levels of unemployment (the loss of jobs) and less visibly in time-related underemployment (the shrinking of jobs).

This *Skills in Focus* paper examines how these patterns of non-skill labour utilization have changed in the UK in the period up to and including the 2008-09 recession and beyond (the noughties)[2]. To do so, the paper uses data which allows us to track trends in unemployment, constraints on working time (i.e. preferences to work longer hours) and involuntary part-time working. By analyzing the effect that the recession has on the probability of particular social groups finding themselves among these three categories of under-utilized labour, the paper contributes to a topical and policy relevant debate (see Tam, 2010; Walling and Clancy, 2010; Bell and Blanchflower, 2011). More specifically, the paper address the question of whether, in the current recession, groups which are at greatest risk of becoming unemployed also face a high risk of being unable to find full-time work or find themselves in jobs where they would prefer to work additional hours.

The paper proceeds as follows. Section 2 outlines the varieties of underemployment, how they can be measured, and what consequences they may have for the well-being of individuals and the economy. The section draws on contemporary, historic and international evidence which highlights the additional and general concern that recessions hit the weakest groups in society hardest. This paper sets out to investigate whether this social justice concern applies to non-skill related underemployment. The data sources used and the two types of analysis undertaken are outlined in Section 3. The first uses cross-sectional techniques – and logistic regression in particular – to analyze data from successive quarterly Labour Force Surveys (LFS) carried out from 2001 to 2010. This addresses the question of how sensitive the under-utilization probabilities of individuals from different social groups are to variations in aggregate demand, when other characteristics are held constant. The second examines the experience of cohorts of individuals who were interviewed as part of the LFS on five separate occasions over a fifteen month period during the recession. Section 4 presents the results emerging from the analysis. Section 5 concludes the paper with a summary of its findings and an argument that the skills utilization debate – which is arguably most advanced in Scotland – should not lose sight of other aspects of labour utilization. This is particularly the case in times of recession when traditional dichotomies – such employment versus unemployment and skills matches versus skill mismatches – fail to capture the complexity of the labour market.

[2]As such the paper provides a contrast to the skills-related underemployment debate in which the Scottish government has shown a particular interest (Scottish Government, 2008; Payne, 2010).

2. Varieties, Consequences and Patterns of Underemployment

While many researchers agree that 'underemployment' refers to a situation where the quality or quantity of employment is lower than some standard point of comparison, the way in which the concept is operationalized varies considerably. Indeed, some have suggested that 'there are almost as many operational definitions of *underemployment* as there are researchers studying the phenomenon' (Friedland and Price, 2003: 33; original emphasis). Regardless of the operational definition, the existence of underemployment carries with it the notion that employment can be located on a continuum ranging from adequate to inadequate. It therefore challenges the conventional idea that employment is a dichotomy between working, on the one hand, and not working, on the other (i.e. being unemployed). Underemployment, then, refers to a deficiency experienced by those in work, whereas unemployment refers to those who want to be in work but find themselves out of work (ILO, 1998).

Notwithstanding the variety of operational definitions, underemployment has commonly been used to describe the inadequacy of employment against four criteria, all of which relate to the features of employment workers seek when entering the labour market. These are: hours of work; skill used during work; income from work; and the status rewards afforded by work. These types of underemployment occur when employment falls short of expectations in one or other of these ways – hours of work falling short of those desired, skills held by workers being under-utilized by the type of work carried out, income earned falling below a level regarded as a living wage or the status rewards of jobs falling below the level expected (for example, underemployed graduates being denied high status positions that they thought they would get).

Despite the different dimensions to underemployment, the situation in which skills are underutilized has attracted most attention in recent policy debates in the devolved administrations (and especially in Scotland), among UK policy makers and in international discussions of the policy choices facing governments around the world. Recently, the Scottish and Welsh government's skills strategies have centred on increasing *both* the supply of skills as well as increasing the demand and use of these skills. This strategy is based on research in both countries which demonstrates that skill underemployment is large and growing (see Felstead, 2009 and 2007). Coupled with the acknowledgement that there is 'no evidence that a generally more skilled [qualified] workforce will automatically drive the economy forward' (Welsh Assembly Government, 2007: 12), both governments have placed a greater emphasis on 'improving the utilisation of skills in the workplace' by enhancing the 'economic pull' of higher skills (Scottish Government, 2007: 5). At a UK level, too, skills underutilization has featured in recent policy discussions with the UKCES stating that 'the future employment and skills system will need to invest as much effort on

raising employer ambition, on stimulating demand, as it does on enhancing skills supply' (UKCES, 2009: 10). Similar debates are also taking place in other parts of the world, such as Australia (Fraser, 2009) and Canada (Livingstone, 2009), sometimes with policies being amended accordingly.

Policy interest in the skills-related underemployment issue is motivated primarily by a desire to make better use of public investment in skills supply. Policy interest in other forms of underemployment, on the other hand, is more indirect. This research is motivated by the desire to highlight and reveal the consequences that these forms of underemployment have for the health and well-being of workers. In this case, policy interest stems from the additional costs incurred by businesses and governments coping with increased levels of ill-health (Chandola, 2010)[3]. Using a variety of datasets from different parts of the world, this research shows that while unemployment (total job loss) has the greatest adverse effect on physical and mental health, underemployment – in a number of guises – also has a detrimental effect on people's health (Wilkins, 2007; Friedland and Price, 2003; Dooley *et al*., 2000; Prause and Dooley, 1997).

Even in economically benign times, the costs of underemployment have generated debate and concern[4]. The definitions and meaning of 'full employment' have also been questioned with the suggestion that the underemployment can tarnish claims of economic success. In Australia, for example, over the last twenty years unemployment has fluctuated with the economic cycle and has fallen steadily since the early 1990s. Underemployment, on the other hand, has risen throughout the period, jumping sharply during the recession of the early 1990s and continuing to rise, not fall, thereafter. It has been argued that this reflects deterioration in the quality, not the quantity, of jobs and must be taken into account when evaluating the degree of economic success achieved (Campbell, 2008).

Fearing an inability to attract leading companies to their locality, some community leaders in the US in the late 1990s also challenged statistics which suggested that their labour market was tight. Several commissioned studies of underemployment (Bollinger *et al*., 2003). Typically these studies were based on telephone surveys of residents with the aim of estimating the number of people in the area who would change jobs if they could work longer, earn more money or get a more appropriate position for their skills.

Statistical bodies, too, have carried out analyses of the extent of underemployment. Studies, for example, have been carried out in the UK on the numbers of people

[3]A notable exception is the work of Green and Gallie (2002) who trace the effect that skills mismatch (skills-related under- and overemployment) has on indicators of mental well-being and reports of job satisfaction.

[4]Unless otherwise stated underemployment in the reminder of this paper refers to time-related underemployment.

underemployed, the total number of hours underused and the characteristics of those involved (Simic, 2002a and 2002b; Walling and Clancy, 2010; Tam, 2010). While previously such studies have largely gone unnoticed, in today's recessionary times they have generated considerable interest since they suggest that the shortage of work is larger than suggested by the unemployment figures alone. For example, announcements of the monthly unemployment figures are often accompanied by commentaries in the media about the extent of underemployment (IPPR, 2010; *The Guardian*, 14 July 2010; *The Independent*, 15 July 2010; *Financial Times*, 18 August 2011).

The impact of downturns on social disadvantage in the UK has also featured in recent analyses and commentaries. This has been measured by who is unemployed (Stafford and Duffy, 2009), who is not in employment, education or training (NEET) (Berthoud, 2009), and who is in poverty whether in or out of work (Muriel and Sibieta, 2009). However, these studies tend to be based on historic evidence from previous recessions and, more importantly for this paper, they fail to examine whether underemployment is also being distributed unfairly. This paper fills this gap by addressing the question of whether, in the current recession, groups which are at greatest risk of becoming unemployed also face a high risk of being unable to find full-time work or find themselves in jobs where they would prefer to work additional hours. This, then, is the focus and substantive contribution of this *Skills in Focus* paper.

3. Measures and Sources of Evidence

Unemployment can be measured using two methods and associated sources of evidence (see Thomas, 1999; Nickell, 1999). One is based on the Labour Force Survey (LFS), a quarterly sample survey of households living at private addresses in the UK which provides information on respondents' personal circumstances and their labour market status during a specific reference period. It is carried out under a European Union Directive and uses internationally agreed concepts and definitions. The other series is based on the monthly claimant count which measures the numbers claiming unemployment benefit because they are out of work. Both series identify different unemployed populations (Clancy and Stam, 2010).

The claimant count is one of the UK's oldest historical statistical series, with antecedents going back to the middle of the nineteenth century (Southall, 1999). Claimants are defined as those who are entitled to receive unemployment benefit by virtue of having paid insurance contributions or, in earlier times, trade union dues. Given the historical nature of the series, comparisons can be made over a long time span as well as between local areas where claimant count data are available.

Despite these advantages, its accuracy as a measure of unemployment can be questioned on a number of grounds. First, it captures only those who are able to successfully claim unemployment benefit. However, not all

those who are unemployed are entitled to claim this particular benefit. The second concern with the claimant count is that during the 1980s and early 1990s employment offices were encouraged to transfer claimants to incapacity benefit in order to reduce the size of the count (Beatty and Fothergill, 2005).

These factors have largely discredited the claimant count as a measure of unemployment and have led the government to choose the ILO measure as its preferred yardstick. The commonsense definition of unemployment runs something like this: 'individuals are unemployed if they are currently without a job but would like to have one'. The ILO definition gives precise meaning to what a 'job' is and what jobless individuals need to do to demonstrate that they 'want one'. According to the ILO a person who works for more than one hour a week and is paid to do so is employed. Conversely, a person is deemed to be unemployed if they do not carry out paid work for at least one hour a week. To be considered to be as a job seeker, the ILO suggests that an individual must have used at least one active method to find work in the previous four weeks and be able to start work with two weeks or waiting to take up a job already secured. The unemployment rate measured according to these protocols is known as the ILO unemployment rate and it is estimated using data from the LFS. The advantage it has over the claimant count measure is that it is based on internationally agreed definitions and it is not directly affected by changes in the regulations determining entitlement to benefits or changes in the ways these regulations are applied. However, the resulting figures are based on estimates derived from a sample survey not a population census. Local and regional estimates are, therefore, subject to greater sampling errors.

It has also been recognized for sometime that the unemployment rate – however defined and measured – is itself a poor measure of the effectiveness with which the availability of labour is used. A focus on hours of work has a long history for international bodies such as the International Labour Organisation (ILO) and the European Union (EU). Both the ILO's campaign for 'decent work' and the EU's 'quality of work' agenda are linked to hours of work. On the one hand, excessive and irregular hours can be detrimental to physical and mental health, make it difficult to achieve a balance between work and family life, and indicate poor pay. On the other hand, short hours can indicate inadequate employment opportunities, poor prospects for career development and low earnings (Anker *et al*., 2002). For these reasons, there is broad international agreement that time-related underemployment refers to a situation where 'hours of work of an employed person are insufficient in relation to an alternative employment situation in which the person is willing and available to engage' (ILO 1998 Resolution cited in Anker *et al*., 2002: 32).

The LFS is a quarterly sample survey of almost 60,000 households and 150,000 people, with 50,000-65,000 economically active respondents aged 16 and above at the time of interview. They are asked a series of

questions through which it is possible to produce reliable estimates of who is unemployed according to the ILO definition (see above). A number of questions have also been added over the years which capture time-related underemployment. For example, starting in 1992 those who considered themselves to be in part-time work were asked why they 'took a part-time rather than full-time job'. Respondents were provided with four options, including 'could not find a full-time job'. From this, we are able to identify those who are involuntarily working part-time. However, we do not know from this question how long ago they were looking for full-time work and whether they would still prefer to work full-time if they could. Furthermore, by focusing only on (self-defined) part-time workers we have no data on workers who may want to work longer hours regardless of whether they see themselves as part-time or full-time workers. In response, a question was added in 1999 which can be used to estimate of the total number of people underemployed. Of those not looking for another job, it asks: 'would you prefer to work longer hours at your current basic rate of pay – that is, overtime or enhanced pay rates – if you were given the opportunity?' From this, we can estimate the number of workers wanting to work longer hours in their current job[5]. While these two questions produce different measures of underemployment, there is a degree of overlap. In Q2 2008, for example, 33% of those wanting to work longer in their current job were also working part-time involuntarily. Similarly, 58% of involuntary part-timers said that they would like to work longer hours in that job.

In this paper, we use both the cross-sectional and longitudinal features of the LFS. For the former, we extract the relevant variables from each quarterly LFS carried out between Q1 2000 and Q2 2010 and create time-series dataset which contains relevant information on those of working age (16-64 for men, 16-59 for women). We use logistic regression to estimate the probability that members of each sample will find themselves in one of the three labour under-utilization categories[6]. This allows us to go beyond simply reporting how many young people, for example, fall into these categories to estimating how much higher their rates of under-utilization are compared to older people with similar characteristics. Furthermore, by including quarterly measures of ILO unemployment in the model, we can assess how sensitive their chances of becoming under-utilized are to the

[5]In this paper we use the LFS variables: ILODEFR which defines respondents as unemployed according to the ILO definition (a derived variable which pieces together data from a number of other LFS questions); YPTJOB to examine 'involuntary part-time working'; and UNDEMP to estimate the number of workers 'wanting to work longer in their current job'. The LFS also contains a number of other variables which can be used to refine further the definition of time-related underemployed. These refinements include adding those wanting an additional job (LOOKM8) as well as those seeking another job with more hours (PREFHR) to those wanting more hours in their current job (UNDEMP). Classifying individuals as time-related underemployment can also be restricted to those available to work additional hours within a two-week period (UNDST) and provided their current total hours of work do not exceed a certain threshold (40 hours if under 18, 48 hours if over 18) (Tam, 2010). The ILO classifies individuals as underemployed using a somewhat tighter definition which uses these variables (ILO, 1998). This paper uses a simpler approach.

ups and downs of the economic cycle as well as predict what would happen if unemployment were to vary – upward, downward or remain at its current level. We also examine the trends in under-utilization by following cohorts of individuals who provided information for the LFS on five separate occasions over a fifteen month period during the recession.

4. Cyclical and Distributional Patterns

The first question we address is how have the three measures of under-utilization changed over the last decade and, in particular, is it possible to detect a recession effect? Figure 1 plots the number of workers reporting: (a) they are unemployed; (b) they are working part-time but only because they could not find a full-time job; and (c) they want to work longer in their current job. This underlines the fact that the unemployment figures alone under-represent the extent to which the supply of labour time is under-utilized. Even in relatively benign economic times, unemployment levels were lower than the number of workers who would like to work longer in their current jobs. For example, at the start of the millennium unemployment was 1.7 million while a further 2 million workers reported that they would have liked to work longer. The gap between these two aspects of under-utilization narrowed during the recession. However, latest figures reported here (Q4 2010) suggest that the number reporting constraints on their working time has continued to rise while unemployment has remained flat. At the end of 2010 an estimated 2.8 million workers would have preferred to work longer hours. The number of involuntary part-time workers has also risen from 670,000 at the start of the recession (Q2 2008) to 990,000 at the end of the recession (Q3 2009). Furthermore, the number has continued to rise well after the recession technically ended in Q3 2009; there are now around 1.2 million part-time workers who would prefer to work full-time.

The effect of the recession can also be seen in the percentage figures (see Figure 2). This most dramatic growth was in the percentage of part-timers who would have preferred to work full-time. It hovered around 8-10% in the period leading up to the recession, rose to 15% by the end of the recession and has since continued upwards – at the end of 2010 it stood at over 17%. On the other hand, the recession has added around three percentage points to the other two measures of under-utilization, although unemployment has since remained fairly flat while constraints on working hours have continued to rise. However, it should be pointed out that the denominators of the three categories vary

[6]Each sample yields a large number of observations – 2,345,364 in the case of predicting the probability of unemployment among those of working age, 546,110 used to predict the probability of part-time workers doing so 'involuntarily' and 2,065,288 workers used to estimate the chances of working hours falling short of what workers desire (cf. Tables A1, A2 and A3). However, the headline data reported in Figures 1 and 2 relate to the entire 2000-2010 period; the addition of further data points has not been possible due to the unavailability of LFS data for 2011 (as of September 2011).

Figure 1:
Numbers of Workers Under-utilized, UK, 2000-2010

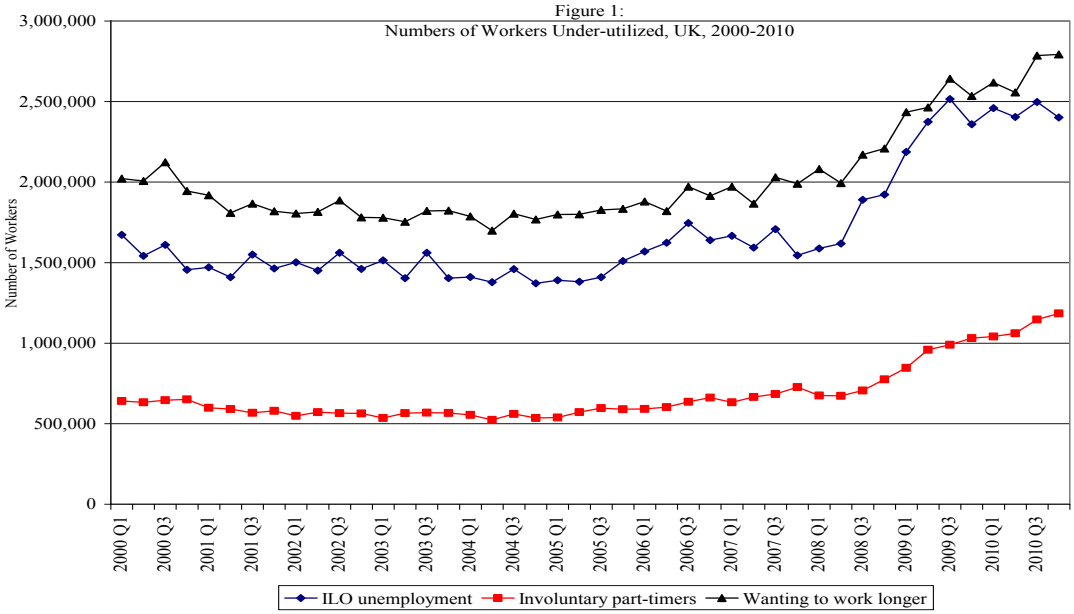
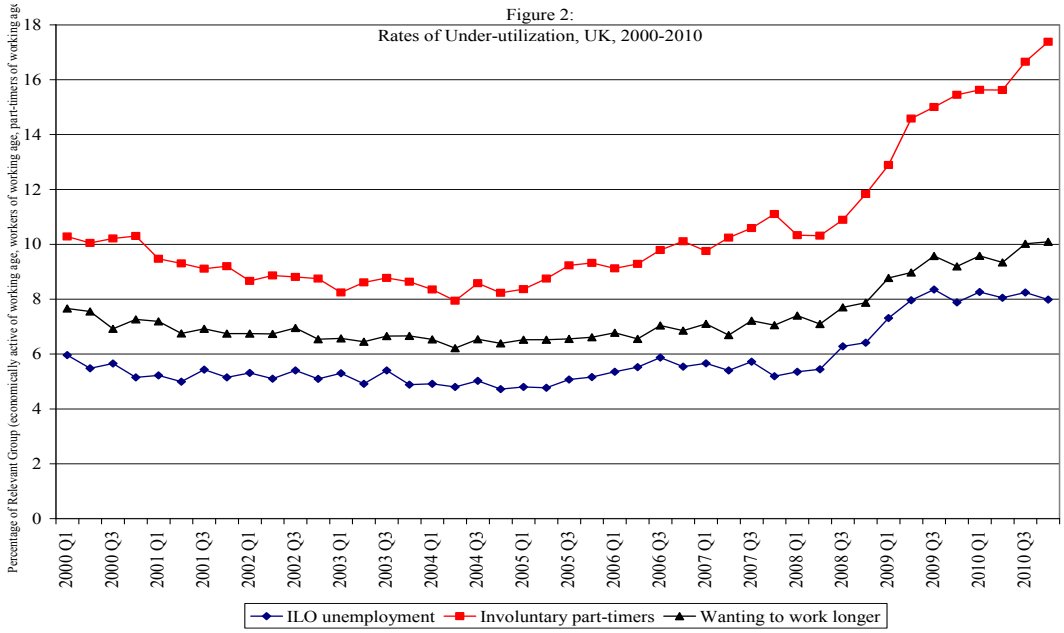


Figure 2:
Rates of Under-utilization, UK, 2000-2010



Analysis restricted to working age population (men 16-64; women 16-59).
Source: own calculations from quarterly Labour Force Surveys 2000-2010.

with the number of part-timers considerably smaller than either the number of workers or the number of economically active people of working age.

The experiences of those questioned in successive LFSs throughout the recession reveal a similar pattern. Around one in twenty (5.4%) of those who joined the survey at the beginning of the recession were unemployed, but fifteen months later nearly one in twelve (8.0%) were out of work (see Table 1). The worsening economic conditions can also be seen in the growing percentage of

part-time workers who report preferring to work full-time if such jobs were available – after a short lag, the percentage of involuntary part-time working rose as the recession lengthened[7].

There is little doubt, then, that the recession has not only led to a rise in unemployment – the most obvious and well reported indicator of under-utilization – but to a rise in both involuntary part-time working and the prevalence of restricted working hours among those who remained in employment. It is also undoubtedly the case that all three forms of under-utilization hit the weakest in society hardest. Whatever the predicted state of the economy, the young, the poorly educated, ethnicity minorities and the disabled – almost without exception – stand the greatest risk of being unemployed, working part-time involuntarily or would prefer to work longer hours (see below). In *absolute* terms, all forms of labour under-utilization are distributed unfairly.

However, has the 2008-09 recession made the *relative* situation of these better or

Table 1: Unemployment Through the Recession.

	Percentage of the Economically Active Working Age Population Unemployed When Interviewed (%)							
	Q1, 2008	Q2, 2008	Q3, 2008	Q4, 2008	Q1, 2009	Q2, 2009	Q3, 2009	Q4, 2009
Cohort 1 (Q1, 2008)	5.4	5.4	6.3	6.4	7.3	n.a.	n.a.	n.a.
Cohort 2 (Q2, 2008)	n.a.	5.4	6.3	6.4	7.3	8.0	n.a.	n.a.
Cohort 3 (Q3, 2008)	n.a.	n.a.	6.3	6.4	7.3	8.0	8.4	n.a.
Cohort 4 (Q4, 2008)	n.a.	n.a.	n.a.	6.4	7.3	8.0	8.4	7.9

Table 2: Involuntary Part-time Working Through the Recession.

	Percentage of Part-timers Who Could Not Find a Full-time Job When Interviewed (%)							
	Q1, 2008	Q2, 2008	Q3, 2008	Q4, 2008	Q1, 2009	Q2, 2009	Q3, 2009	Q4, 2009
Cohort 1 (Q1, 2008)	9.7	9.6	9.4	9.6	10.7	n.a.	n.a.	n.a.
Cohort 2 (Q2, 2008)	n.a.	10.4	8.7	11.1	11.3	13.7	n.a.	n.a.
Cohort 3 (Q3, 2008)	n.a.	n.a.	10.4	12.1	13.3	13.2	14.8	n.a.
Cohort 4 (Q4, 2008)	n.a.	n.a.	n.a.	11.9	11.6	13.2	13.8	14.8

Tables 1 and 2 focus on LFS interviewees who were interviewed on either four or five occasions during the recession (Q2, 2008 to Q3, 2009). The data are weighted to take into account differential rates of attrition between social groups and therefore each cohort of individuals is representative of the UK working age population (16-64 for men; 16-59 for women).

worse? To answer this particular question we use multiple regression to predict the probabilities of particular social groups occupying one of the three under-utilization categories compared with people outside this group but with otherwise similar characteristics. The net difference represents a particular social group's under-utilization 'penalty' (see, Berthoud, 2008). So, for example, by including educational qualifications and the annual unemployment rate in the same model we can estimate the probability that graduates will be in one of the three under-utilization categories compared to those holding no qualifications at all as well as estimate what difference the business cycle makes for all workers whatever their educational background. Furthermore, we add two set of interaction terms. First, in order to differentiate the effects of the business cycle on different social groups (such as those with different qualifications) we add a set of interaction terms to the three logistic regression models. Second, in order to take account any secular trends over the decade – such as changes in the 'penalties' of group membership – we interact the predictor variables with time. The resulting models produce probability estimates of the effects of both underlying trends and cyclical economic variations (as measured by varying rates of unemployment) on each of the social characteristic predictor variables (cf. Appendix A1, A2 and A3).

The three models have a large number of interaction terms which are too complicated to be interpreted directly. To make interpretation more transparent, we use the models to predict the hypothetical probability in Q2 2010 of a person with a particular social characteristic (such as gender, educational level, age and so on) being in one of the three under-utilization categories in different economic scenarios. These scenarios are characterized by variable unemployment rates: (1) 5%, typical of the years before the onset of the recession; (2) 7.5%, the figure reached in the mid-point of the recession; and (3) 10%, the scenario predicted by some commentators at the beginning of recession and still possible given the unknown effect of public expenditure cuts and historical evidence suggesting that unemployment grows well after recessions officially end (see, e.g., *Financial Times*, 2 November 2010 and 14 February 2011). The aim of this analytical exercise, then, is to demonstrate which social groups are most affected by the three different categories of under-utilization and whether the nature of the most recent recession exposes to them to different levels of risk, or to put it in political parlance, is the recession tough but fair?

The results presented here corroborate a well-known international finding that job losses in recessions hit the weakest in society hardest (e.g. ILO, 2010). The recent recession in the UK is no different with the lowest qualified, the youngest and those from ethnic

[7]The longitudinal datasets prepared by the Office for National Statistics (ONS) are used for this analysis. This is a subset of the full LFS variable set, and so only includes ILODEFR (ILO unemployment) and YPTJOB (involuntary part-time working), and not UNDEMP (wanting to work longer hours).

minorities experiencing the sharpest rise in unemployment. Table 3 shows the risk of unemployment among particular social groups in Q2 2010, taking account of other characteristics as well as secular and cyclical interactions (these adjustments are not possible using simple cross-sectional techniques). Whatever the level of unemployment, the young have the greatest risk of being unemployed, with 16-19 year olds being particularly vulnerable. However, their susceptibility is heightened further in times of economic crisis. With unemployment at 5%, around one in eight (17.6%) 16-19 year olds are likely to find themselves unemployed but this rises to a third (33.3%) when unemployment reaches 10%. The risks of unemployment also rise among older groups, but much more slowly. Rising unemployment, therefore, affects the young disproportionately with the gap between the young and the old widening (see Figure 3c). The same story can be told for the lowly and highly qualified with the risk gap of unemployment widening as the state of the economy worsens (see Figure 3b). Even when unemployment is at 5%, one in eight (12.2%) of those with no qualifications are likely to be unemployment, compared to only one in fifty (1.7%) of those with higher education qualifications. These percentages rise for both groups as the economic climate worsens, but the gap between the two widens – from 11 to 15 percentage points. The relative risks of unemployment are also felt disproportionately by ethnicity. Those from ethnic minority communities are more likely than the white economically active working population to be unemployed whatever the state of the labour market but a worsening economic climate makes their relative plight somewhat bleaker. If unemployment were 5% the risk gap is a little less than five percentage points rising to over six percentage points if unemployment were to reach 10% (see Figure 3d).

The recession is also gendered in that men are more likely than women to find themselves in unemployment the deeper the recession. For example, if unemployment was 5% men and women would be equally likely to be unemployed but if it was 10% instead of 5%, male unemployment rates would be 12.2% compared to 8.5% for women. Yet, not all inequalities are compounded by the recession. Our analysis shows that a worsening economic climate has less effect on those who have health problems or disabilities which substantially limit their 'ability to carry out normal day-to-day activities' than those who do not. Even so, the 'disabled' are more at risk from unemployment than their able bodied counterparts (see Figure 3e) with the gap closing but not disappearing. However, this is the exception not the rule.

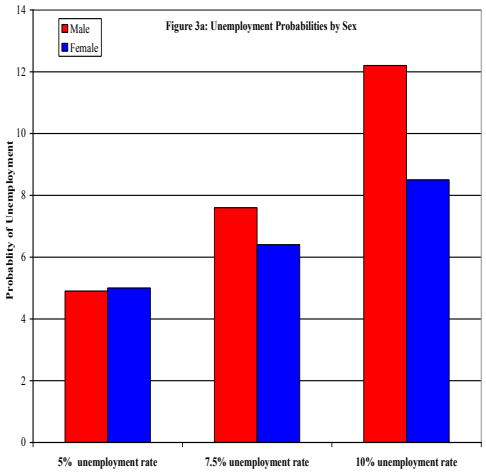
The risk gap closes, or at least widens more modestly, when the spotlight shifts towards the impact of the recession on the less widely reported forms of under-utilization. In some cases, the recession closes rather than widens the gap between the chances of different social groups falling into the categories of involuntary part-time working or those preferring to work longer hours. For example, over a quarter of those in part-time work who

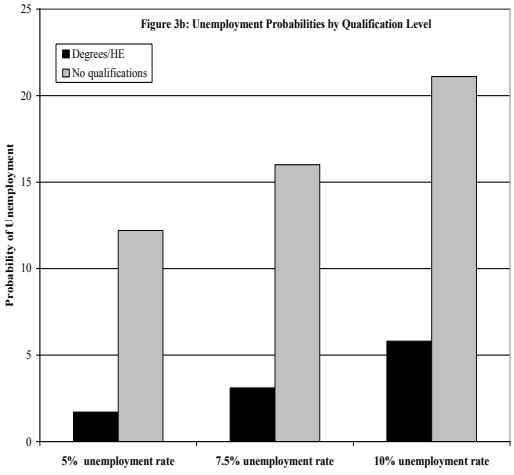
Table 3. Effect of Varying Rates of Unemployment on Predicted Unemployment Probabilities

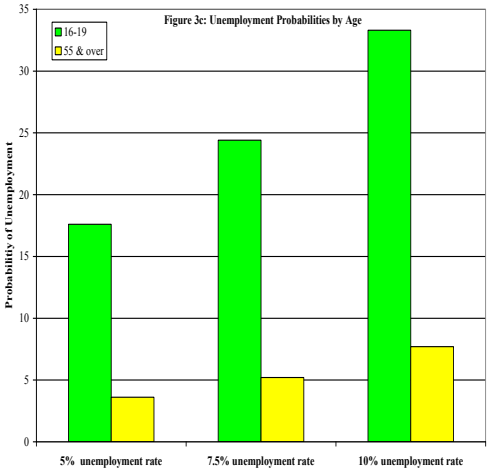
Characteristics of Social Groups	Predicted Unemployment Probabilities (of those active and of working age)		
	5% Unemployment Rate	7.5% Unemployment Rate	10% Unemployment Rate
Sex			
Male	4.9	7.6	12.2
Female	5.0	6.4	8.5
Highest qualification			
Degree/higher education	1.7	3.1	5.8
A level	3.9	6.3	10.1
O level	7.4	9.7	12.8
Lower qualifications	7.9	10.6	14.5
No qualifications	12.2	16.0	21.1
Age			
16-19 year olds	17.6	24.4	33.3
20-24 year olds	9.6	14.2	21.3
25-29 year olds	6.1	9.1	13.9
30-34 year olds	4.4	6.5	10.0
35-39 year olds	3.5	5.1	7.7
40-44 year olds	3.2	4.5	6.7
45-49 year olds	2.9	4.1	6.0
50-54 year olds	3.0	4.1	6.0
55 year olds and over	3.6	5.2	7.7
Ethnicity			
White	4.5	6.7	9.9
Ethic minority	9.2	12.1	16.1
Region/country of residence			
North East	5.8	8.0	11.4
Yorkshire	5.9	8.5	12.5
East Midlands	5.4	6.9	9.2
East of England	4.2	5.7	7.9
London	5.8	8.4	12.4
South East	3.6	5.4	8.4
South West	3.7	5.7	8.9
West Midlands	5.6	8.6	13.4
North West	6.7	8.5	11.1
Wales	5.8	8.2	11.8
Scotland	4.0	6.3	10.0
Northern Ireland	3.2	5.4	9.4
Disability			
Limited long-standing illness	9.3	10.5	12.0
Not disabled	4.3	6.6	10.2

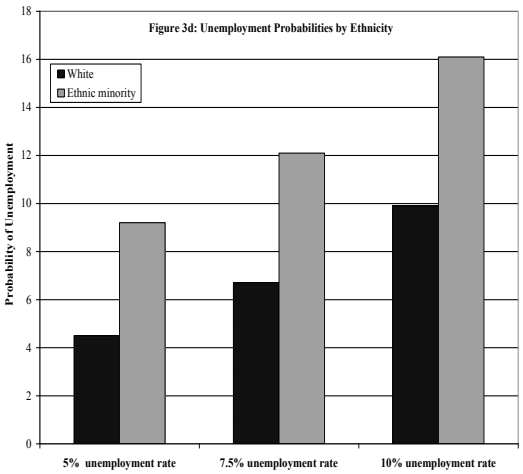
Based on logit regressions as reported in Table A1

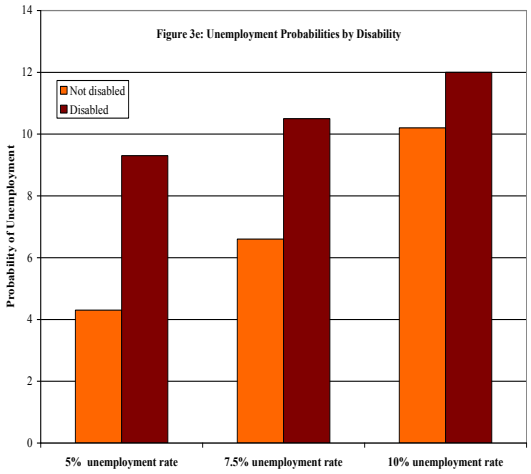
Figure 3. Unemployment Probabilities











Source: see Table 3 for prediction probabilities and Table A1 for logistic regression model.

have no qualification are likely to be working such hours because they cannot find a full-time job. This is the case if unemployment across the economy is 5%, 7.5% or even 10%. However, a worsening economic climate has a greater impact on enhancing the chances of part-timers who have qualifications finding themselves in part-time work because full-time opportunities are not available. As a result, the gap between the non-qualified and those with qualifications at various levels closes by 3-4 percentage points if unemployment were to double, while the gap itself remains large (see Table 4). On the other hand, the age gap grows as economic circumstances worsen, but much more modestly than for unemployment (see Figures 3d and 4d).

Nevertheless, men are disproportionately affected by the recession compared to women – both terms of their increased chances of being in unemployment (cf. Figure 3a) – and their chances of taking part-time jobs involuntarily (see Figure 4a). A doubling of the unemployment rate increases the probability of men working part-time involuntary from 20.6% to 32.7%, whereas for women the rise is almost negligible (from 10.6% to 11.9%, see Table 4). However, the recession effect for the disabled is mixed. On the one hand, unemployment rates among the disabled are relatively high whatever the state of the economy, but the disabled/able-bodied difference narrows as the recession deepens (cf. Figure 3e). Yet, on the other hand, rates of involuntary part-time working rise relatively steeply as the economy weakens – turning what began as labour market advantage into a disadvantage (note the changing height of the bars in Figure 4e).

The contrasting effect of the recession on the different dimensions of non-skill related under-utilization is more still apparent when attention shifts to workers who report an unfulfilled willingness to work longer hours. Disadvantaged groups have a higher probability of occupying such a position whatever the state of the economy. However, the gender, ethnicity and disability gaps tend to narrow as the economic situation worsens (see Table 5 and Figures 5a, 5d and 5e). Even where they do widen – as for age and qualification – they do so at a much slower rate than for unemployment (see Figures 5b and 5c). This suggests that although the recession throws disproportionately more of the traditionally disadvantage in society out of work, underemployment is a little less unfair in terms of who it affects most[8].

5. Conclusion

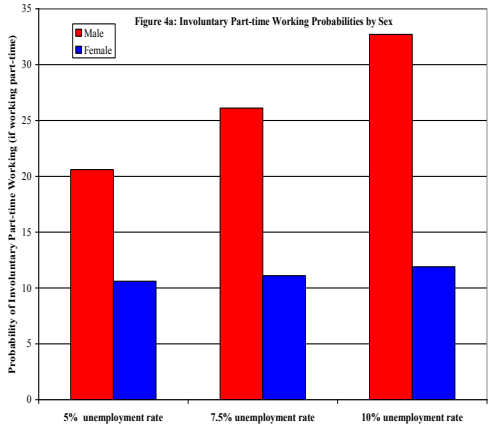
At a political level, fairness is one of the three values at the heart of the Coalition Agreement between the Conservatives and Liberal Democrats (Cabinet Office, 2010). It is also evident at a practical policy level. For example, in announcing the Comprehensive Spending Review, the government gave its assessment of the distributional effect of changes to departmental budgets (HM Treasury, 2010). While these claims generated considerable controversy and debate, the promotion of fairness is a declared policy goal. Yet when economic

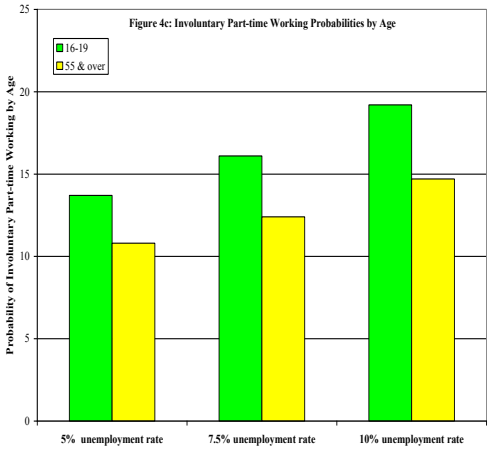
Table 4. Effect of Varying Rates of Unemployment on Predicted Involuntary Part-time Working Probabilities

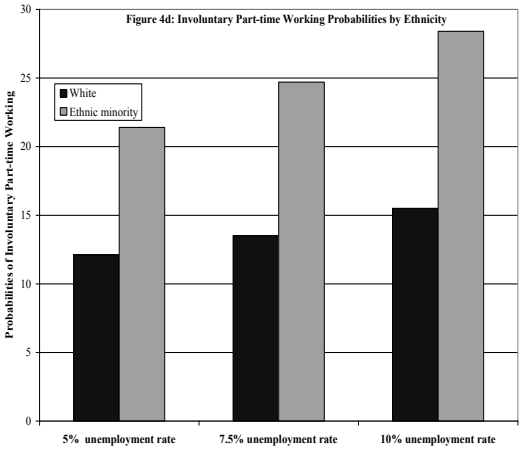
Characteristics of Social Groups	Predicted Involuntary Part-time Working Probabilities (of those working part-time)		
	5% Unemployment Rate	7.5% Unemployment Rate	10% Unemployment Rate
Sex			
Male	20.6	26.1	32.7
Female	10.6	11.1	11.9
Highest qualification			
Degree/higher education	10.0	11.3	13.0
A level	11.0	12.6	14.7
O level	11.4	13.5	16.1
Lower qualifications	21.0	23.5	26.5
No qualifications	25.6	25.9	26.5
Age			
16-19 year olds	13.7	16.1	19.2
20-24 year olds	14.9	17.3	20.4
25-29 year olds	15.3	17.2	19.6
30-34 year olds	14.3	15.9	17.9
35-39 year olds	13.7	15.1	16.8
40-44 year olds	13.1	14.5	16.3
45-49 year olds	12.1	13.4	15.1
50-54 year olds	11.0	12.0	13.4
55 year olds and over	10.8	12.4	14.7
Ethnicity			
White	12.1	13.5	15.5
Ethic minority	21.4	24.7	28.4
Region/country of residence			
North East	12.5	16.3	21.1
Yorkshire	12.7	14.2	15.9
East Midlands	17.1	14.5	14.1
East of England	10.3	12.5	15.2
London	16.8	19.3	22.1
South East	8.4	11.2	14.8
South West	11.6	12.2	16.3
West Midlands	16.3	17.0	17.8
North West	12.2	15.1	18.5
Wales	20.0	17.2	14.9
Scotland	12.0	14.0	16.4
Northern Ireland	13.7	17.2	21.4
Disability			
Limited long-standing illness	11.0	14.1	18.0
Not disabled	13.3	14.7	16.4

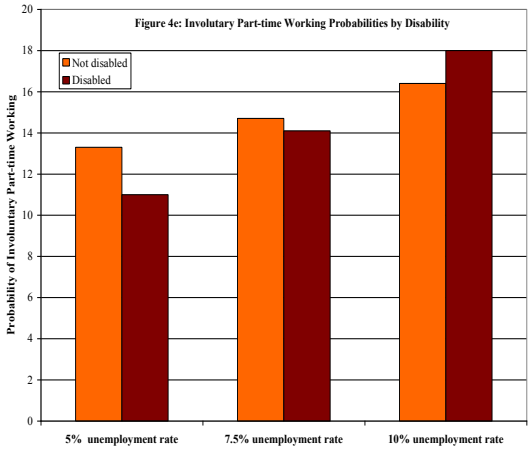
Based on logit regressions as reported in Table A2.

Figure 4. Involuntary Part-time Working Probabilities









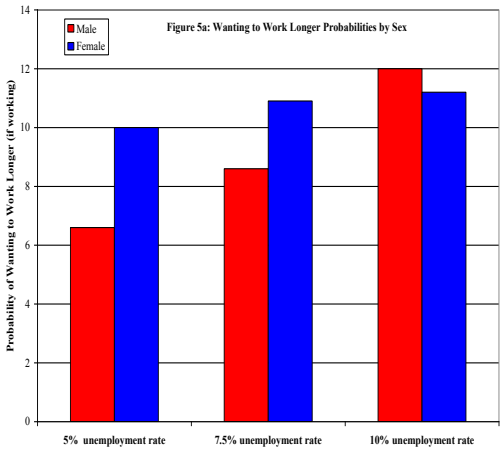
Source: see Table 4 for prediction probabilities and Table A2 for logistic regression model.

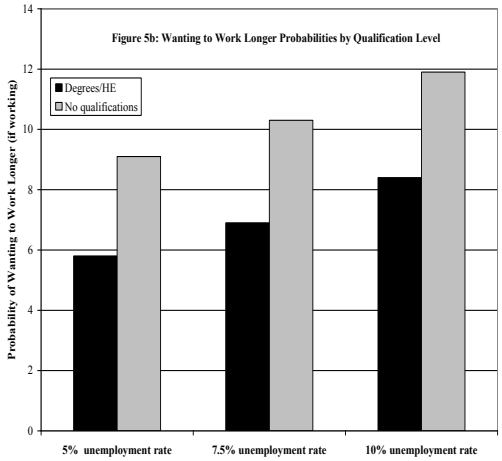
Table 5. Effect of Varying Rates of Unemployment on Predicted Wanting to Work Longer in Current Job

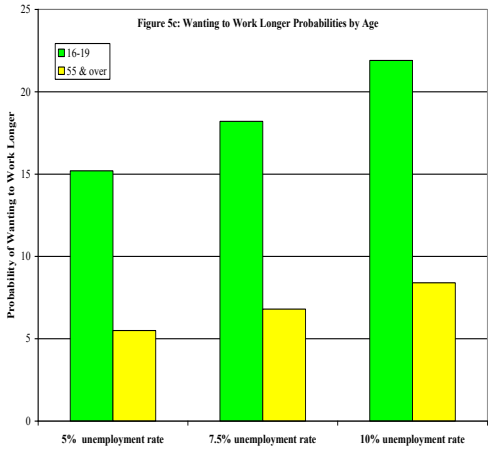
Characteristics of Social Groups	Predicted Wanting to Work Longer in Current Job Probabilities (of those in work)		
	5% Unemployment Rate	7.5% Unemployment Rate	10% Unemployment Rate
Sex			
Male	6.6	8.6	12.0
Female	10.0	10.9	11.2
Highest qualification			
Degree/higher education	5.8	6.9	8.4
A level	8.4	10.1	12.4
O level	10.0	11.9	14.3
Lower qualifications	12.1	13.5	15.3
No qualifications	9.1	10.3	11.9
Age			
16-19 year olds	15.2	18.2	21.9
20-24 year olds	12.2	14.6	17.6
25-29 year olds	10.5	12.3	14.5
30-34 year olds	9.2	10.8	12.7
35-39 year olds	8.3	9.7	11.5
40-44 year olds	7.7	9.0	10.7
45-49 year olds	6.9	8.2	9.7
50-54 year olds	6.4	7.5	9.0
55 year olds and over	5.5	6.8	8.4
Ethnicity			
White	7.8	9.3	11.3
Ethic minority	12.7	14.0	15.5
Region/country of residence			
North East	8.5	9.3	10.2
Yorkshire	7.9	10.3	13.6
East Midlands	10.9	11.2	11.6
East of England	9.8	11.4	13.4
London	8.8	10.3	12.2
South East	7.2	9.2	11.9
South West	9.7	10.9	12.3
West Midlands	7.4	9.5	12.2
North West	9.1	10.3	11.7
Wales	9.5	10.0	10.6
Scotland	7.1	8.4	10.0
Northern Ireland	2.5	3.9	6.1
Disability			
Limited long-standing illness	10.1	11.1	12.3
Not disabled	8.0	9.5	11.5

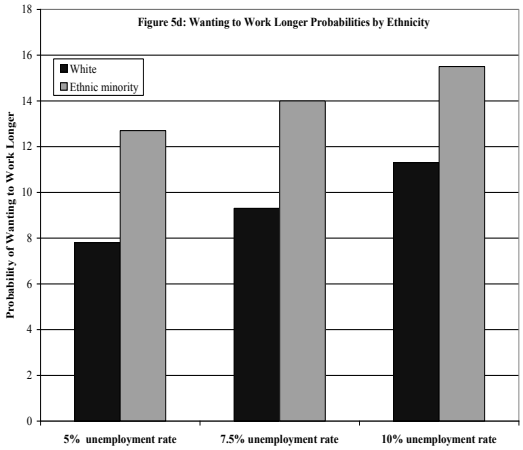
Based on logit regressions as reported in Table A3.

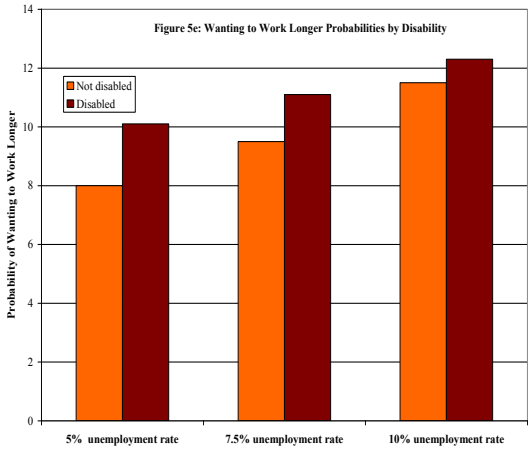
Figure 5. Wanting to Work Longer Probabilities











Source: see Table 3 for prediction probabilities and Table A3 for logistic regression model.

conditions are tough, inequalities tend to grow rather than diminish.

Against this backdrop, this paper has examined how the 2008-09 recession has impacted on different social groups in terms of their under-utilization prospects. By focusing on labour under-utilization, the paper has highlighted the variegated nature of the concept, which in recent policy discussions is assumed to refer to skill under-utilization. However, such an approach should not lose sight of the growing number of individuals who – in recession and for sometime thereafter – find themselves out of work, working fewer hours than they would prefer or involuntarily working part-time This paper has focused on these aspects of labour under-utilization and the differential probability of particular social groups becoming unemployed, working fewer hours they would like or doing part-time work simply because they are unable to find a full-time job. All three forms of under-utilization have risen in the recession. Around 900,000 people have been added to the ranks of the unemployed, an additional 650,000 workers report that would like to work longer hours and around 320,000 part-timers say they have taken part-time jobs because they cannot find full-time work. These numbers have continued to grow – 195,000 involuntary part-timers and 150,000 workers whose hours are constrained have been added since the recession technically ended towards the third quarter of 2009.

The results presented here suggest that all three of these forms of under-utilization affect the weakest in society disproportionately. Whatever the predicted state of the economy, the young, the poorly educated, ethnicity minorities and the disabled – almost without exception – stand the greatest risk of being unemployed, working part-time involuntarily or would prefer to work longer hours. However, a worsening economic climate means that some of these groups are disproportionately affected by rising rates of all three forms of labour under-utilization. In other words, they face a triple 'whammy'[9]. The paper shows, for example, that the young – as compared to their otherwise identically placed older counterparts – not only face steeper rises in unemployment, but sharper rises in rates of involuntary part-time working and limits to their preferred hours of work. Men, too, face much steeper rises in all three types of labour under-utilization as economic prospects deteriorate. However, for other social groups the picture is mixed with the lowly qualified and ethnic minorities experiencing relatively rapid increases in unemployment rates, but relatively slower rises in other forms of labour under-utilization.

The policy implication of this analysis is that underemployment rather than a job loss response to the economic downturn is only marginally fairer. In this sense, underemployment offers a tough but only slightly fairer option than cutting headcounts.

[8]We found no notable pattern by region/country. For example, in the relative low unemployment scenario Scotland would have rates of unemployment slightly below average compared to average rates in the high unemployment scenario. Its ranking in terms of involuntary part-time and constrained hours working also varies only marginally in different economic circumstances (cf. Tables 3, 4 and 5).

This resonates with the sentiment 'any job is better than no job' whatever the hours of work, particularly in a recession and its aftermath. With the impending shrinkage of the public sector, this is an issue worthy of further consideration by a government which claims 'that the potential impacts on the equality of men and women, people from ethnic minorities and people with disabilities have been taken into account as far as possible in decision making' in its spending review (HM Treasury, 2010: 31). Regardless of the validity of this claim, how the public sector sets about shrinking itself in response to the cuts – by job loss and/or sharing work out – will be another test of the government's resolve to pursue its tough but (only slightly) fairer agenda in practice.

Acknowledgements

Material from the Labour Force Surveys is Crown Copyright and has been made available by the Office for National Statistics (ONS) through The Data Archive and has been used by permission. Neither the ONS nor The Data Archive bear any responsibility for the analysis or interpretation of the data reported here. Many thanks to Iain Campbell, Francis Green, Ewart Keep and Nick Jewson for comments on earlier draft – the usual caveat applies.

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[9]The word 'whammy' has been used widely in the UK following the Conservative Party's 1992 election campaign in which the Labour Party's policies were depicted as hitting the electorate in two ways, hence the phrase 'double whammy'.

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Table A1. Predicted Probabilities of Unemployment, UK, 2000-2010

Predictors	Main effects	Interactions with:		
		Unemployment Rate	Quarter	Quarter Squared
Demographics				
Male	-0.1967†	8.4647*	0.0003	-0.0002
	(0.0916)	(1.4997)	(0.0030)	(0.0001)
Age	0.0925*	-0.3125	-0.0037	0.0001*
	(0.0135)	(0.3443)	(0.0007)	(0.0000)
Age squared	0.0014*	0.0037	$3.7x10^{-7}$*	$8.56x10^{-7}$*
	(0.0003)	(0.0046)	($9.27x10^{-6}$)	($2.72x10^{-7}$)
Qualification Level				
Degree/higher education	-0.6321*	5.9210†	0.0262*	-0.0008*
	(0.1512)	(2.4654)	(0.0050)	(0.0001)
A level (base)	NA	NA	NA	NA
O level	0.7052*	-7.6320*	-0.0038	0.0003†
	(0.1321)	(2.1555)	(0.0044)	(0.0001)
Lower qualifications	0.9676*	-5.7440*	-0.0021	0.0001
	(0.1493)	(2.4469)	(0.0049)	(0.0001)
No qualifications	1.4833*	-6.6058*	-0.0031	0.0002
	(0.1479)	(2.4322)	(0.0048)	(0.0001)
Region/Country				
North East	1.0883*	-3.2487	-0.0472*	0.0009*
	(0.2129)	(3.4937)	(0.0070)	(0.0002)
Yorkshire	0.6043*	-0.7132	-0.0415*	0.0009*
	(0.1831)	(2.9867)	(0.0061)	(0.0002)
East Midlands	0.6887*	-6.2683	-0.0298*	0.0007*
	(0.2003)	(3.2589)	(0.0068)	(0.0002)
East of England	0.4439	-5.2326	-0.0196†	0.0005
	(0.2689)	(4.3797)	(0.0090)	(0.0003)
London	0.5504*	-0.2287	-0.0088	0.0001
	(0.1738)	(2.8339)	(0.0058)	(0.0002)
South East (base)	NA	NA	NA	NA
South West	0.2024	0.2426	-0.0326*	0.0007*
	(0.2074)	(3.3806)	(0.0069)	(0.0002)
West Midlands	0.3137	2.4759	-0.0222*	0.0005*
	(0.1838)	(2.9967)	(0.0061)	(0.0002)
North West	0.9296*	-7.1963†	-0.0400*	0.0010*
	(0.1776)	(2.8920)	(0.0060)	(0.0002)
Wales	0.7639*	-2.0803	-0.0473*	0.0010*
	(0.2336)	(3.8264)	(0.0077)	(0.0002)
Scotland	0.7997*	1.1025	-0.0346*	0.0004†
	(0.1871)	(3.0723)	(0.0060)	(0.0002)
Northern Ireland	0.4643	4.0988	-0.0336*	0.0003
	(0.2675)	(4.4110)	(0.0085)	(0.0003)
Ethnicity				
White (base)	NA	NA	NA	NA
Ethnic minority	-1.1509*	5.6548†	0.0074	-0.0001
	(0.1409)	(2.2819)	(0.0048)	(0.0001)
Disability				
Limited long-standing illness	1.4809*	-13.2331*	-0.0159*	0.0005*
	(0.1270)	(2.0726)	(0.0042)	(0.0001)
None (base)	NA	NA	NA	NA
Economic Cycle and Trends				
Unemployment rate	20.5649*			
	(6.6352)			
Quarter	0.0925*			
	(0.0135)			
Quarter squared	-0.0019*			
	(0.0004)			
Number of observations	2,345,364			
Pseudo R^2	0.1021			

* = p<0.001; †=p<0.05

Table A2. Predicted Probabilities of Involuntary Part-time Working, UK, 2000-2010

Predictors	Main effects	Interactions with:		
		Unemployment Rate	Quarter	Quarter Squared
Demographics				
Male	0.8618* (0.1663)	11.3622* (2.7097)	-0.0058 (0.0056)	-0.0002 (0.0002)
Age	0.0900* (0.0350)	0.3739 (0.5708)	-0.0054* (0.0012)	0.0001* (0.0000)
Age squared	-0.0012† (0.0005)	-0.0050 (0.0074)	0.0001* (0.0000)	$-1.12x10^{-6}$† ($4.44x10^{-7}$)
Qualification Level				
Degree/higher education	0.0896 (0.2316)	-0.0361 (3.7833)	0.0173† (0.0078)	-0.0005† (0.0002)
A level (base)	NA	NA	NA	NA
O level	-0.2172 (0.2163)	2.9544 (3.5314)	0.0340* (0.0072)	-0.0007* (0.0002)
Lower qualifications	0.4714 (0.2462)	-0.3988 (4.0338)	0.0375* (0.0081)	-0.0007* (0.0002)
No qualifications	0.8109* (0.2491)	-5.7216 (4.1001)	0.0256* (0.0081)	-0.0003 (0.0002)
Region/Country				
North East	1.2207* (0.3346)	0.0853 (5.4915)	-0.0334* (0.0110)	0.0004 (0.0003)
Yorkshire	1.2716* (0.2976)	-8.3208 (4.8657)	-0.0413* (0.0099)	0.0008* (0.0003)
East Midlands	1.5841* (0.3172)	-18.3723* (5.1510)	-0.0404* (0.0109)	0.0011* (0.0003)
East of England	0.7613 (0.4083)	-4.6051 (6.6574)	-0.0165 (0.0137)	0.0002 (0.0004)
London	0.8165* (0.2984)	-7.3323 (4.8495)	0.0029 (0.0101)	-0.0000 (0.0003)
South East (base)	NA	NA	NA	NA
South West	1.1177* (0.3037)	-11.2254† (4.9449)	-0.0263* (0.0102)	0.0006 (0.0003)
West Midlands	1.2253* (0.3054)	-11.3641† (4.9732)	-0.0300* (0.0103)	0.0007 (0.0003)
North West	1.0080* (0.2877)	-3.3977 (4.6908)	-0.0229† (0.0097)	0.0003 (0.0003)
Wales	2.2464* (0.3534)	-21.1932* (5.7815)	-0.0507* (0.0117)	0.0011* (0.0003)
Scotland	1.4680* (0.2904)	-5.1201 (4.7579)	-0.0283* (0.0095)	0.0002 (0.0003)
Northern Ireland	1.1965* (0.4021)	-0.4408 (6.5822)	-0.0322† (0.0134)	0.0004 (0.0004)
Ethnicity				
White (base)	NA	NA	NA	NA
Ethnic minority	-0.5386† (0.2493)	-0.8066 (4.0143)	0.0127 (0.0087)	-0.0001 (0.0002)
Disability				
Limited long-standing illness	-0.2847 (0.2155)	7.0339† (3.5122)	-0.0036 (0.0072)	-0.0001 (0.0002)
None (base)	NA	NA	NA	NA
Economic Cycle and Trends				
Unemployment rate	3.2084 (11.6780)			
Quarter	0.0798* (0.0243)			
Quarter squared	-0.0012 (0.0007)			
Number of observations	546,110			
Pseudo R^2	0.0741			

* = p<0.001; †=p<0.05.

Table A3. Predicted Probabilities of Wanting to Work Longer in Current Job, UK, 2000-2010

Predictors	Main effects	Interactions with:		
		Unemployment Rate	Quarter	Quarter Squared
Demographics				
Male	-0.8138* (0.0815)	7.7632* (1.3365)	0.0093* (0.0027)	-0.0002* (0.0001)
Age squared	0.0001 (0.0003)	0.0038 (0.0044)	$2.27x10^{-5}$* ($8.86x10^{-6}$)	$-6.36x10^{-7}$* ($2.60x10^{-6}$)
Qualification Level				
Degree/higher education	-0.3310* (0.1188)	0.2396 (1.9402)	0.0080† (0.0040)	-0.0003† (0.0001)
A level (base)	NA	NA	NA	NA
O level	0.1250 (0.1137)	0.1513 (1.8627)	0.0037 (0.0037)	-0.0001 (0.0001)
Lower qualifications	0.5013* (0.1324)	-2.9007 (2.1756)	0.0008 (0.0043)	0.0000 (0.0001)
No qualifications	0.5028* (0.1546)	-2.9909 (2.5584)	-0.0012 (0.0049)	-0.0000 (0.0001)
Region/Country				
North East	0.8560* (0.1936)	-7.3612† (3.1871)	-0.0235* (0.0062)	0.0004† (0.0002)
Yorkshire	0.1835 (0.1606)	1.2126 (2.6330)	-0.0179* (0.0053)	0.0003 (0.0002)
East Midlands	0.6849* (0.1704)	-9.8031* (2.7836)	-0.0272* (0.0057)	0.0008* (0.0002)
East of England	0.2469 (0.2144)	-4.2220 (3.4936)	-0.0037 (0.0072)	0.0003 (0.0002)
London	0.1344 (0.1608)	-2.5308 (2.6314)	-0.0065 (0.0053)	0.0002 (0.0002)
South East (base)	NA	NA	NA	NA
South West	0.6357* (0.1595)	-6.2538† (2.6125)	-0.0211* (0.0052)	0.0005* (0.0002)
West Midlands	0.1997 (0.1652)	0.0960 (2.7133)	-0.0111† (0.0054)	0.0001 (0.0002)
North West	0.4439* (0.1578)	-5.3962† (2.5855)	-0.0221* (0.0052)	0.0006* (0.0002)
Wales	0.8685* (0.2071)	-8.9576* (3.4110)	-0.0359* (0.0067)	0.0008* (0.0002)
Scotland	0.5636* (0.1612)	-3.5544 (2.6514)	-0.0089 (0.0052)	$-3.17x10^{-6}$ (0.0002)
Northern Ireland	-1.0148* (0.3035)	7.1693 (4.9764)	0.0155 (0.0098)	-0.0006† (0.0003)
Ethnicity				
White (base)	NA	NA	NA	NA
Ethnic minority	-0.5970* (0.1451)	3.8789 (2.3386)	-0.0049 (0.0050)	0.0001 (0.0001)
Disability				
Limited long-standing illness	0.4296* (0.1258)	-3.6421 (2.0440)	0.0014 (0.0042)	0.0000 (0.0001)
None (base)	NA	NA	NA	NA
Economic Cycle and Trends				
Unemployment rate	9.4461 (6.6989)			
Quarter	0.0350 (0.0135)			
Quarter squared	-0.0008 (0.0004)			
Number of observations	2,065,288			
Pseudo R^2	0.0313			

* = p<0.001; †=p<0.05.

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