OXFORD

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Unstable jobs and time out of work: evidence from the UK

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Abstract
This article tests the hypothesis that unstable jobs with variable hours or pay enhance the job-finding chances of the working-age non-employed in the UK, by using a combination of the UK Household Longitudinal Study and the Labour Force Survey data and a discrete time model. We find no evidence on the share of unstable jobs in the non-employed person's local labour market impacts on the probability to move into employment. This result holds both for men and women and for groups with low employability such as the low educated and the long-term unemployed. It is robust to alternative ways of defining unstable jobs and to the inclusion of unobserved heterogeneity. Overall, findings cast doubt on the importance of unstable jobs for employment creation in the UK.

1. Introduction

The UK is considered to have one of the most flexible labour markets among developed countries (OECD, 2013, 2020). In the decade following the Great Recession, it experienced record employment growth but also a proliferation of atypical forms of employment such as self-employment, zero-hours contracts and agency work.[1] These jobs, often have unpredictable hours and earnings, are very insecure and fail to guarantee a minimum level of earnings, even in the short term. Zero-hours contracts that fail to guarantee any work or pay have received much scrutiny but they constitute only a subset of unstable jobs with unpredictable

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1 Most growth in atypical employment and self-employment occurred between 2013 and 2016; https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2020

hours and pay. Many others do have a limited number of guaranteed hours but employees are regularly expected to work whenever they are called on.

Low and unstable pay interferes with the ability to plan, organize and generally be in control of one's life. The potential negative effects of unpredictable hours and earnings are significant. They include poorer physical and mental health (Halliday, 2007; Prause et al., 2009; Wolf and Morrissey, 2017), financial insecurity and indebtedness (Diaz-Serrano, 2005; Schneider and Harknett, 2019), food insecurity (Leete and Bania, 2010; Dahl et al., 2014), work–life conflict and family strain (Henly and Lambert, 2014), and worse educational and developmental outcomes in adolescents and children (Hill et al., 2013; Gennetian et al., 2015).

Despite these serious problems, unstable jobs with unpredictable hours and pay are often justified as necessary to provide employers with numerical flexibility, support job creation and provide access to the labour market and potentially a stepping stone to better paid employment for groups with low employability (Chartered Institute of Personnel and Development, 2013; Department for Business and Skills, 2013; Beatson, 2015). Yet, the empirical evidence in support of this view is limited. Previous work on atypical employment suggests that substitution effects may dominate new job creation (Kahn, 2010) and atypical jobs offer very limited opportunities for career progression (Booth et al., 2002; Giesecke and Groß, 2004; McGovern et al., 2004). Nevertheless, most of the evidence concerns temporary employment rather than jobs with unpredictable hours and pay.

This article provides evidence on the impact of variable[2] hours and pay employment, henceforth unstable jobs, on the job finding probabilities of individuals out of work. It builds on and extends the large literatures on labour market flexibility and employment. Its contribution is two-fold. First, while the previous literature has focused on temporary employment and low wages, this article looks at another form of labour market flexibility that has proliferated in recent years: unstable jobs with variable hours and pay. Secondly, with a few exceptions (Gebel and Giesecke, 2011; Barbieri and Cutuli, 2016), the majority of existing studies have relied on country-level time series to tease out the impact of institutions on labour market outcomes (Iversen and Wren, 1998; Howell, 2002; Kenworthy, 2003; Nickell et al., 2005; Avdagic and Salardi, 2013). While informative, studies relying on country-level variation have a number of well-known limitations such as insufficient institutional variation, the confounding potential of national institutional, cultural or economic characteristics, and drawing conclusions about micro-level processes from aggregate data. It is thus important to complement macro-level findings with micro-level evidence. This study uses variation across occupations, regions and time in one country—the UK—to examine how the prevalence of flexible/unstable employment impacts on non-employment duration and job-finding probabilities. The rest of the article proceeds as follows. Section 2 reviews the existing literature on labour market flexibility and (un)employment and discusses the theoretical expectations. Section 3 describes the data and the methods. The main results are presented in Section 4. Section 5 discusses the results and Section 6 concludes.

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2 The terms unpredictable and variable are used interchangeably. Strictly speaking, variable hours may be predictable. However, even when predictable, fluctuations in income and working times can be problematic.

2. Unemployment and labour market flexibility

A large body of research investigated the potential trade-off between labour market flexibility and (un)employment. At least two possible explanations have been proposed: skill-biased technological change and the service sector trilemma.

The neo-classic economic literature has attributed the structural labour market changes experienced by developed countries starting with the 1980s to shocks in the relative demand for different skills (Bertola *et al.*, 2007; Goos and Manning, 2007; Acemoglu and Autor, 2011). Globalization and new technological developments are thought to have dramatically increased the demand for highly skilled labour and depressed the demand for low-skilled workers resulting in the expansion of low-paid employment in countries where labour markets were flexible such as the USA and the UK and a substantial increase in unemployment in countries where labour market rigidities prevented a downward adjustment of low-skilled wages such as Continental Europe in the 1990s. After countries in Continental and Southern Europe deregulated employment protections for peripheral workers, the trade-off changed to one between low wages and insecure/temporary employment (Barbieri, 2009).

A second hypothesis has focused on productivity changes associated with a shift from manufacturing to services. In a 1989 article, Iversen and Wren (1998) argued that a slowdown of productivity growth in non-tradable services presents governments with a choice between low employment growth, high wage inequality and high public spending. Countries that wish to boost private sector employment have to accept the proliferation of low-wage, low-quality jobs. The UK is given as a prime example of such a strategy. Countries that preserve strong employment protections have to contend with low employment growth as in the case of several Continental European countries in the 1990s.

2.1 The evidence so far

The empirical evidence on the trade-off between labour market flexibility, and associated low-quality jobs, and employment creation is weak and contested. A few studies using country-level time series do find a significant positive effect of labour market rigidities on unemployment, especially youth and long-term unemployment (Di Tella and MacCulloch, 2005; Nickell *et al.*, 2005; Bertola *et al.*, 2007; Bernal-Verdugo *et al.*, 2012; Agnello *et al.*, 2014). Yet, subsequent studies have shown that these results are not robust to variations in model specification, the inclusion of additional countries and/or the use of slightly different institutional indicators (Kenworthy, 2003; Heyes, 2011; Vergeer and Kleinknecht, 2012; Avdagic and Salardi, 2013). A recent meta-analysis of 75 studies concluded there is no robust evidence to support the assertion that employment protection legislation increases unemployment rates (Heimberger, 2021). In addition, alternative correlated institutional features such as monetary policy or product market regulation are often better able to explain observed aggregate employment patterns, casting doubt on the importance of labour market flexibility (Howell, 2002; Amable *et al.*, 2011). There is also little evidence that countries with more flexible labour markets were better able to withstand the employment shock of the 2008 financial crisis (Heyes, 2011).

Mindful of the well-known problems associated with using country-level time series, a different strand of the literature has focused on deregulation reforms and associated changes in employment and unemployment. A number of studies focused on evaluating the impact of atypical employment deregulation on overall job creation (Barbieri and Scherer, 2009;

Barbieri and Cutuli, 2016) and on the relative unemployment risk of the low skilled (Gebel and Giesecke, 2011). Results indicate no or even negative effects on employment creation overall and on the relative employment chances of low-skilled workers. Rather than adding new jobs, employers appear to substitute well-paid, protected jobs for lower quality ones in a bid to drive down costs. From a social mobility perspective, atypical employment is associated with significant future unemployment risk and labour market marginalization (Booth *et al.*, 2002; Giesecke and Groß, 2004; Barbieri, 2009), although the strength of the relationship is country and period specific (Korpi and Levin, 2001; McGinnity *et al.*, 2005; Gash, 2008).

2.2 The UK context

During the 1980s, the UK experienced a large increase in wage inequality as a result of deregulation, weakening of the trade unions and de-industrialization. While wage inequality has been more stable in the last two decades, low-paid employment and working poverty remained a problem. Since 1999, the UK has a minimum wage that has been gradually increased and now ranks as one of the highest in the Organisation for Economic Co-operation and Development (OECD) in relative terms. While the minimum wage legislation successfully solved the problem of very low wages and significantly reduced wage inequality at the bottom (Avram and Harkness, 2019), employment protection remains weak. New forms of employment such as 'fake' self-employment in the gig economy or zero-hours contracts have multiplied, possibly as a result of employers attempting to avoid payment of the relatively high minimum wage (Datta *et al.*, 2018). Far from acting as a springboard, these low-paid jobs can be a dead end. The evidence indicates that holding a low-paid job substantially increases the risk of low pay and unemployment in the future (Stewart, 2007; Cappellari and Jenkins, 2008) and that upward mobility, when it occurs, is often short-lived (D'Arcy and Finch, 2017).

In the decade we study, employment growth was relatively strong, especially in the second part of the period, whereas wage growth remained weak. After 2010, the Coalition Government and subsequently the Conservative Government implemented an austerity agenda that largely consisted in cuts to public services and working-age benefits. This included the launch of Universal Credit which merged in-work and out of work benefit provision but also significantly cut many in-work benefits (tax credits) used to top up the earnings of low-paid workers and restricted access to out of work benefits, including disability benefits. Administrative methods such as sanctions and new ways of establishing eligibility were used to push people off benefits and limit case loads (Reeves and Loopstra, 2017; Dwyer, 2018). Many of these measures had the effect of encouraging employment by removing any alternative income options that low-paid workers might have had.

2.3 Hypotheses

The aim of this article is to test the claim that unstable jobs help the individuals out of work, and in particular vulnerable groups, transition into employment. Two specific hypotheses are tested. First is the hypothesis that out of work individuals facing a local labour market with a higher share of unstable jobs have on average a higher probability of finding a job and, as a result, shorter non-employment spells (H1).

Secondly, labour market flexibility is supposed to be especially beneficial for vulnerable groups or non-core workers that otherwise would find it hard to secure employment. The

second hypothesis asserts that the impact of the share of unstable jobs in the labour market on the probability of finding employment is higher for women, the low educated and the long-term unemployed (H2). The next section details the data and empirical estimation.

3. Data and methods

The data we use combine information from two large scale British household surveys. Unemployment histories are obtained from the UK Household Longitudinal Study (UKHLS), a longitudinal study that follows approximately 40 000 households (in the first wave) and interviews them annually.[3] It collects detailed demographic, income and labour market information among others. We use the first nine waves spanning the period 2009–2018. The Labour Force Survey (LFS) is geared towards collecting detailed information about employment and the labour market and is used to generate official government statistics relating to the labour market. LFS is conducted quarterly and interviews approximately 40 000 individuals every quarter.

In comparison with administrative data, household survey data have the advantage of including information on a wide range of individual characteristics, including information usually not collected administratively such as education, detailed household composition measures, incomes and/or personality traits. However, survey data also have some important limitations. They are subject to sampling variation, have lower sample sizes, are more likely to contain measurement error and the information contained in them may be less accurate (e.g. exact dates of non-employment start and end dates are not known). In the case of the UK, however, they represent the best source of information for studying non-employment duration. Administrative datasets only cover spells of benefit receipt, are more difficult to access and contain a more limited amount of information.

3.1 Reconstructing unemployment histories

Information in the UKHLS, including detailed information about the current labour force status is gathered annually. The UKHLS also has an 'Annual Event History' module where it asks respondents about important events occurring in-between interviews. These include periods of employment and unemployment, as well as limited information about jobs. This information is used to construct monthly employment histories for each working-age individual who has ever reported a spell of non-employment.

A person is considered to be out of work when they report unemployment or family care as their main economic activity, or when they report not doing any paid work and not having any paid job. A person is considered to be employed when they report being employed part time or full time, on maternity leave or self-employed. Periods in full-time education, retirement, long-term sickness and periods spent in training or apprenticeships are excluded.

The monthly employment history is reconstructed using information about employment and non-employment spells in-between interviews. When inconsistent, priority is given to current over retrospective information. For individuals who are not employed when first observed in the sample, their most recent non-employment spell is reconstructed using information on when their most recent job ended or the date they left full-time education. To ease

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3   Details about the sampling strategy, data collected and uses can be found here: https://www.under standingsociety.ac.uk

interpretation of the results, the focus is kept on working-age individuals defined as men aged 22–64 years and women aged 22–59 years. Unemployment spells are censored at 240 months. This affects only a very small number of observations. Unemployment spell reconstruction yielded an initial sample of 5137 working-age men observed for a total of 953 391 months and 9232 working-age women observed for a total of 246 746 months. Out of this sample, about a third is lost due to missing information on spell duration and on variables used to match with LFS data, especially information about last occupation. A further third of the sample is lost due to missing information on risk preferences (which are only asked in wave 1). Further cases are lost due to missing information on covariates, especially income information resulting in a final sample of approximately 2500 women and 1800 men. This is the sample used to carry out all the multivariate[4] analyses.

3.2 Measuring hours and pay variability

Unstable jobs with unpredictable hours and are not necessarily straightforwardly identified in survey data. The LFS collects information about varying weekly hours, but this includes salaried employees and overtime work. Information about pay variability is collected only for a very small subset of respondents. Finally, a question about 'flexible work arrangements' including zero-hours contracts is asked only in the Spring and Autumn quarters. To balance the need for accuracy and comprehensiveness, a job is identified as unstable if it has variable weekly hours or variable pay and is hourly paid.[5] An alternative specification using part-time status instead of hourly pay yielded very similar results (see Tables C and D in the Supplementary material).

The local labour market a person out of work is facing is approximated by crossing region (13 categories), occupation (Standard Occupational Classification- SOC two digits) and year, resulting in a total of 3000 cells. Within each cell, the share of employees reporting working in an unstable job was calculated and then merged back into the UKHLS, using the occupation of the last reported job. Using a three-digit measure of occupation yielded a very similar measure but resulted in a slightly lower sample size as some cells could not be matched. Using a finer occupational measure also has the disadvantage of decreasing cell sample size, and thereby lowering the reliability of the estimated shares.

3.3 Empirical estimation

To test hypotheses H1 and H2, we estimate a series of discrete time survival models where the probability of transitioning to employment is modelled as a function of the prevalence of unstable jobs (i.e. jobs with variable hours or pay) the job seeker faces in her local labour market. Discrete time models[6] are suitable for dealing with time to event data where information about time is interval censored. In this case, we only have information about the

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4 Note the sample used to draw survival curves includes cases lost in later analysis due to missing covariates.

5 VARYHR==1 | YLESS==1 | YMORE==1 | YVARY99==1) & HOURLY==1.

6 Another very popular class of models used to model time to event data is Cox regressions. Their popularity is due to the fact they do not make any assumptions about the shape of duration dependence; however, they are not well suited for discrete data as they rely on the ordering of events for identification. In discrete time, the ordering of events is not well defined due to the presence of 'ties', i.e. more than one event taking place in the same discrete time unit.

month, not the exact date an unemployment spell ends. Discrete time models also have the advantage they can easily incorporate time varying covariates and are straightforward to estimate (Singer and Willet, 2003; Box-Steffensmeier and Jones. 2004; Mills, 2011).

The local labour market is defined by region, occupation and year. The estimates of interest are obtained comparing job finding probabilities for unemployment individuals in local labour markets with different shares of unstable jobs. If unstable jobs help boost employment, we expect, all things equal, individuals in labour markets with a higher prevalence of unstable jobs to have an increased probability of finding employment and shorter out of work spells.

More specifically, we estimate complementary log–log models of the following form, separately for men and women:

$$\log\bigl(-\log(1-h_{it})\bigr) = \alpha + \beta \text{sh\_US}_{it} + \gamma_1 d_{it} + \gamma_2 d_{it}^2 + \delta X_{it} + \theta_t + \eta_a + \lambda W_{it}$$

where h_{it} represents the hazard of moving from non-employment to employment for individual i at time t, sh_US represents the share of unstable jobs in the local labour market of individual i at time t, d_{it} represents the log of time spent in non-employment (i.e. duration), X is a vector of individual time-varying characteristics, W is a vector of time-varying local labour market characteristics, θ_t are year fixed effects and η_a are region fixed effects. Complementary log–log models are especially suited for interval censored data such as ours as the estimated coefficients do not depend on the size of the interval.

The vector X includes a large number of individual characteristics that might be relevant for transitioning from non-employment to employment, including age(quadratic), education (four categories), number of children (four categories), having children under five (0/1), being a single parent (0/1), suffering from a long-term illness or disability (0/1), a measure of risk aversion (11 point scale) and the income of the partner (transformed using the inverse hyperbolic sine[7]). Including individual characteristics ensures that compositional differences between labour markets with high and low shares of unstable jobs are not driving results.

The vector W contains two local labour market characteristics: the mean level of wages and the growth rate relative to overall employment. The first is included to control for any spuriousness induced by a correlation between wage levels and hours and pay instability. The relative growth rate is included to account for structural changes in the labour market correlated with the level of pay and hours instability.

To explore heterogeneity in effects and test hypothesis H2, the last set of models contain interactions with non-employment duration and education:

$$\log\bigl(1-\log(1-h_{it})\bigr) = \alpha + \beta \text{sh\_US}_{it} + \gamma_1 d_{it} + \gamma_2 d_{it}^2 + \delta X_{it} + \theta_t + \eta_a + \lambda W_{it}$$
$$+ \sum_{e=1}^{3} \phi_e \text{sh\_US}_{it} * D\_e_{it} + \psi \text{sh\_US}_{it} * d_{it}, \text{ where } D_{eit}, \text{ e}$$
$$= 1, \ 2, \ 3 \text{ represent three education dummies.}$$

Table 1 shows descriptive information about the variables used in the models. Mean unemployment duration is skewed by very long spells present in the data. Median unemployment duration is 20 months for women and 12 months for men. Even so, it is clear the sample is somewhat skewed towards longer spells. This is to be expected given the inclusion

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7   log[x+sqrt(1+x^2)]; this transformation has similar effects to taking the log but can be applied to variables that contain zero and negative values.

Table 1 Descriptive statistics

Variable	Women		Men	
	Mean	SD	Mean	SD
Non-employment duration (months)	42.75	50.21	26.68	36.84
Share unstable jobs	19.56	8.61	20.35	8.88
Age, years	39.58	9.99	42.19	12.58
Number of children	1.40	1.13	0.60	1.00
Number of children <5 years	0.47	0.68	0.19	0.50
Single parent	0.19	0.39	0.03	0.16
Education				
HE graduate	0.25	0.43	0.21	0.41
A-levels	0.17	0.37	0.19	0.39
GSCEs	0.28	0.45	0.27	0.44
Other/no qualification	0.29	0.46	0.33	0.47
Poor health (0/1)	0.33	0.47	0.40	0.49
Risk aversion	5.29	2.60	4.54	2.77
Income of partner	406.54	720.03	375.47	657.14
Average hourly pay in the local labour market	9.86	3.89	10.13	3.73
Local labour market growth	0.0001	0.55	−0.0228	0.53
N (observations/months)	113 143		39 108	

Note: Average partner income includes cases with zero income; N refers to the number of observations (months) with a valid value on all variables in the table.
Source: Author's calculations using UKHLS and LFS.

of periods spent out of work for family care and very short unemployment spells being more likely to be missed by retrospective questioning.

4. Results

We start by reviewing the prevalence and characteristics of unstable jobs with variable hours and pay using the LFS dataset. Figure 1 shows the trend in the proportion of jobs with variable hours and pay. For reference, trends in the proportion of low-paid jobs—defined as jobs with an hourly pay below 2/3 of median—is shown on the right-hand axis. The proportion of jobs with variable hours and pay fell from 14% in 2009 to around 12.5% in 2012. Subsequently, it started rising again until 2016 and fell again in 2017 and 2018, in line with low-paid jobs in general. The observed patterns suggest that jobs with variable hours and pay are sensitive to the economic cycle. They are more easily destroyed during recessions and grow in the early phases of economic recovery.

Figure 2 shows that unstable jobs are less well paid. On average, workers in these jobs earn 20–30% less compared to workers in standard jobs. The difference is mainly due to an hourly pay penalty of about 20–25% and only to a very small extent due to differences in working hours. Notably, while unstable jobs are more often classified as part-time (38% versus 25%), workers report only around two fewer hours worked per week (34.5 versus 36.3). The wage differential between unstable jobs and standard jobs increased during the
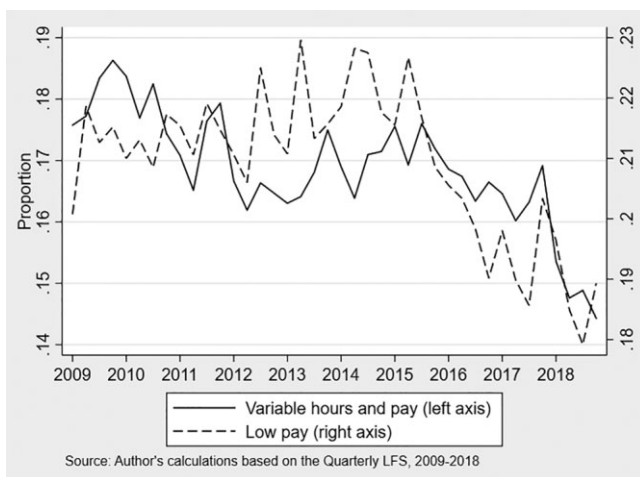
Figure 1 Trends in the share of employees in jobs with variable hours and pay, 2009–2018.
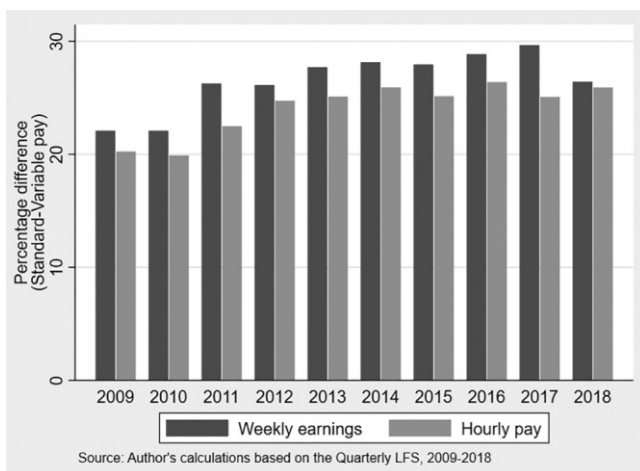

Figure 2 Wage differentials between jobs with standard and variable pay.

decade under study and always exceeded 20%. Workers in unstable jobs are more likely to be single, older, less educated and have fewer dependent children. There are no notable gender differences.

Figure 3 plots the average share of unstable jobs by observed unemployment durations using LFS data. Contrary to expectations, workers who have been unemployed for longer face local labour markets (defined by region, occupation and year) that have higher shares of unstable jobs. This association is of course cross-sectional and could be driven by certain regions/occupations having both fewer jobs (and thus longer unemployment durations) and a higher prevalence of unstable jobs. To obtain credible estimates of the causal effect of
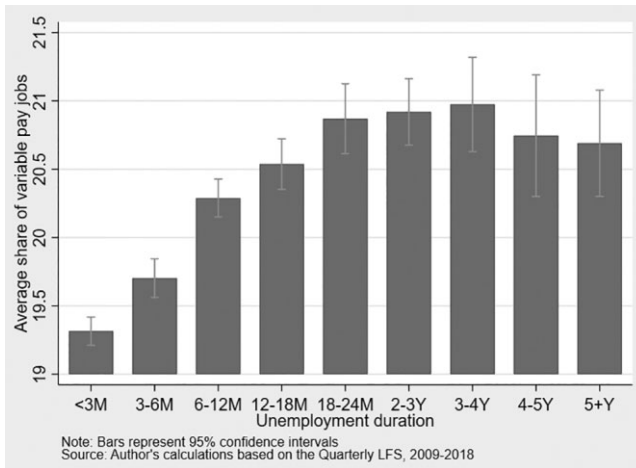
Figure 3 Average group level earnings instability by unemployment duration.

unstable jobs on non-employment duration, we turn to longitudinal UKHLS data where we can follow individuals out of work for long periods of time.

4.1 Flexible jobs and non-employment duration: some descriptive results

Survivor functions plotting the probability to remain non-employed against time out of work are graphed in Figure 4 separately for men and women. In the case of women, the cumulative probability to remain non-employed declines significantly in the first 2 years of non-employment, after which the fall in survival rates slows down somewhat. The survivor functions for women in labour markets with the lowest and highest incidence of unstable jobs cross. At shorter non-employment durations, women facing a labour market with a higher share of unstable jobs are more likely to remain non-employed. This is in contrast with the expectation that unstable jobs enable women to find employment more quickly. At very long non-employment durations, the pattern is reversed: women are more likely to transition out of non-employment when their local labour market has a higher share of unstable jobs.

The survivor functions for men, shown in the right-hand panel, fall more steeply compared to those of women. Overall, survival rates are much lower. Approximately 75% of spells end before duration reaches two and a half years. For all durations, men in labour markets with fewer unstable jobs have shorter non-employment spells, contrary to Hypothesis 1.

Hypothesis 2 suggests that flexible jobs should be especially helpful in supporting the employment of low-skilled workers. A first assessment of this hypothesis is provided by the survivor functions graphed in Figure 5. They plot the cumulative probability to remain non-employed by time out of work and share of unstable jobs in the local labour market for individuals whose highest educational qualification is General Certificate of Secondary Education (GCSE) or lower (corresponding to 16-year-old school leavers). The expectation that low-skilled women are more likely to find a job in more flexible labour markets with a
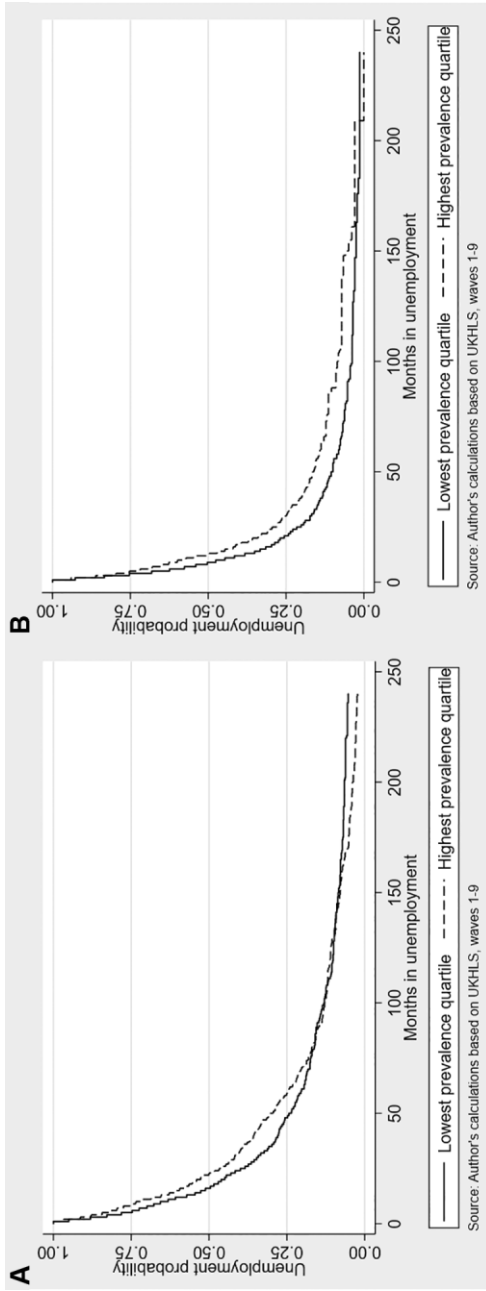
Figure 4 (A) Probability to remain unemployed by prevalence of jobs with variable hours/pay in the local labour market: All women. (B) Probability to remain unemployed by prevalence of jobs with variable hours/pay in the local labour market: All men.
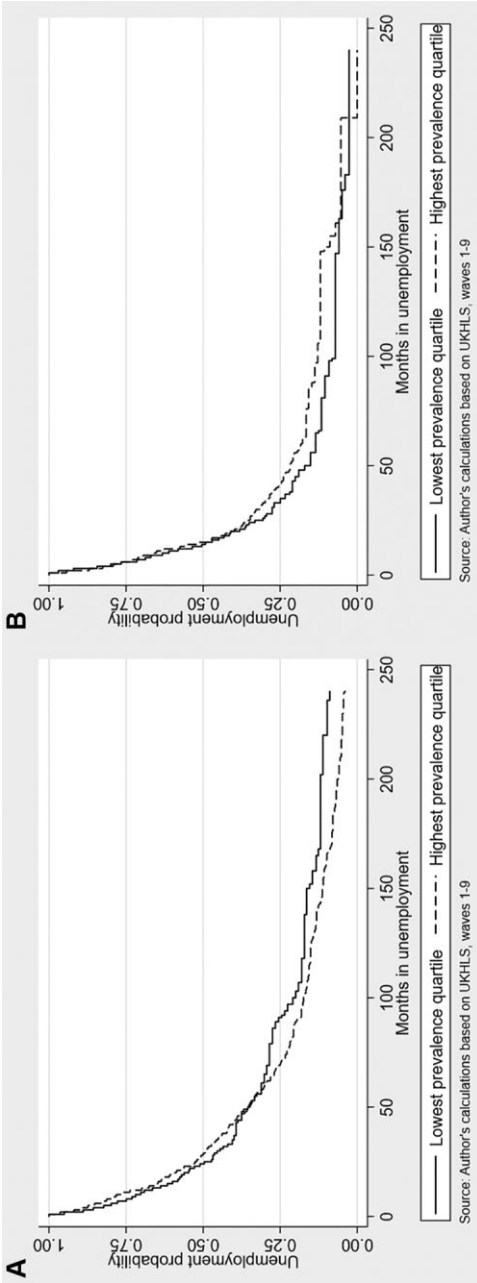
Figure 5 (A) Probability to remain unemployed by prevalence of jobs with variable hours/pay in the local labour market: Low educated women. (B) Probability to remain unemployed by prevalence of jobs with variable hours/pay in the local labour market: Low educated men.

higher share of unstable jobs is confirmed only at very long non-employment durations. At shorter durations, the difference is negligible or even reversed. In the case of low-educated men, the probability to remain non-employed is actually larger in labour markets with a higher share of unstable jobs.

4.2 Evidence from discrete time models

Descriptive results generally do not support Hypothesis 1 and provide only very limited support for Hypothesis 2. However, it is possible that compositional differences between regions and occupations with high and low incidence of unstable jobs obscure the relationship with non-employment duration. To account for this possibility, we estimate a discrete time duration model where the probability to transition from non-employment to employment is modelled as a function of the share of unstable jobs in the person's local labour market. We estimate three sets of models separately for men and women. Model A contains controls for non-employment duration (entered as a quadratic), demographic characteristics: age in years measured since turning 22 (quadratic), education (four categories), number of children under 14 years, having children under 5 years in care (0/1), single parenthood status (0/1), poor health (0/1), an individual measure of risk aversion and partner's income (transformed using the inverse hyperbolic sine). Model A fully exploits the variability in the local labour market flexibility measure. However, it is possible that regions and occupation differ in unobserved ways and these differences are driving the observed relationship between non-employment duration and labour market flexibility. To address this issue, Model B expands the set of controls by including region and year fixed effects, the average wage level by region, year and occupation as well as a variable measuring whether the occupation by region by year cell is expanding or contracting. The latter two variables are included to account for local labour market trends that might be impacting on non-employment duration. For example, a negative shock to the local economy might be simultaneously increasing non-employment duration and the share of unstable jobs, thereby leading to a spurious negative relationship. Finally, Model C includes interactions between the main variable of interest and non-employment duration and education. With Model C, we wish to test whether vulnerable categories such as the long-term non-employed or the low-skilled benefit disproportionately from unstable jobs being available. Tables 2 and 3 below show the coefficients of interest. A full set of results is available in Tables A and B in the Supplementary material.

The share of unstable jobs has no effect on women's non-employment duration in the first two models. The estimated coefficients are both statistically insignificant and very close to zero in substantive terms. Model C introduces, in addition to the main effect, interactions with non-employment duration and education. The main effect—corresponding to graduates who have been out of work for 1 month—becomes negative whereas the interaction term with duration is positive and significant. None of the interaction terms with education are statistically significant.

To gain a better understanding of the patterns of variation, Figure 6 plots average marginal effects (AMEs) by education level and duration of non-employment. To make the interpretation easier, the plotted AME correspond to a change of 1 SD in the share of unstable jobs in the person's local labour market. The graphs show that for women with a graduate degree the share of unstable jobs actually has a negative effect on the probability of transitioning from non-employment to employment at short durations. The effect is small, a 0.5–0.6 percentage points change corresponding to a change of 1 SD, but statistically significant.

Table 2 Estimated coefficients from a clog–log discrete time model of non-employment duration: Women

	Model A	Model B	Model C
Share of unstable jobs	−0.002	−0.001	−0.0245*
	(0.0038)	(0.006)	(0.011)
Share of unstable jobs			0.007*
X unempl. duration			(0.003)
Share of unstable jobs			
X education (ref.cat tertiary)			
X A-levels			0.004
			(0.011)
X GSCE			0.003
			(0.010)
X Other/no qualifications			0.015
			(0.013)
Individual characteristics	Yes	Yes	Yes
Region and year fixed effects	No	Yes	Yes
Local labour market wages and employment	No	Yes	Yes
No. of spells	2488	2443	2443
No. of individuals	1920	1892	1892

Note: Coefficients are on a clog–log scale; SE in parenthesis, *$P < 0.05$.
Source: Author's calculations based on UKHLS, Waves 1–9.

As non-employment duration increases, this effect disappears. In the case of women with no qualifications, the share of unstable jobs has little impact on their probability to move into a job, irrespective of how long they have been out of work.

Table 3 displays estimated coefficients from regressions for men. The share of unstable jobs has no effect on the probability of leaving non-employment for a job in any of the three models. The coefficients are very close to zero and statistically insignificant in Models A and B. In Model C, the main effect is slightly larger and positive bust still very far from achieving statistical significance. The interaction terms with non-employment duration and education levels are insignificant as well.

Figure 7 plots AMEs corresponding to a change of a 1 SD by non-employment duration and education level. Results confirm that there is virtually no difference in the impact of the share of unstable jobs by education. At shorter durations, the effect is positive but insignificant. A 1 SD increase in the share of unstable jobs increases the probability to move from non-employment to employment by around 0.4 percentage points for men who have been out of work for 3 months or less. As non-employment duration increases, the effect declines and reaches actual zero at 24 months. None of the estimated AME are, however, different from zero.

Other covariates have the expected effects (see results in Tables A and B in the Supplementary material). Non-employment duration is negatively related to the probability of finding a job and this effect increases over time. Poor health, a lower education and being

Table 3 Estimated coefficients from a clog–log discrete time model of non-employment duration: Men

	Model A	Model B	Model C
Share of unstable jobs	−0.005	0.005	0.014
	(0.004)	(0.006)	(0.012)
Share of unstable jobs X unempl. duration			−0.005
			(0.003)
Share of unstable jobs X education (ref.cat tertiary)			
X A-levels			0.017
			(0.011)
X GSCE			−0.006
			(0.010)
X Other/no qualifications			0.005
			(0.003)
Individual characteristics	Yes	Yes	Yes
Region and year fixed effects	No	Yes	Yes
Local labour market	No	Yes	Yes
wages and employment			
No. of spells	1822	1765	1765
No. of individuals	1317	1284	1284

Note: Coefficients are on SE in parenthesis; *P <0.05.
Source: Author's calculations based on UKHLS, Waves 1–9.

Note: Bars represent 95% confidence intervals
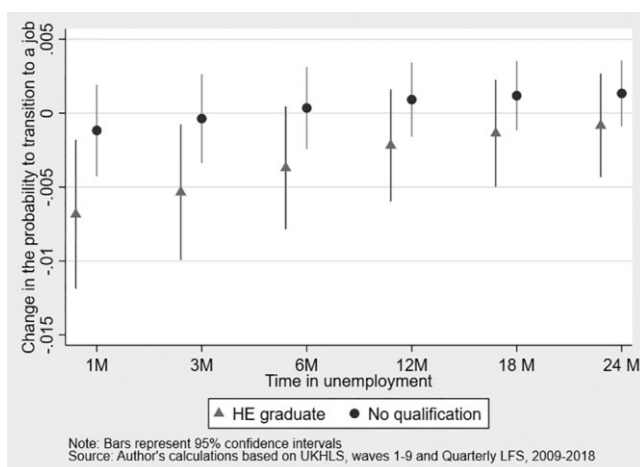Source: Author's calculations based on UKHLS, waves 1-9 and Quarterly LFS, 2009-2018

Figure 6 Average marginal effects of the prevalence of variable hours and pay jobs on the probability to transition from unemployment to employment: Women.

more risk averse are associated with a lower probability of finding employment both in the case of men and women, whereas having children under the age of 5 years in case has a negative effect only in the case of women.
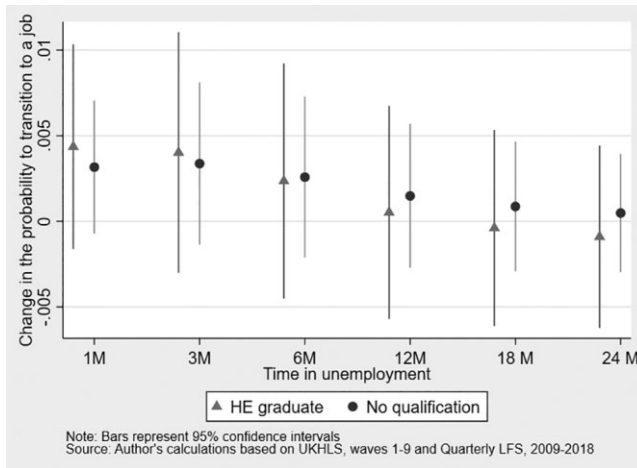
Figure 7 Average marginal effects of the prevalence of variable hours and pay jobs on the probability to transition from unemployment to employment: Men.

Interestingly enough, the average local labour market wage has a strong positive effect on the job finding probabilities of men but no effect of the job finding probabilities of women. These results suggest that women's labour supply is less sensitive to their own wages, consistent with a secondary earner status. While measures of explained variation designed specifically for discrete time survival data are not available, Royston's proposed index (Royston, 2006) based on a Cox specification suggests that models explain about a quarter of the variation in the case of women and around a seventh in the case of men (see Table E in the Supplementary material).

4.3 Robustness checks

Discrete time models are vulnerable to bias if unobserved heterogeneity is present. Estimated coefficients can be biased downwards even if unobserved heterogeneity is not correlated with the predictor of interest at the start of the spell. In this case, the effect of the share of unstable jobs could be underestimated. To investigate this possibility, we have estimated models incorporating a discrete mixture distribution with two points of support, first proposed by Heckman and Singer (1984). Results with and without unobserved heterogeneity are shown in Table 4 below. In the case of women, we find that unobserved heterogeneity is important in explaining the probability to move into employment but does not affect the estimate of interest. The estimated coefficients for the share of unstable jobs remain statistically insignificant and very close to zero. In the case of men, the models with unobserved heterogeneity did not converge.[8]

Since there is no agreed upon definition of unstable jobs, a separate concern relates to the robustness of results to alternative definitions. The main analysis defined unstable jobs as hourly paid jobs with varying weekly hours or pay. Since the majority of short-hours jobs

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8 Non-convergence is likely due to the relatively small number of observations, as well as a lack of repeated spells for the same individual in the case of men.

Table 4 Estimates of the impact of the share of unstable jobs on the probability of finding employment with and without unobserved heterogeneity: Women

	Without unobs. het			With unobs. het		
	Model A	Model B	Model C	Model A	Model B	Model C
Share of unstable jobs	−0.002	−0.001	−0.025*	0.004	0.008	−0.016
	(0.0004)	(0.006)	(0.011)	(0.005)	(0.008)	(0.015)

Note: Unobserved heterogeneity is included as two discrete mass points (i.e. constants) in a clog–log model.
Source: Author's calculations using UKHLS and LFS.

are considered to be part-time (Beatson, 2015), a different possibility is to define unstable jobs as part-time jobs with varying weekly hours or pay. This definition results in somewhat lower estimates of the share of unstable jobs. Nonetheless, results for the impact on non-employment duration remain substantively unchanged (see Tables C and D in the Supplementary material).

5. Discussion

Unstable jobs that have variable hours and pay and do not guarantee workers an income stream they can live on are often justified on the grounds they support employment creation, reduce non-employment and enable non-core workers to find a job. The empirical results in this article do not support this view. The share of unstable jobs in a non-employed person's local labour market had no effect on the probability of transitioning from non-employment to employment. This result holds for both men and women and is robust to a variety of specifications, including controls of local labour market trends, unobserved heterogeneity and an alternative specification of unstable jobs. At the aggregate level, the correlation between the share of unstable jobs in the local labour market and employment growth using LFS data is negligible at 0.02, again casting doubt that unstable jobs boost employment creation.

There is no evidence that less employable groups such as the low-educated and/or the long-term unemployed benefit either. In one specification, higher educated women who had been out of work for short periods of time were less likely to find a job when the share of unstable jobs in their local labour market increased. While this result was not statistically significant when unobserved heterogeneity was introduced in the model, it suggests that unstable jobs may be avoided by job-seekers who can afford to wait.

The lack of employment effects may be related to the institutional context. The UK already has one of the most flexible labour markets among OECD countries (OECD, 2013). In a context where employers face low hiring and firing costs and few legal impediments to reorganizing their personnel and business practices, the benefits of further increases in labour flexibility may be relatively small. Further research is needed to understand the role of labour market institutions in moderating the effect of unstable jobs on employment.

From a worker's perspective, instability in hours and earnings has clear costs. Qualitative interviews with workers in unstable jobs suggest the unpredictability in hours and income imposes a significant burden creating family strain and hindering the management of household finances (Schneider and Harknett, 2019). Similarly, experimental

research has shown that workers seek to avoid variability in hours and earnings they have
no control over (Mas and Pallais, 2017; Avram, 2020). Nevertheless, workers will accept
unstable jobs if they feel they have few alternatives (Henly *et al.*, 2006; Pennycook *et al.*,
2013). In fact, in some cases, wage insecurity may incentivize low-paid workers to work more
in an attempt to improve their income and insure against future negative income shocks
(Kuhn and Lozano, 2008). Most low-paid workers do not have the savings or alternative
income streams to support long job searches. Recent welfare policy clearly emphasizes job
search and moving into employment as soon as possible. Job seekers are penalized if they
refuse any kind of employment. In addition, the increased use of sanctions, restricted eligi-
bility and cuts in the real value of benefits make welfare a non-viable or unpalatable alter-
native. As a result, many low-skilled workers may feel they have no choice but to take up
low-paid, unstable jobs for a living. In this respect, the UK appears to have followed the
US model.

6. Conclusions

Low-paid, low-quality employment has been a significant problem in the UK starting with
the 1980s. More recently, some types of unstable jobs, such as zero-hours contracts have be-
come more common (Adams and Prassl, 2018). Despite the negative effects on workers,
employers and many policy makers have justified the existence of unstable jobs as a way to
facilitate employment creation and enable less employable groups to participate in the la-
bour market.

   This article finds no evidence that unstable jobs are associated with a higher probability
of finding employment, either in the general population or among the low-educated and
the long-term unemployed. The results are consistent with much of the literature on labour
market flexibility and unemployment but not with the conventional wisdom based on neo-
classic economic models of labour demand and supply. Such models have long dominated
the economic thinking among UK and European policy makers and have helped push
labour market deregulation despite the lack of clear empirical evidence it supports
employment growth. The development of alternative theoretical models that incorporate
aspects such as worker bargaining power (Dosi *et al.*, 2018) should be a priority for
future research.

Funding

Supplementary material

Supplementary material is available at *SOCECO Journal* online.

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