The impact of atypical employment on individual wellbeing: evidence from a panel of British workers

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The impact of atypical employment on individual wellbeing: evidence from a panel of British workers

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Abstract

This study explores the relationship between individual wellbeing and atypical employment, which includes both temporary and part-time employment schemes. Individual wellbeing is measured in terms of subjective indicators of mental health, general health status, life satisfaction, and job satisfaction. It addresses four questions: (1) Are workers on a temporary contract more likely to report poor health and poor life and job satisfaction than those who are employed in permanent jobs? (2) Is this the case for part-time workers compared to those who are in a full-time job? (3) Do changes in employment profiles (e.g., from a fixed-term contract to a permanent job, or from part-time employment to full-time employment) affect individuals' health and life satisfaction? (4) Are there differences in such relationships between men and women? To answer these questions, logistic regression models were used to analyse a panel of almost 7000 male and female workers from the first 10 waves of the British Household Panel Study, 1991-2000. Controlling for background characteristics, atypical employment does not appear to be associated with adverse health consequences for either men or women, when both health and employment are measured at the same time. However, there is evidence that job satisfaction is reduced for seasonal/casual workers and is higher for part-timers. Taking account of selection issues does not change the general picture: the chances of ill mental and physical health and low life satisfaction are unaffected by atypical employment and some of the effects of job satisfaction persist. In addition, very few employment transitions appear to be consequential for a worsening in health outcomes, which tends to be observed in the case of job satisfaction. Although the pattern of results suggests that atypical forms of employment do not have durable adverse health consequences on workers, public policies that aim at improving the working conditions of workers in weak bargaining positions should give special attention to equity issues, including the possible health effects of experience of work in atypical employment arrangements.

Keywords: Atypical employment; General and mental health, Life and job satisfaction, Panel data; Britain

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Introduction

For the past two decades, many commentators have increasingly emphasised the importance of flexibility in the labour market (OECD, 1999). Employers and policy makers have seen labour market flexibility as a means of improving workers' performance and adaptability in the face of technical change and increasing globalisation. Although a few studies document the widespread prevalence of atypical jobs in Britain (Dex & McCulloch, 1995; Booth & Francesconi, 2003), very little research has been done to analyse whether experience of work in such jobs has a positive or negative impact on individuals' physical and mental health (Rodriguez, 2002).

The purpose of our paper is to fill this gap by investigating the extent to which specific forms of atypical work influence a broad range of health measures. In particular, we address the following questions: (1) Are workers on a temporary contract more likely to report poor health and poor life and job satisfaction than those who are employed in permanent jobs? (2) Is this the case for part-time workers compared to those who are in a full-time job? (3) Do changes in employment profiles (e.g., from a fixed-term contract to a permanent job, or from part-time employment to full-time employment) affect individuals' health and life satisfaction? (4) Are there differences in such relationships between men and women? Throughout, and in relation to question (4), we estimate our models separately for men and women, using a large representative sample of employees from the British Household Panel Survey (BHPS), collected annually during the period 1991-2000.[1]

In this study we examine two specific forms of atypical (or marginal) employment. The first refers to temporary employment, which distinguishes individuals who are on a fixed-term contract from those who hold a casual or seasonal job. The second refers to

[1] We do not consider the self-employed in this paper.

part-time employment, and, owing to specific institutional settings that are relevant over our survey period (and discussed below), separately identifies individuals who work 1 to 15 hours a week from individuals who work 16 to 29 hours a week. Not only have these two forms of atypical employment been examined in several previous studies concerning Britain (e.g., Blossfeld & Hakim, 1997; O'Reilly & Fagan, 1998; Dex, 1999; Rodriguez, 2002; Booth, Francesconi, & Frank, 2002; Booth and Francesconi, 2003), but they have also been the focus of recent policy initiatives. Our interest is to determine how such forms of marginal employment are associated with a number of health measures, which have been widely analysed by social and medical researchers (e.g., Clark, Oswald, & Warr, 1996; Darity & Goldsmith, 1996; Theodossiou, 1998; Currie & Madrian, 1999; Frey & Stutzer, 2002; Rodriguez, 2002). These include a mental health indicator derived from the General Health Questionnaire (GHQ), a measure of perceived general health status, a subjective measure of life satisfaction, and a subjective indicator of job satisfaction.

Background

Under the European Union (EU) directive 1999/70/EC put into force in the United Kingdom in October 2002, firms are required to offer fixed-term workers the same treatment with regard to pay and benefits (including, for example, holiday pay and maternity benefits) as permanent workers, along with the same rights to be protected against discrimination. Part-time workers are covered by similar EU directives (1997/81/EC and 1998/23/EC).[2] Temporary employment and part-time employment therefore represent one of the prime targets of recent public policies aimed at *equal pay*

[2] For a comprehensive record of the recent EU employment-related directives see the Department of Trade and Industry site (http://www.dti.gov.uk/er/europe/directives.htm).

treatment. These policies were partly motivated by the observation that, across Europe, temporary workers and part-timers had to face less favourable pay conditions than their permanent and full-time counterparts. But little is known about the *non-monetary* situation of workers who are employed in atypical jobs.[3]

Yet knowing how such jobs affect individuals' health (which is arguably one key non-monetary facet of workers' life) is also important both for social analysts and health practitioners as well as for policy makers and employers. Indeed, this knowledge is likely to provide some insights into key equity considerations, which would complement the efficiency arguments advocated by those who encourage a greater flexibility in the labour market. In addition, a better understanding of the relationship between health and atypical employment is necessary to inform public policy debates over questions such as the appropriateness of work-related disability transfers, or the desirability of mandating minimum insurance coverage for psychiatric services in highly unstable jobs. Certain private sector decisions (e.g., the funding of employee assistance programs) also depend on the degree to which ill health impairs workplace performance, relative to the cost of implementing such programs.

In theoretical terms, however, the effect of atypical employment on health outcomes is ambiguous *a priori*. Arguably, it depends on individuals' preferences, expectations, and financial constraints. Some people may prefer 'stable' jobs, which guarantee a certain flow of income but require a full-time attachment to the labour market. Others (such as the young, or the old, or women with young children) may prefer more flexible work arrangements, even if these pay less or are less secure. To the extent that individuals voluntarily select marginal jobs, we may expect that atypical employment does not have

[3] Exceptions are Maier (1991), Snider (1995), Hudson (1999).

adverse health consequences, or it may even have positive health effects. For example, Hakim (1997) argues that most part-time workers (especially women) prefer to work part time rather than full time. Other social researchers have however stressed the involuntary nature of part-time employment and its costs (e.g., Burchell, Dale, & Joshi, 1997), as well as the costs associated with temporary work (Booth, Francesconi, & Frank, 2002). Therefore, from a theoretical viewpoint, we cannot unequivocally say whether the health impact of atypical jobs is detrimental, or beneficial, or neutral. It is precisely this impact that will be the focus of our empirical investigation.

Figure 1 plots the trends over the ten years between 1991 and 2000 in the four types of atypical employment that are of interest in this study for men (panel (a)) and women (panel (b)).[4] The values in each graph are proportions expressed as a percentage of all employees (including permanent and full-time workers). Compared to men, women are slightly more clustered in both types of temporary employment (about 9 per cent versus 6 per cent), and substantially more concentrated in the two types of part-time employment (around 35 per cent versus 5 per cent).[5] Interestingly, we cannot detect any remarkable trend for men (except for a modest increase in the proportion of workers on fixed-term contracts in the middle of the 1990s, perhaps as a delayed response to the recession that affected the economy few years earlier). But we do observe a steady decline in the proportion of women working 1 to 15 hours a week, which is mirrored by a stable increase in the proportion of women working 16 to 29 hours a week (panel (b)). This trend emerges

[4] The data source used to construct this figure is the BHPS. A detailed description of the dataset and the atypical employment variables is given below.

[5] The small decline in the percentage of men and women in seasonal/casual jobs in 1999 and 2000 is due to a change in definitions. In those two years, the BHPS has in fact distinguished workers in agency temping from workers in seasonal/casual jobs and fixed-term contracts. To keep the data comparable over all ten years, we arbitrarily chose to group agency workers with those on fixed-term contracts, thus over-representing them (and under-representing workers in seasonal-casual jobs). None of our results are affected by this aggregation, that is, we obtained the same results as those reported below when agency workers in the 1999 and 2000 waves of data were grouped with seasonal/casual workers.

over the entire period and particularly after the introduction of the Working Families Tax Credit and other benefits in 1998-99, which were intended to provide support for low wage families with children who worked at least 16 hours per week (Blundell, 2001).

These are some of the salient institutional and macroeconomic features that render the background to this research. We now turn to some of the previous studies upon which we develop our contribution.

Related literature

There is a huge amount of work that has documented the link between personal wellbeing and unemployment (see, among others, the excellent surveys by Jin, Shah, & Svoboda, (1995), Darity & Goldsmith (1996), and Machin & Manning (1999)). Both cross-sectional and panel data analyses reveal that unemployment is systematically associated with a lower level and deterioration of physical and mental wellbeing. An issue that the research in this area has to face is that of *reverse causation*, whereby it is not the case that the experience of an unemployment spell leads to detrimental health outcomes but rather the opposite, that is, people with poorer health are more likely to work less and exit out of the labour market (Hamilton, Merrigan, & Dufresne, 1997; Kerkhofs & Lindeboom, 1997; Theodossiou 1998; Wadsworth, Montgomery, & Bartley, 1999; Strandh, 2000).[6] Similar considerations may apply to the case of atypical employment.

For atypical employment, however, the empirical evidence related to its health effects is scant. Ferrie and colleagues (1998, 2001) document a positive association between job insecurity and adverse psychological changes for a cohort of white-collar

[6] Indeed, a well-established literature is concerned with the impact of health on employment, productivity and earnings (Bartel & Taubman, 1986; Ettner, Frank, & Kessler, 1997), as well as the impact of mental health on criminal activity (Link, Andrews, & Cullen, 1992) and divorce (Bartel & Taubman, 1986). For up-to-date reviews, see Currie & Madrian (1999), and Frank & McGuire (2000).

British civil servants. Analysing a sample of managers and employees from twenty UK firms, Burchell, Ladipo, & Wilkinson (2001) report a strong link between feelings of job insecurity and stress, and find that, for employees, such link gets even stronger as their exposure to insecurity increases. One problem with these studies is that job insecurity may be felt not only by workers in temporary or part-time jobs but also by those on full-time permanent contracts, if the fear of instability has become an endemic feature of the labour market. In addition, we do not know how these findings can be generalised to workers in other sectors and firms of the British economy. In the case of part-time employment, a great deal is known about the potential effect of health on hours of work and wages (see the review in Currie & Madrian, 1999), but our understanding of the opposite effect (that of part-time employment on health) is comparatively limited.

The paper most closely related to ours is that of Rodriguez (2002). This study finds a small and insignificant association of poor health status with marginal employment in Britain (but larger and more precisely measured effects in the case of Germany). Despite the fact that Germany is not examined here, we extend Rodriguez's work for Britain in a number of ways. First, although the data source (the BHPS) is the same, we use more waves of data: this should provide a more up-to-date picture of the relationship between health and atypical employment. Second, our regressions include a greater number of controls. Some of the variables we use (e.g., occupation and industry) are meant to 'soak up' part of the correlation between health measures and atypical employment that would be otherwise only spurious. Other variables (e.g., the unemployment/vacancy ratio) are intended to approximate the local labour market conditions in which workers operate and that can affect their health status independently of the specific type of job they hold. Finally, using the employment and job history files collected by the BHPS in 1992 and

1993 respectively, we also include people's entire work histories summarised by their total work experience in full-time and part-time employment. Several studies have shown that individuals' wellbeing is strongly related to their labour force histories (Goldsmith, Veum, & Darity, 1996; Clark, Georgellis, & Sanfey, 2001), and failure to control for such trajectories may lead to biased estimates of the effect of atypical employment.

A third important extension to Rodriguez's (2002) study is that we analyse four measures of health status rather than one. To the extent that these measures cover different aspects of individual wellbeing (i.e., their correlations are less than perfect), we are likely to capture more diverse components of workers' health and have a more sophisticated understanding of how atypical employment influences workers' life conditions (Currie & Madrian, 1999). Fourth, our analysis tries to deal with the endogeneity (or selection) problems that plague most studies relating labour market activity and health more extensively than previous work did. The issue of reverse causality mentioned above in relation to the health/unemployment research is an example of such problems. Another example is given by the mutual association that individuals' health and atypical employment patterns may share with some unmeasurable factors. For instance, individuals who have relatively low job aspirations may prefer a temporary or part-time commitment to the labour market while being able to do other things. Therefore, the differences in health outcomes across workers may simply reflect differences in their unobserved (or unobservable) job aspirations rather than differences in the type of their employment contract or hours of work. We address such issues with five different methods (described below), which, albeit not perfect, are meant to provide us with sensible robustness checks of our benchmark results.

Data and methods

Estimating sample and variables

The data used in our empirical analysis come from the first ten waves of the British Household Panel Survey (BHPS), conducted over the period 1991-2000. The BHPS collects information on a nationally representative random sample of private households in Britain, with interviews first conducted during the autumn of 1991 and annually thereafter.[7] Our analysis is based on the sample of men and women who were born between 1940 and 1984 (thus aged at least 16 and at most 60 in the last wave of the selected data). They had to report positive hours of work, leave school and be employed at the time of the survey, and be neither in the armed forces nor self-employed.[8] We have an unbalanced panel comprising a longitudinal sample of 3184 men and 3570 women, with 15633 and 16831 person-wave observations, respectively.[9]

As mentioned above, we analyse four dependent variables. These are:

[7] The achieved wave 1 sample covered 5,500 households and corresponds to a response rate of about 74 percent of the effective sample size. At wave 1, about 92 percent of eligible adults, i.e., almost 10,000 individuals, provided full interviews. The same individuals are re-interviewed each successive year, and if they split off from their original households to form new households all adult members of these households are also interviewed. Similarly, children in the original households are interviewed when they reach 16 years of age. Thus, the BHPS sample remains broadly representative of the population of Britain as it changes over time. Of those interviewed in the first wave, 88 percent were successfully re-interviewed at wave 2 (Autumn 1992), and subsequent wave-on-wave response rates have consistently been above 95 percent. Detailed information on the BHPS can be obtained at http://www.iser.essex.ac.uk/bhps/index.php.

[8] Although our selection restricts the sample under analysis, it was designed to minimise differences in career and employment characteristics (and possibly health status) between employees, and excluded from the present analysis self-employed, military personnel and unemployed (individuals who presumably possess different labour market experiences). The inclusion of such other groups of workers is left for future research.

[9] These figures refer to the samples used to estimate the mental health outcome (for which we have information in each of the 10 waves of data). Notice that 1112 (or 35 per cent of the total sample of) men and 1509 (or 42 per cent of the total sample of) women in our estimating samples are in all 10 waves of data. In the case of job satisfaction (for which we, again, have information over all 10 waves) the total number of men and women are very similar (3200 and 3586, respectively). For the other two measures, i.e., general health and life satisfaction, the sample sizes are smaller, because such variables have not been collected over the entire sample period (see the discussion below and footnote 14).

1. *Ill mental health*, which takes the value one if an individual's score in the General Health Questionnaire (GHQ, 12-point measure) is greater than or equal to four, and zero otherwise (Goldberg, 1972).
2. *Poor general health*, which takes the value one if an individual reports that his/her general health is 'poor' or 'very poor', and zero if he/she reports 'fair', 'good' or 'excellent' health.[10]
3. *Low life satisfaction*, which takes the value one if an individual reports that his/her overall satisfaction with life is three or lower on a scale ranging from 1 to 7 (where a value of 1 corresponds to 'not satisfied at all' and a value of 7 corresponds to 'completely satisfied'), and zero if the individual reports a score of four or greater.[11]
4. *Low job satisfaction*, takes the value of one if an individual reports that his/her overall satisfaction with the present job is three or lower on a scale ranging from 1 to 7 (where a value of 1 corresponds to 'not satisfied at all' and a value of 7 corresponds to 'completely satisfied'), and zero if the individual reports a score of four or greater.[12]

Figure 2 plots the trends over the survey period in these four health outcomes for men (panel (a)) and women (panel (b)). We observe a slow but steady upward trend in ill

[10] In the ninth (1999) wave, the BHPS changed the wording of the question used to obtain information on general health. In waves 1 through 8 and in wave 10, the form of the question was: 'Compared to people of your own age, would you say that your health has on the whole been … (5-point scale: excellent, good, fair, poor, very poor)?'. In wave 9, instead, there is no reference to people of comparable age, and the question is: 'In general would you say your health is ... (5-point scale: excellent, very good, good, fair, poor)?'. Because of the different wording and the different scales, the 1999 data are not comparable to the data from the other waves, and are therefore not used in our analysis.

[11] The first time this question was asked in the BHPS was in the sixth wave (1996). It has been asked in all the successive waves under study.

[12] The main reason why we dichotomised all our outcomes is simplicity, so that the estimation results can be easily reported and discussed. The same patterns of results emerge when we used linear regressions for the GHQ measure and ordered logit regressions for the other three outcomes. But because their presentation is more cumbersome we chose not to report them. In addition, we have experimented with different categorisations of the dependent variables (e.g., we grouped individuals who report 'fair' general health with those with 'poor' and 'very poor' health; or we used 4 rather than 3 as the cutoff defining the low life and low job satisfaction measures) and found results that are qualitatively similar to those reported below. They are therefore not shown.

mental health (from 18 to 24 per cent) for women, while for men, after an initial increase, this trend is substantially stable from 1992 onwards. Stable is also the time pattern of reported poor general health, regardless of sex. The proportion of female workers with low life satisfaction tends to decline first and to increase after 1998, whereas the same proportion for men seems to decline over all the observation period (which, for this health measure, is from 1996 to 2000). For men, the trend in low job satisfaction increases up to 1994, then declines and rises again after 1997: in this way, it appears to track the business cycle, emphasising the link that has been observed between happiness and macroeconomic conditions (Darity & Goldsmith, 1996; Frey & Stutzer, 2002). For women, instead, we notice a small upward trend. The correlations among our four dependent variables are generally low. The highest correlations are those between low life satisfaction and ill mental health (0.38 and 0.32, for men and women respectively). But by and large they are quite small, with the lowest being those between low job satisfaction and poor general health (0.06 and 0.04, for men and women respectively). This suggests that, by analysing all four variables in isolation, we are likely to capture sufficiently different aspects of workers' wellbeing and improve our understanding of the potential effects of atypical employment on health.

As anticipated in the Introduction, the BHPS data allow us to distinguish two aspects of atypical work arrangements, which represent our main variables of interest here. These are:

1. *Temporary employment*, which may be either seasonal or casual work, or work done under contract or for a fixed period of time. The reference category is given by workers on permanent contracts.

2. *Hours of work.* We distinguish between those who work 1 to 15 hours per week ('mini-jobs'), those who work between 16 and 29 hours per week and those who work 30 or more hours per week (base category).[13]

Table 1 shows the average distribution of workers' health outcomes across all employment arrangements by sex over the entire sample period.[14] Job satisfaction and mental health are the only aspects of men's wellbeing for which we observe differences between workers in atypical employment and workers in 'regular' jobs. In particular, 21 per cent of men who hold seasonal/casual jobs report a low level of job satisfaction, while only 13.3 per cent of those on a permanent contract do so: the 7.7 percentage-point difference is significant at any conventional level. Moreover, as compared to workers on permanent contracts, a greater number of men in seasonal/casual jobs report ill mental health. Conversely, significantly fewer men in mini-jobs show low job satisfaction as compared to full-timers. In the case of women, instead, all four measures of wellbeing are differently affected depending on female employment status. For example, as compared to permanent employees, fewer women on fixed-term contracts report poor levels of general health while a greater proportion of women with the same atypical work arrangements experience low life satisfaction. Part-timers (16-29 hours per week) tend to have greater job satisfaction but also greater distress than full-timers.

[13] The choice of these cut-offs is motivated by current institutional settings in Britain. Workers in mini-jobs (and low income) are potentially eligible for the Income Support and Jobseeker's Allowance benefits (Iacovou & Berthoud, 2000; Blundell, 2001). Those working between 16 and 29 hours are part-timers, comparable to those in 'half-time jobs' as defined in Hakim (1997).

[14] The small cell sizes in some forms of atypical employment (e.g., part-time employment for men or fixed-term employment for women) and the small proportion of individuals experiencing some of the health outcomes (e.g., poor general health, or low life satisfaction) have alerted us not to use interactions between different forms of atypical employment (e.g., mini-jobs in fixed-term contracts). In fact, in the multivariate analysis, the results on such interaction terms might be driven uniquely by small sample sizes. Furthermore, the correlations among the atypical employment variables are relatively small, with mini-jobs and seasonal/casual jobs displaying the highest correlations for men and women (at about 0.43 and 0.24 respectively). As more BHPS waves become available, however, including some interactions will become increasingly feasible.

In our statistical analysis below we will investigate the extent to which these differences between health outcomes across regular and atypical forms of employment persist after controlling for individual and workplace characteristics in a multivariate analysis. The Appendix Table A1 reports the sample means by sex of the other explanatory variables used in the empirical analysis.[15] These include: (i) personal characteristics (namely, age, education, marital status, number of children by age, house tenure, household income, and number of cigarettes smoked per day); (ii) employment-related characteristics (i.e., work experience in part-time and full-time employment, current industry and occupation, employing sector, firm size, and union coverage); and (iii) geographic variables (i.e., region of residence and local unemployment/vacancy ratio).[16]

Statistical methods

Using multivariate logistic regressions, our first goal is to estimate the degree to which the probability of low health status (measured in terms of mental health, general health, job satisfaction and life satisfaction) varies across atypical employment, after controlling for all the variables shown in Table A1. We label these 'benchmark estimates', as they can be compared with other available estimates (e.g., Booth, Francesconi, & Frank, 2002; Rodriguez, 2002). However, by looking at associations, we are not measuring the effect of marginal employment on wellbeing but rather the fact that unhealthy or unhappy or dissatisfied people may 'suffer' more unstable employment. Alternatively, naturally

[15] These figures are computed on the male and female samples that have been used to obtain our benchmark estimates in the case of ill mental health (see below and see also the discussion in footnote 8). The variable means for the samples used to compute the other estimates (and the other wellbeing outcomes) are not shown for brevity, but can be obtained from the authors upon request.

[16] For the local unemployment/vacancy stock, the geographic unit is given by 306 matched job centres (providing information on the vacancies stock) and travel-to-work areas (providing information on the unemployment stock). The source for such data is the National On-line Manpower Information Service.

motivated or able workers could be less likely to hold atypical jobs and experience higher life and job satisfaction or better health. It is, therefore, especially important to account for unobserved heterogeneity and endogeneity issues (for simplicity we refer to them as 'selection' problems), since failure to do so may lead to biased coefficients (Heckman, 1981; Adams, Hurd, McFadden, Merrill, & Ribeiro, 2003).

For this purpose, we then perform three alternative exercises. First, we estimate fixed effects (FE) conditional logit regressions, which eliminate the effect of all fixed individual factors but rely exclusively on those individuals who change health status over time (Chamberlain, 1980). This however may be problematic if individual health status is stable over time (as it is compatible with many of the relatively flat trends shown in Figure 2). Second, we control for previous employment status (and, similarly, lag all explanatory variables by one year). This procedure is meant to account for the labour market (and other) circumstances which workers face *before* their health outcomes are observed. The presumption here is that the direction of the effect is likely to be measured more appropriately than in the case of the benchmark estimates (i.e., the effect of atypical employment on health rather than the effect of health on the probability of being in atypical jobs). In the same spirit, our third exercise is to estimate the impact of experience in atypical employment in any of the past three years on current health outcomes. The problem with this and the previous exercise is that, to the extent that there is persistence in people's labour market status, elements of unobserved preferences and omitted permanent individual characteristics might still contaminate our estimates.

Finally, we exploit the panel nature of the BHPS more fully by analysing the effects of changes in labour market status on changes in health outcomes. In this case, we will be able to assess whether entry into (rather than exit from) atypical employment produces any

adverse health consequences. By looking at changes over time, we can also 'wipe out' those unmeasured individual characteristics that remain fixed over time and, as in the case of the FE models, partially address the issue of selection. From all these regressions, only the effects of temporary employment and part-time employment are displayed, while, for the sake of brevity, the estimates for the other variables are not shown (but can be obtained from the authors).

Results

Benchmark estimates

Table 2 reports the estimated odds ratios (OR) from four logistic regression models by sex, one for each of the health outcomes we are interested in. Regardless of sex, none of the forms of atypical employment is significantly associated with poor general health status. Men and women in seasonal/casual jobs have instead higher chances of experiencing ill mental health (OR=1.52 and 1.22, respectively). In addition, women are more likely to report low scores of life satisfaction if they hold fixed-term contracts (OR=1.54) or if they are in seasonal/casual jobs (OR=1.61).

The last column of Table 2 shows that atypical employment is strongly correlated to job satisfaction. Both men and women in seasonal/casual jobs report a significantly lower level of satisfaction with their job as compared to their permanent counterparts (OR=2.39 and 1.30 respectively). This result is consistent with the findings reported in Booth, Francesconi, & Frank (2002). It is consistent also with the widely held notion that such jobs offer less favourable conditions than permanent jobs do, and that the degree of willingness to accept them is relatively limited. In contrast, men and women in mini-jobs are *less* likely to have low job satisfaction than their full-time counterparts (OR=0.41 and

0.65, respectively), and so are those who work 16-29 hours a week (OR=0.56 and 0.80, respectively).

In general, therefore, the types of atypical employment analysed here do not seem to be strongly associated with adverse health consequences in the short term (i.e., when health and employment are measured at the same time). However, there is evidence that job satisfaction is reduced for seasonal/casual workers and is higher for part-timers. But, without exceptions, these results do not account for the presence of fixed individual-specific characteristics that are omitted from our regressions or that cannot be observed in our dataset (e.g., work motivation, family commitment, and innate ability). In addition, they are silent about the possible effect that atypical employment has on individuals' wellbeing over time, that is, after some time that a worker has been in a temporary or part-time job. We shall turn to these issues in the two following subsections.

Selection issues

Table 3 contains the results from the FE conditional logit models. These estimates provide evidence that for males, even after controlling for fixed effects, the chances of poor job satisfaction are substantially higher if they hold jobs with seasonal/casual contracts (OR=3.11) and lower if they are employed in mini-jobs (OR=0.31). Similarly, women in seasonal/casual jobs are 46 percent significantly less likely to report poor general health, an arguably sizeable effect. For men, the adverse effect of mini-jobs and fixed-term contracts on poor life satisfaction and that of seasonal/casual jobs on psychological distress are large but never significant at conventional levels.

Table 4 shows the estimates of reporting ill health and low satisfaction in year *t* in relation to labour market status (and other characteristics) measured in year *t*-1. We can

only detect two significant effects, both involving workers in mini-jobs. One, for men, implies a lower probability of ill mental health (OR=0.62); the other, for women, shows again a lower probability of a poor health outcome, but this time in job satisfaction (OR=0.57). Finally, Table 5 shows the odds ratios from logit regressions in which the health outcomes are measured in year *t* and the experience in atypical employment is observed in years *t*-2, *t*-1 or *t* (while, for simplicity, all other regressors are measured in year *t*).[17] There is no evidence here that atypical employment has significant detrimental effects on workers' health and satisfaction. Indeed, we find evidence of the opposite. Men in mini-jobs seem to experience a substantially lower chance of low life satisfaction than their full-time counterparts (OR=0.29). This however is in contrast with the FE results in Table 3 (where the confidence intervals around this estimate are anyway too wide). Women in mini-jobs report a 48 per cent lower probability than female full-timers of having a low job satisfaction, while those on fixed-term contracts have an even larger probability (52 per cent) of reporting poor general health compared to women in permanent jobs.

In sum, we argued that controlling for selection problems is necessary to gain some additional confidence in our findings. But compared to the benchmark case, the estimates — which, at least in part, account for such problems — reveal that there are *no* new systematic effects. The general picture that the chances of ill mental and physical health and low life satisfaction are largely unaffected by atypical employment emerges again, even after adjusting our estimates to control for unobserved individual heterogeneity and simultaneity bias. Importantly, there is evidence that some of the effects on *job* dissatisfaction persist. This is the case for men in seasonal/casual jobs who experience

[17] Similar results were obtained if we used all the regressors measured in year *t*-1 or in year *t*-2 (rather than in year *t*). The results are not reported due to space limitations.

higher chances of low satisfaction with their job than men in permanent jobs. Women in mini-jobs appear to face instead a *smaller* risk of job dissatisfaction than their full-time counterparts.

Dynamic effects

Table 6 shows the estimates of workers' reporting a worsening in their wellbeing between two consecutive years in relation to the changes in employment status (and other characteristics) between the same two years over the period 1991-2000.[18] In general, very few employment transitions appear to be consequential for a deterioration in health outcomes, and this deterioration tends to be observed only in the cases of job satisfaction and mental health.[19] For example, when men move into a seasonal/casual job, we observe higher odds of a drop in job satisfaction (OR=2.43) as well as higher odds of ill mental health (OR=1.97). When starting a job with a fixed-term contract, women face an increased probability of low job satisfaction (OR=2.10). A worsening in mental health status is also detected when women start working part-time between 16 and 29 hours a week (OR=1.37). But some labour market transitions are also associated with improvements in health outcomes. For women, we observe that exiting from mini-jobs significantly *reduces* the odds of a decline in both psychological distress (OR=0.53) and job satisfaction (OR=0.55).

[18] The figures in this and the next table come from multinomial logit regressions. The dependent variables (which indicate changes in health outcomes) are defined over four states: stay in poor health, stay in non-poor health, move from poor to non-poor health, and move from non-poor to poor health. Because of their potential policy relevance (and, crucially, because of space limitations), both tables report the estimates for moving from non-poor to poor health only. Furthermore, we do not have enough transitions to distinguish the employment state workers are in *before* observing their entry into the different forms of atypical employment and the destination state people reach *after* they exit from them. This is however an interesting issue, and is left for future analyses.

[19] This may be due to the fact that the other two health outcomes (and especially life satisfaction) are observed over a smaller number of years, and therefore fewer transitions can be measured. It is worth noticing that, in a few instances, a small number of transitions do not allow us to estimate the effect of employment changes on health outcome changes (e.g., entry into a mini-job for men).

To ensure that the employment transitions are not anticipated by changes in wellbeing (and thus, to avoid or minimise the problem of reverse causality), we lagged the employment transitions and the changes in all other covariates by one period (i.e., we looked at changes between waves *t*-2 and *t*-1) and used them to explain the changes in health outcomes observed between waves *t*-1 and *t*. The results of this exercise are reported in Table 7. There are no effects for men. The only noticeable impact emerges in the case of an entry into seasonal/casual jobs, which leads to a worsening of mental conditions (OR=1.88), but this is significant only at the 10 percent level. Conversely, we find a few health consequences for women. We observe higher chances of a decline in their life satisfaction when they start a job that requires 16-29 hours a week (OR=1.63), which are compounded by, again, higher chances of a worsening in mental health if they leave the same type of job (OR=1.46). Thus, even though starting a part-time job may produce some unfavourable effects, leaving part-time employment is likely to generate equally adverse consequences.[20] On the other hand, leaving part-time employment is also associated with a sizeable *improvement* in job satisfaction (OR=0.53). Which of these effects prevails is not clear and remains to be seen.

Discussion

Caveats

This study has estimated a variety of models to explore the links between atypical employment and workers' wellbeing. Many of our findings carry potentially relevant implications for public policy and for future research in this area. Before turning to the

[20] Interestingly, women who exit from part-time jobs involving 16-29 hours per week are also more likely to experience a worsening in their general health and life satisfaction (OR=1.76 and 1.69, respectively), although the confidence interval around these effects are too wide to guarantee statistical significance at conventional levels.

discussion of such findings and their implications, it is therefore important to stress some of the research limitations. First, although a large number of variables were controlled for, these are only a few of the many factors that have a bearing on people's wellbeing. They may even be relatively minor, when viewed as part of a constellation of relevant factors that affect people's wellbeing including their personality and emotional stability as well as the investments they make in 'producing' their mental and physical health. Using fixed-effects models and models of transition was one way to limit the selection problems as much as possible, but the resolution of such problems is unlikely to arise serendipitously.

Second, wellbeing is a complex and multi-faceted concept to operationalise (Kahneman, Diener, & Schwarz, 1999; Frey & Stutzer, 2002). This study has analysed four different subjective measures (of mental health, general health, life satisfaction, and job satisfaction), which may provide us with a more thorough view of people's wellbeing than did previous research that focused on a single measure of health (e.g., Clark, Georgellis, & Sanfey, 2001; Rodriguez, 2002). Yet, harder and more objective measures of fitness (as those assessed by medical doctors and psychiatrists) will possibly better approximate people's health circumstances.[21]

Third, we examined only two types of atypical work arrangements, i.e., temporary employment and part-time employment. While these are undoubtedly an important reality of the British labour market at the turn of the twentieth century, they do not exhaust the variety of new arrangements that may be relevant to social researchers and are pertinent to public policy. Immediate examples include forms of employment that are atypical in the 'time' of the day when the job is performed (e.g., working in the mornings only or at night

[21] In most of the existing large-scale surveys, however, this information is not collected, and analysts can only rely on subjective measures.

only) or in the 'place' where the job is done (e.g., working at home rather than at the employer's premises). Other examples would be to extend our analysis to agency temping employment, second jobs and self-employment. Therefore, when considering the implications of this study it should be remembered that problems of selection (and reverse causation), issues of measurement of individual wellbeing and changes in the labour market over and above those considered here may all confound the genuine impact of atypical employment on workers' health with other unwarranted associations.

Summary of main findings

In this study we have used 10 waves of the BHPS (1991-2000) to analyse the relationship between atypical employment and subjective individual wellbeing. There are four results worthwhile noting. First, we find that in general temporary work arrangements and part-time employment did *not* have long-lasting detrimental health effects on male and female workers in 1990s Britain. This clearly emerges from most of the models that appeal to the panel aspect of the data, and relate currently measured subjective wellbeing to labour market information from previous waves. Second, the previous conclusion is valid regardless of whether wellbeing is measured in levels or in changes, that is, even after the issues of selection have been greatly attenuated.

Third, we show that *job* dissatisfaction is strongly and significantly increased for men and women who are currently employed in seasonal/casual jobs and is *reduced* for those who are in mini-jobs. As mentioned above, these associations tend to disappear over time, and do not systematically arise for the other three measures of subjective wellbeing used in our paper. Nonetheless, it is interesting that some forms of atypical work are associated with greater (rather than lower) levels of subjective health outcomes, indicating

perhaps that the willingness to seek for and accept such jobs is likely to play a part in the relationship we have analysed. Fourth, despite the lack of health effects among most of the employment arrangements studied here, individuals in seasonal/casual jobs turn out to be characterised by relatively worse wellbeing conditions. It is hard to believe that this specific form of employment is perceived as providing people with an ideal opportunity to be integrated in the labour market for the first time or after periods of inactivity (Rodriguez, 2002). In fact, there is evidence that, as compared to permanent employees, seasonal/casual workers in Britain suffer from a large wage penalty, and this does not disappear even after seasonal/casual workers move to permanent employment (Booth, Francesconi, & Frank, 2002 and 2003). Therefore, monitoring the health outcomes for this particular group of workers should be an ordinary task of current social welfare research.

Pointers for policy and concluding remarks

Government and EU initiatives have been introduced recently with the aim of ameliorating the conditions of traditionally weak groups of the workforce, such as part-timers, the low-paid, and temporary workers (Neathey & Arrowsmith, 1999; Blundell, 2001; Booth, Francesconi, & Frank, 2003). The past few years have also witnessed the implementation of a number of New Deal programmes (e.g., New Deals for lone parents, for the unemployed, for disabled people, and for the elderly),[22] which emphasise the dual objectives of getting low-skill people into work as well as the need of supplementing their incomes. Some of these programmes have been shown to induce a reasonably large and positive increase in the labour market participation of specific groups of individuals, e.g., lone mothers (Blundell, 2001). It is also clear, however, that there is an important equal

[22] For a description of such programmes, see http://www.dwp.gov.uk/gbi.

opportunities dimension to regulating equal pay and conditions for various forms of atypical employment, so that effective regulation will be likely to have an impact (Booth, Francesconi, & Frank, 2003). The pattern of results shown here suggests that atypical employment does not have durable adverse health consequences on workers. But in organising institutional support to facilitate welfare-to-work transitions and in designing regulations that are meant to improve the working conditions of individuals in weak bargaining positions (including atypical workers), special attention should be given to equity considerations. Since these considerations inevitably cover also non-monetary aspects of workers' life, social welfare research will be increasingly involved in monitoring the possible health effects of experience of work in atypical employment arrangements.

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References

Adams, P., Hurd, M.D., McFadden, D., Merrill, A., & Ribeiro, T. (2003). Healthy, wealthy, and wise? Tests for direct causal paths between health and socioeconomic status. *Journal of Econometrics*, *112*, 3-56.

Bartel, A., & Taubman, P. (1986). Some economic and demographic consequences of mental illness. *Journal of Labor Economics*, *4*, 243-256.

Blossfeld, H.-P., & Hakim, C. (Eds.), (1997). *Between equalization and marginalization: women working part-time in Europe and the United States*. Oxford: Oxford University Press.

Blundell, R. (2001). Welfare reform for low income workers. *Oxford Economic Papers*, *53*, 189-214.

Booth, A.L., & Francesconi M. (2003). Union coverage and non-standard work in Britain. *Oxford Economic Papers*, forthcoming.

Booth, A.L., Francesconi, M., & Frank, J. (2003). Labour as a buffer: do temporary workers suffer? In Fagan, G., Mongelli, F.P., & Morgan, J. (Eds.) *New Features of Wage Determination and Institutions in Europe*. Cheltenham: Edward Elgar Publishing, forthcoming.

Booth, A.L., Francesconi, M., & Frank, J. (2002). Temporary jobs: stepping stones or dead ends? *Economic Journal*, *112*, F189-F213.

Burchell, B., Dale, A., & Joshi, H. (1997). Part-time work among British women. In H.-P. Blossfeld, & C. Hakim (Eds.), *Between equalization and marginalization: women working part-time in Europe and the United States*. Oxford: Oxford University Press.

Burchell, B.J., Ladipo, D., & Wilkinson, F. (2001). *Job insecurity and work intensification*. London: Routledge.

Chamberlain, G. (1980). Analysis of covariance with qualitative data. *Review of Economic Studies*, *47*, 225-38.

Clark, A.E., Georgellis, Y., & Sanfey P. (2001). Scarring: the psychological impact of past unemployment. *Economica*, *68*, 221-241.

Clark, A.E., Osward, A.J., & Warr, P.B. (1996). Is job satisfaction U-shaped in age? *Journal of Occupational and Organizational Psychology*, *69*, 57-81.

Currie, J. & Madrian, B.C. (1999). Health, health insurance and the labor market. In O. Ashenfelter, & D. Card (Eds.), *Handbook of Labor Economics*, vol. 3C. Amsterdam: Elsevier Science.

Darity, W., & Goldsmith, A. (1996). Social psychology, unemployment and macroeconomics. *Journal of Economic Perspectives*, *10*, 121-140.

Dex, S. (Ed.), (1999). *Families and the labour market: trends, pressures and policies*. Published for the Jouseph Rowntree Foundation by Family Policy Studies Centre, London.

Dex, S., & McCulloch, A. (1995). *Flexible employment in Britain: a statistical analysis*. Equal Opportunities Commission, Research Discussion Series No. 15.

Ettner, S.L., Frank, R.G., & Kessler, R.C. (1997). The impact of psychiatric disorders on labor market outcomes *Industrial and Labor Relations Review*, *51*, 64-81.

Fernie, J.E., Shipley, M.J., Marmot, M.G., Martikainen, P., & Stanfeld, S. (2001) Job insecurity in white-collar workers: toward an explanation of associations with health. *Journal of Occupational Health Psychology*, *6*, 26-42.

Fernie, J.E., Shipley, M.J., Marmot, M.G., Stanfeld, S., & Smith, G.D. (1998) The health effects of major organisational change and job insecurity. *Social Science and Medicine*, *46*, 243-254.

Frank, R.G., & McGuire, T.G. (2000). Economics and mental health. In: A.J. Culyer, & J.P. Newhouse (Eds.), *Handbook of Health Economics*, vol. 1B. Amsterdam: Elsevier Science.

Frey, B.S., & Stutzer, A. (2002). What can economists learn from happiness research? *Journal of Economic Literature*, *40*, 402-435.

Goldberg, D. (1972) *The detection of psychiatric illness by questionnaire*. London: Oxford University Press.

Goldsmith, A.H., Veum, J.R., & Darity, W. (1996). The impact of labor force history on self-esteem and its component parts, anxiety, alienation and depression. *Journal of Economic Psychology*, *17*, 183-220.

Hakim, C. (1997). A Sociological Perspective on Part-Time Work. In H.-P. Blossfeld, & C. Hakim (Eds.), *Between equalization and marginalization: women working part-time in Europe and the United States*. Oxford: Oxford University Press.

Hamilton, V.H., Merrigan, P., & Dufresne, E. (1997). Down and out: Estimating the relationship between mental health and unemployment. *Health Economics*, *6*, 397-406.

Heckman, J.J. (1981). Statistical models for discrete panel data. In C.F. Manski, & D. McFadden (Eds.), *Structural analysis of discrete data with econometric applications*, Cambridge, Mass.: MIT Press.

Hudson, K. (1999). No shortage of ‘nonstandard’ jobs. Economic Policy Institute Briefing Paper. Washington, D.C., December.

Iacovou, M., & Berthoud, R. (2000). *Parents and Employment*. Leeds: Department of Social Security, Research Report No. 107.

Jin, R.L., Shah, C.P., & Svoboda, T.J. (1995). The impact of unemployment on health: A review of the evidence. *Canadian Medical Association Journal, 153*, 529-540.

Kahneman, D., Diener, E., & Schwarz, N. (Eds.), (1999). *Well-Being: The Foundations of Hedonic Psychology*. New York: Russell Sage Foundation.

Kerkhofs, M., & Lindeboom, M. (1997). Age related health dynamics and changes in labour market status. *Health Economics*, *6*, 407-423.

Link, B.G., Andrews, H., & Cullen, F.T. (1992). The violent and illegal behavior of mental patients reconsidered. *American Sociological Review*, *57*, 275-292.

Machin, S., & Manning, A. (1999). The causes and consequences of longterm unemployment in Europe. In O. Ashenfelter, & D. Card (Eds.), *Handbook of Labor Economics*, vol. 3C. Amsterdam: Elsevier Science.

Maier, F. (1991). Part-time work, social security protection and labour law: an international comparison. *Policy and Politics*, *19*, 1-11.

Murphy, G.C., & Athanasou, J.A. (1999). The effect of unemployment on mental health. *Journal of Occupational and Organizational Psychology*, *72*, 83-99.

Neathey, F., & Arrowsmith, J. (1999). *Early Implementation of the Working Time Regulations*. Interim Research Report for the Department of Trade and Industry. London, October.

OECD. (1999). *Employment Outlook*. Paris: Organisation for Economic Co-operation and Development.

O'Reilly, J., & Fagan, C. (eds.), (1998). *Part-time prospects. An international comparison of part-time work in Europe, North American and the Pacific Rim*. London: Routledge.

Rodriguez, E. (2002). Marginal employment and health in Britain and Germany: does unstable employment predict health? *Social Science and Medicine*, *55*, 963-979.

Sneider, S. (1995). Characteristics of the part-time workforce and part-time employee participation in health and pension benefits. *Journal of Labor Research*, *16*, 239-248.

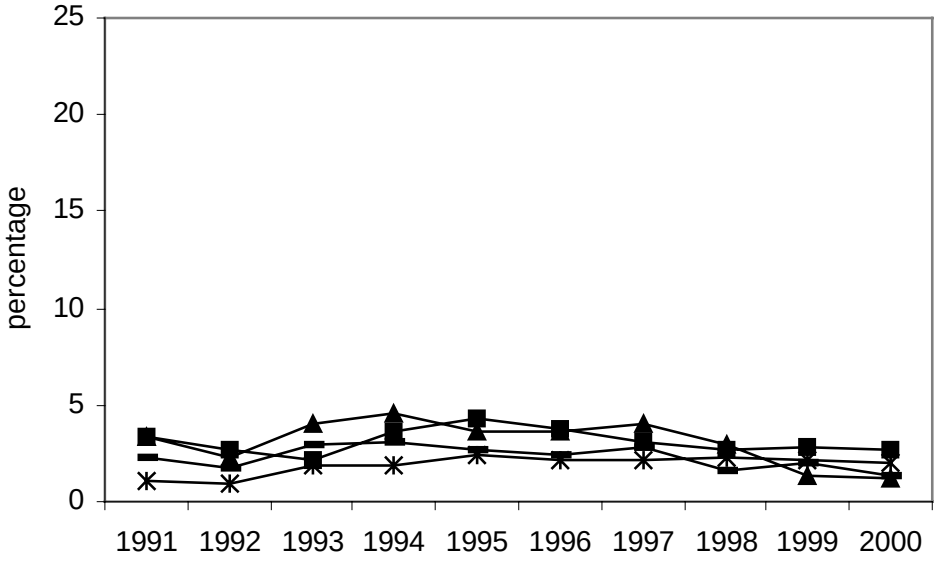
Strandh, M. (2000). Different exit routes from unemployment and their impact on mental well-being: the role of the economic situation and the predictability of the life course. *Work, Employment and Society, 14*, 459-479.

Theodossiou, I. (1998) The effects of low-pay and unemployment on psychological well-being: a logistic regression approach. *Journal of Health Economics*, *17*, 85-104.

Wadsworth, M.E.J., Montgomery, S.M., & Bartley, M.J. (1999). The persisting effect of unemployment on health and social well-being in men early in working life. *Social Science and Medicine, 48*, 1491-1499.

Figure 1
Trends in the percentages of workers in atypical contracts, 1991-2000

(a) Men



(b) Women

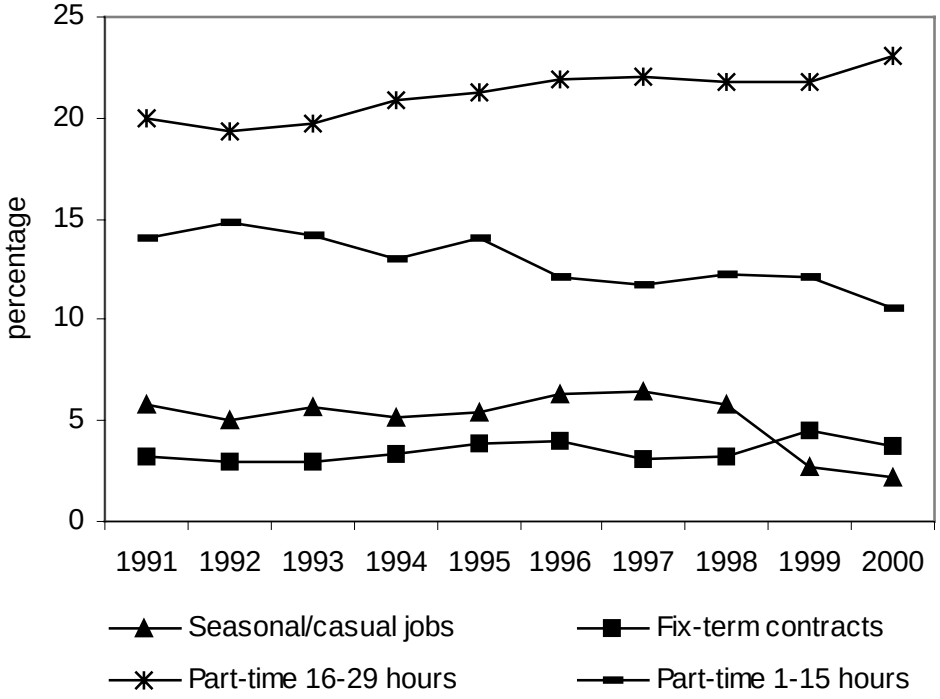
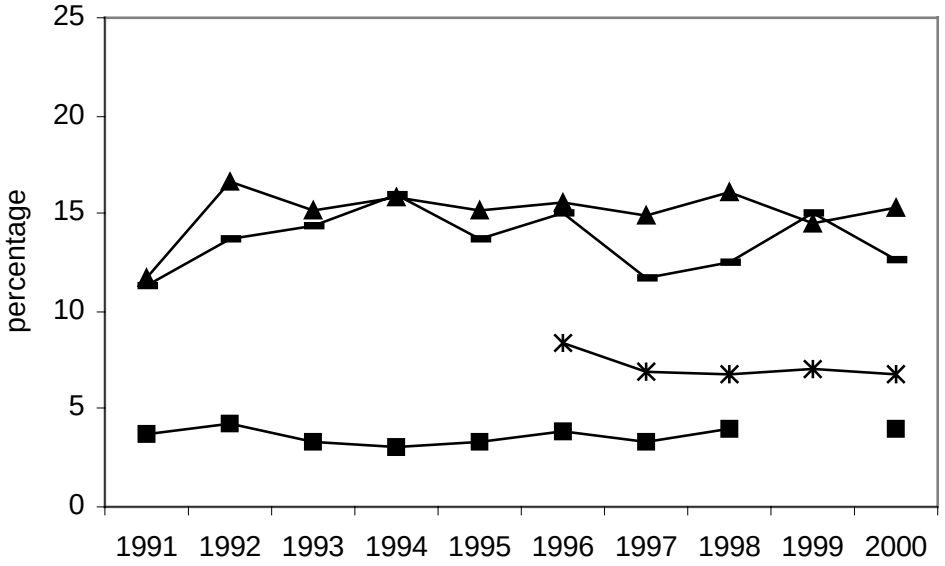


Figure 2
Trends in the percentages of workers with ill health and low satisfaction outcomes, 1991-2000

(a) Men



(b) Women

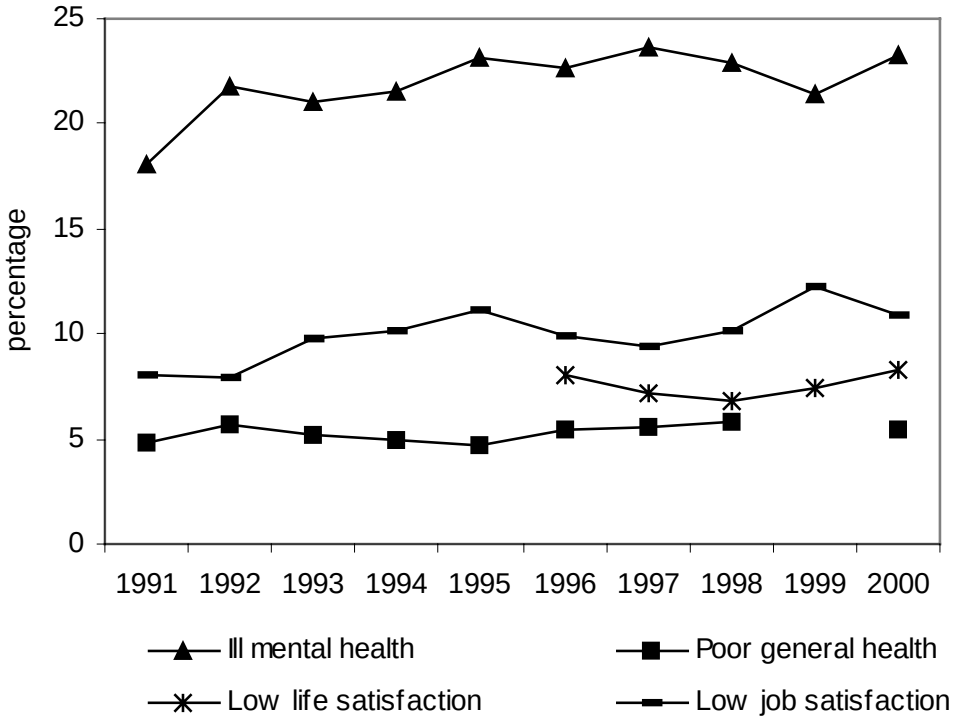


Table 1
Distribution of health outcomes by employment status and sex[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Permanent contracts	14.9	3.7	7.0	13.3
Seasonal/casual jobs	19.6	2.8	10.5	21.0
Fixed-term contracts	15.0	3.9	8.9	13.9
Test of the differences between:				
Permanent and seasonal/casual	0.005*	0.341	0.052	0.000*
Permanent and fixed-term contracts	0.978	0.835	0.250	0.719
Full-time employment (≥ 30 hours)	15.1	3.6	7.2	13.8
Part-time 16-29 hours	15.1	3.8	6.2	10.1
Part-time 1-15 hours	16.6	4.6	6.0	8.3
Test of the difference between:				
Full-time and part-time 16-29 hours	0.998	0.883	0.606	0.067
Full-time and part-time 1-15 hours	0.429	0.330	0.540	0.003*
Women				
Permanent contracts	21.7	5.4	7.2	9.9
Seasonal/casual jobs	25.2	4.9	10.8	10.8
Fixed-term contracts	24.4	3.4	10.8	10.1
Test of the differences between:				
Permanent and seasonal/casual	0.018*	0.532	0.007*	0.438
Permanent and fixed-term contracts	0.124	0.045*	0.017*	0.902
Full-time employment (≥ 30 hours)	21.5	5.2	7.3	11.6
Part-time 16-29 hours	23.5	5.4	8.0	7.4
Part-time 1-15 hours	22.1	5.6	8.0	6.0
Test of the difference between:				
Full-time and part-time 16-29 hours	0.011*	0.674	0.271	0.000*
Full-time and part-time 1-15 hours	0.531	0.544	0.383	0.000*

[a] *Note*: The figures are average percentages computed over the entire samples of workers by sex. The samples refer to those used to estimate ill mental health in Table 2, with 15633 and 16831 person-wave observations for men and women, respectively. The tests refer to standard *t*-tests of equality of means between permanent and temporary employment and between full-time and part-time employment. The table reports the *p*-value of such tests.
* $p \leq 0.05$.

Table 2
Likelihood of reporting poor wellbeing outcomes in year *t* according to year *t* employment status. Odds ratios from logit regressions[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Seasonal/casual jobs	1.524*	0.585	1.794	2.393*
	(2.897)	(-1.686)	(1.879)	(6.271)
Fixed-term contracts	0.955	0.950	1.241	1.135
	(-0.339)	(-0.190)	(0.908)	(0.840)
Part-time 16-29 hours	0.966	0.839	0.640	0.558*
	(-0.175)	(-0.420)	(-1.249)	(-2.428)
Part-time 1-15 hours	1.056	1.500	0.552	0.412*
	(0.269)	(1.273)	(-1.386)	(-3.937)
Person-wave observations	15633	14117	8235	15783
Women				
Seasonal/casual jobs	1.223*	0.805	1.607*	1.304*
	(2.106)	(-1.162)	(2.494)	(2.050)
Fixed-term contracts	1.089	0.689	1.537*	1.083
	(0.727)	(-1.295)	(1.977)	(0.505)
Part-time 16-29 hours	1.054	0.972	1.005	0.798*
	(0.732)	(-0.219)	(0.038)	(-2.131)
Part-time 1-15 hours	0.937	0.976	0.957	0.645*
	(-0.766)	(-0.160)	(-0.245)	(-3.560)
Person-wave observations	16831	15188	8902	16994

[a] *Note*: Asymptotic *t*-ratios are reported in parentheses. The *t*-ratios are computed using standard errors that account for repeated observations on the same individual and are robust to arbitrary forms of heteroskedasticity. Other variables included in each regression are: age, education, marital status, number of children (by age group), housing tenure, number of cigarettes smoked daily, total net household income, total work experience in full-time and part-time work, industry, occupation, employing sector, and firm size.
* $p \leq 0.05$.

Table 3
Odds ratios from fixed-effects conditional logit regressions

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Seasonal/casual jobs	1.389	0.423	1.557	3.105*
	(1.531)	(-1.605)	(0.825)	(5.176)
Fixed-term contracts	0.960	0.934	1.967	1.000
	(-0.197)	(-0.163)	(1.661)	(0.002)
Part-time 16-29 hours	0.645	1.125	1.813	0.739
	(-1.480)	(-0.195)	(0.898)	(-1.001)
Part-time 1-15 hours	1.332	2.072	4.198	0.312*
	(0.994)	(1.107)	(1.498)	(-3.407)
Person-wave observations	6964	1788	1328	6892
Women				
Seasonal/casual jobs	0.973	0.542*	0.847	1.345
	(-0.206)	(-2.030)	(-0.475)	(1.620)
Fixed-term contracts	0.883	0.645	0.742	0.881
	(-0.832)	(-1.175)	(-0.846)	(-0.622)
Part-time 16-29 hours	1.094	1.043	1.356	0.918
	(0.962)	(0.225)	(1.150)	(-0.644)
Part-time 1-15 hours	1.099	0.774	1.815	0.839
	(0.774)	(-0.994)	(1.573)	(-0.976)
Person-wave observations	9711	2855	1571	5986

[a] *Note*: Asymptotic *t*-ratios (from robust standard errors) are reported in parentheses. For other details and control variables, see note to Table 2.
* $p \leq 0.05$.

Table 4
Likelihood of reporting poor wellbeing outcomes in year *t* in relation to employment status (and other characteristics) in year *t*-1. Odds ratios from logit regressions[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Seasonal/casual jobs	1.199	1.349	1.429	0.779
	(1.087)	(0.915)	(1.038)	(-1.163)
Fixed-term contracts	1.196	0.826	1.133	1.022
	(1.224)	(-0.478)	(0.380)	(0.122)
Part-time 16-29 hours	1.017	0.980	0.664	0.716
	(0.080)	(-0.046)	(-0.893)	(-1.179)
Part-time 1-15 hours	0.624*	0.443	0.710	1.070
	(-2.121)	(-1.686)	(-0.727)	(0.265)
Person-wave observations	12747	9837	6113	12398
Women				
Seasonal/casual jobs	1.154	0.870	1.064	1.135
	(1.476)	(-0.678)	(0.281)	(0.754)
Fixed-term contracts	1.208	0.623	1.306	1.046
	(1.635)	(-1.504)	(1.131)	(0.232)
Part-time 16-29 hours	0.997	0.982	1.024	0.827
	(-0.051)	(-0.126)	(0.158)	(-1.771)
Part-time 1-15 hours	0.872	0.937	0.992	0.566*
	(-1.663)	(-0.414)	(-0.038)	(-3.888)
Person-wave observations	13958	10768	6712	13171

[a] *Note*: Asymptotic *t*-ratios (from robust standard errors) are reported in parentheses. For other details and control variables, see note to Table 2.
* $p \leq 0.05$.

Table 5
Likelihood of reporting poor wellbeing outcomes in year *t* in relation to employment status in years *t*-2, *t*-1 or *t* (and other covariates in year *t*). Odds ratios from logit regressions[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Seasonal/casual jobs	1.112	0.465	1.289	1.084
	(0.611)	(-1.720)	(0.702)	(0.396)
Fixed-term contracts	1.088	0.746	0.923	1.063
	(0.563)	(-0.885)	(-0.326)	(0.345)
Part-time 16-29 hours	0.627	0.823	0.563	0.699
	(-1.861)	(-0.382)	(-1.508)	(-1.232)
Part-time 1-15 hours	0.967	1.067	0.290*	0.883
	(-0.130)	(0.119)	(-2.016)	(-0.435)
Person-wave observations	9491	8253	6316	9573
Women				
Seasonal/casual jobs	1.052	0.676	0.711	1.035
	(0.464)	(-1.605)	(-1.472)	(0.216)
Fixed-term contracts	1.128	0.477*	1.342	1.177
	(0.951)	(-2.414)	(1.392)	(0.903)
Part-time 16-29 hours	1.155	1.05	1.047	0.845
	(1.804)	(0.327)	(0.307)	(-1.456)
Part-time 1-15 hours	0.939	1.15	0.827	0.524*
	(-0.660)	(0.800)	(-1.040)	(-4.562)
Person-wave observations	10060	8789	6675	10152

[a] *Note*: Asymptotic *t*-ratios (from robust standard errors) are reported in parentheses. For other details and control variables, see note to Table 2.
* $p \leq 0.05$.

Table 6
Likelihood of reporting a worsening in health outcomes between year *t*-1 and *t* according to changes in employment status (and other characteristics) between year *t*-1 and *t*. Odds ratios from multinomial logit regressions[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Entry into:				
Seasonal/casual job	1.968*	0.470	0.657	2.425*
	(2.011)	(-0.721)	(-0.382)	(2.615)
Fixed-term contract	0.801	0.645	1.930	1.490
	(-0.652)	(0.552)	(1.336)	(1.338)
Part-time 16-29 hours	0.260	—	—	0.804
	(-1.700)			(-0.442)
Part-time 1-15 hours	1.962	—	—	1.368
	(1.415)			(0.503)
Exit from:				
Seasonal/casual job	1.349	1.386	1.315	0.471
	(0.955)	(0.636)	(0.534)	(-1.687)
Fixed-term contract	1.443	—	1.267	1.066
	(1.557)		(0.547)	(0.244)
Part-time 16-29 hours	1.096	1.622	0.724	0.563
	(0.266)	(0.752)	(-0.486)	(-1.245)
Part-time 1-15 hours	0.267	—	—	0.856
	(-1.730)			(-0.353)
Number of transitions	11567	8891	5066	11762
Women				
Entry into:				
Seasonal/casual job	1.472	1.662	1.082	1.255
	(1.824)	(1.401)	(0.137)	(0.794)
Fixed-term contract	0.859	—	0.811	2.100*
	(-0.626)		(-0.403)	(3.142)
Part-time 16-29 hours	1.372*	1.163	1.201	1.417
	(2.243)	(0.503)	(0.540)	(1.836)
Part-time 1-15 hours	1.158	0.798	1.606	1.210
	(0.703)	(-0.534)	(1.013)	(0.740)
Exit from:				

Seasonal/casual job	1.330	0.925	1.075	1.234
	(1.679)	(-0.215)	(0.170)	(0.956)
Fixed-term contract	1.217	—	1.658	1.050
	(0.986)		(1.253)	(0.186)
Part-time 16-29 hours	1.130	1.000	0.974	0.842
	(0.823)	(0.000)	(-0.079)	(-0.944)
Part-time 1-15 hours	0.679*	0.520	0.720	0.549*
	(-2.033)	(-1.491)	(-0.710)	(-2.260)
Number of transitions	12028	9309	4889	12248

[a] *Note*: The dependent variables (which indicate changes in health outcomes) are defined over four states: stay in poor health, stay in non-poor health, move from poor to non-poor health, and move from non-poor to poor health. The table reports the estimates for moving from non-poor to poor health only. Asymptotic *t*-ratios (from robust standard errors) are reported in parentheses. The notation "—" denotes that the coefficient could not be estimated due to insufficient variation in the explanatory variable (and small cell size). For other details and control variables, see note to Table 2.

* $p \leq 0.05$.

Table 7
Likelihood of reporting a worsening in health outcomes between year *t*-1 and *t* according to changes in employment status (and other characteristics) between year *t*-2 and *t*-1. Odds ratios from multinomial logit regressions[a]

	Ill mental health	Poor general health	Low life satisfaction	Low job satisfaction
Men				
Entry into:				
Seasonal/casual job	1.882	—	0.600	1.083
	(1.665)		(-0.514)	(0.133)
Fixed-term contract	1.314	—	1.812	1.448
	(0.926)		(1.261)	(1.084)
Part-time 16-29 hours	0.610	0.411	—	0.273
	(-0.933)	(-0.607)		(-1.293)
Part-time 1-15 hours	—	—	—	1.771
				(0.647)
Exit from:				
Seasonal/casual job	1.356	0.883	1.462	0.995
	(1.077)	(-0.188)	(0.743)	(-0.013)
Fixed-term contract	0.791	—	2.033	0.755
	(-0.769)		(1.754)	(-0.767)
Part-time 16-29 hours	0.643	1.365	0.273	0.707
	(-0.880)	(0.360)	(-1.117)	(-0.725)
Part-time 1-15 hours	1.286	—	—	0.601
	(0.581)			(-0.846)
Number of transitions	9568	7007	4693	9433
Women				
Entry into:				
Seasonal/casual job	0.953	0.792	1.021	1.450
	(-0.194)	(-0.476)	(0.050)	(1.193)
Fixed-term contract	0.974	0.201	1.300	0.961
	(-0.113)	(-1.568)	(0.570)	(-0.114)
Part-time 16-29 hours	0.988	1.215	1.626*	1.133
	(-0.070)	(0.657)	(1.978)	(0.568)
Part-time 1-15 hours	0.779	0.738	1.465	1.264
	(-1.028)	(-0.650)	(0.900)	(0.649)
Exit from:				
Seasonal/casual job	1.083	0.440	0.568	0.895
	(0.447)	(-1.528)	(-1.277)	(-0.404)

Fixed-term contract	1.489	0.173	1.895	1.357
	(1.692)	(-1.749)	(1.725)	(1.126)
Part-time 16-29 hours	1.457*	1.756	1.689	0.530*
	(2.402)	(1.864)	(1.869)	(-2.343)
Part-time 1-15 hours	1.174	1.342	—	0.674
	(0.844)	(0.870)		(-1.533)
Number of transitions	10119	7454	4615	9741

[a] *Note*: The dependent variables (which indicate changes in health outcomes) are defined over four states: stay in poor health, stay in non-poor health, move from poor to non-poor health, and move from non-poor to poor health. The table reports the estimates for moving from non-poor to poor health only. Asymptotic *t*-ratios (from robust standard errors) are reported in parentheses. The notation "—" denotes that the coefficient could not be estimated due to insufficient variation in the explanatory variable (and small cell size). For other details and control variables, see note to Table 2.

* $p \leq 0.05$.

Appendix

Table A1

Description and means by sex of the variables used in the analysis[a]

Variable	Description	Men	Women
Dependent variables			
Ill mental health	Takes value 1 if GHQ (12-point measure) is greater than or equal to 4, and 0 otherwise	0.151	0.220
Poor general health	Takes value 1 if an individual reports that his/her general health is 'poor' or 'very poor', and 0 if he/she reports 'fair', 'good' or 'excellent' health	0.036	0.053
Low life satisfaction	Takes value 1 if an individual reports that his/her overall satisfaction with life is three or lower on a scale ranging from 1 ('not satisfied at all') to 7 ('completely satisfied'), and 0 otherwise	0.072	0.075
Low job satisfaction	Takes value 1 if an individual reports that his/her overall satisfaction with the present job is three or lower on a scale ranging from 1 ('not satisfied at all') to 7 ('completely satisfied'), and 0 otherwise	0.136	0.100
Explanatory variables			
Employment status defined in terms of:			
Contract type:			
Permanent contract	(Base category)	0.938	0.915
Seasonal/casual job		0.031	0.050
Fixed-term contract	Includes agency contracts (from 1999 onwards)	0.031	0.035
Hours of work			
Full-time	Takes value 1 if individual works 30 or more hours per week, and 0 otherwise (base category)	0.958	0.660
Part-time 16-29 hours	Takes value 1 if individual works between 16 and 29 hours per week, and 0 otherwise	0.019	0.212
Part-time 1-15 hours	Takes value 1 if individual works between 1 and 15 hours per week, and 0 otherwise	0.023	0.128
Age	Measured in years	35.7	35.7
Age groups:	Take value 1 if in the age group, and 0 otherwise		
16-25		0.282	0.289
26-35		0.347	0.332
36-45		0.255	0.244
46-60		0.116	0.135
Education			
No qualification	(Base category)	0.115	0.117
Less than O-level		0.081	0.095
O-level		0.205	0.280
A-level		0.157	0.132
Vocational degree	Includes teaching qualification, nursing qualification, and other higher qualification	0.276	0.243
Higher education	Includes BA, Master degree, and PhD	0.166	0.133
Marital status			
Married	Cohabiting and legally married (base category)	0.705	0.702
Separated, divorced, widowed		0.046	0.092

Never married		0.249	0.206
Number of children by age group:			
Children aged 0-2		0.100	0.071
Children aged 3-4		0.096	0.072
Children aged 5-11		0.313	0.303
Children aged 12-15		0.176	0.201
Children aged 16-18		0.041	0.048
No child or children aged 18 or more	(Base category)	0.274	0.305
Housing tenure			
Owner	Outright owner or with mortgage (base category)	0.807	0.794
In social housing	Rented from local authority or housing association	0.100	0.118
Renter	Private renter (including employer)	0.093	0.088
Household income	Net equivalised current household income (£/week in January 2001 prices)	400.86	396.4
Cigarettes	Number of cigarettes smoked per day	4.3	4.0
Full-time experience	Total experience in full-time work (months)	186.1	119.7
Part-time experience	Total experience in part-time work (months)	2.5	43.3
Industry	One-digit Standard Industrial Classification		
Agriculture	(Base category)	0.014	0.005
Energy		0.031	0.007
Extraction		0.054	0.019
Metal		0.146	0.042
Other manufacturing		0.120	0.066
Construction		0.050	0.007
Distribution		0.165	0.229
Transport		0.083	0.036
Banking		0.132	0.138
Other services		0.205	0.451
Occupation	One-digit Standard Occupational Classification		
Manager		0.168	0.092
Professional		0.112	0.102
Technical occupation		0.105	0.123
Clerical occupation		0.098	0.297
Craft		0.181	0.025
Personal and protective services		0.070	0.141
Sales		0.049	0.103
Plant/machine operatives		0.148	0.041
Other unskilled occupation	(Base category)	0.069	0.076
Employing sector			
Private firm	Employees of a private enterprise (base category)	0.773	0.608
Civil service		0.045	0.043
Local government	Local government and town hall employees	0.100	0.178
Other public	National health service, higher education, nationalised industry employees	0.054	0.117
Non-profit	Employees of non-profit organisation	0.028	0.054
Firm size (number of co-workers)			
1-9		0.133	0.189
10-24		0.130	0.181

25-49		0.123	0.138
50-99		0.131	0.109
100-199		0.120	0.099
200-499		0.161	0.111
500-1000		0.088	0.055
Over 1000	(Base category)	0.114	0.064
Unemployment/vacancy ratio	Ratio of local unemployment stock to local vacancy stock. The geographic unit is 306 matched job centres and travel-to-work areas (source is National On-line Manpower Information Service)	11.615	11.513
Union coverage	Takes value 1 if there is a recognised union or staff association at the workplace, and 0 otherwise	0.510	0.524
Region of residence			
London	Greater London (base category)	0.093	0.098
South	South East and South West	0.282	0.276
Centre	East Anglia, East Midlands, West Midlands conurbation, Region of West Midlands	0.220	0.207
North West	Greater Manchester, Merseyside, North West	0.109	0.107
North East	South and West Yorkshire, Yorkshire and Humberside, Tyne and Wear, Rest of the North	0.163	0.160
Wales		0.049	0.050
Scotland		0.084	0.102

[a] *Note*: The figures reported here are computed on the male and female samples used to estimate ill mental health in Table 2. The samples used to estimate the other health outcomes are not reported for brevity.