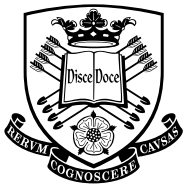

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Work and Well-being

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Abstract

This thesis presents the findings from three research projects exploring the relationship between work and well-being. Firstly, I contribute to the literature on the effects of the timing of work by analysing the extent to which weekend working impacts upon different measures of subjective well-being. Using two UK datasets (the Labour Force Survey and Understanding Society), I find that weekend working has a negative impact on happiness, psychological well-being and satisfaction with leisure time. Secondly, I explore the effects of occupation and job type on workers' well-being, making a specific distinction between eudaimonic and hedonic aspects of well-being. This analysis, based on the American Time Use Survey and the UK Annual Population Survey, shows that job type is a strong predictor of eudaimonic well-being with jobs that combine professional autonomy and social impact appearing to be most associated with subjective feelings of meaningfulness or purpose. Finally, I use the harmonised British Household Panel Survey and Understanding Society data to investigate the extent to which well-being is affected by the unemployment of one's partner, and how these spill-over effects vary between men and women. I find strong evidence of cross-partner effects of both male and female unemployment, but these impacts depend on the gender of the partner, how unemployment is defined and how well-being is measured.

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Chapter 1: Introduction

1.1 Motivation

> *"The ultimate purpose of economics, of course, is to understand and promote the enhancement of well-being."*
>
> *Ben Bernanke*[1]

A concern with human well-being is at the heart of the economics discipline. While it has long been assumed that well-being can best be achieved through increasing incomes and consumption, much recent empirical evidence has refuted this assumption (e.g. Easterlin 1974, Clark et al. 2008b). This has led to the emergence of well-being or happiness economics, where the focus for research is on measuring well-being directly rather than inferring utility from observed intermediate outcomes, such as monetary payoffs.

For many adults today, work accounts for a significant proportion of time use and hence it continues to be important to understand how people's working lives impact on their well-being. Classical labour economics assumes that work is a source of disutility that is undertaken only for its value in exchange for consumption goods, and again this is an assumption that has been refuted by empirical evidence (e.g. Clark and Oswald 1994). Work can have a positive impact on well-being directly, aside from its instrumental value, but this is dependent on factors such as the type of work, the timing of work and the importance of work to one's sense of identity. These impacts are also dependent on how well-being is defined and measured.

[1] Speech by Ben Bernanke, then Chairman of the US Federal Reserve, to the 32nd General Conference of the International Association for Research in Income and Wealth, Cambridge, Massachusetts, 6 August 2012. Quote taken from Layard et al. (2014).

In this thesis, I present the findings from three research projects exploring the relationship between work and well-being. Firstly, I contribute to the literature on the effects of the timing of work by analysing the extent to which weekend working impacts upon different measures of subjective well-being. Secondly, I explore the effects of occupation and job type on workers' well-being, making a specific distinction between eudaimonic and hedonic aspects of well-being. Finally, I investigate the extent to which well-being is affected by the unemployment of one's partner, and how these spill-over effects vary between men and women.

1.2 Epistemological approach

In this research, I take an explicitly positivist epistemological position. This implies that, as a researcher, I have attempted to ensure that my own beliefs and opinions do not influence the method or bias the results. This is the standard approach in economics and is conducive to the quantitative analysis of secondary data. In my research, I have not collected any primary data nor am I making any qualitative assessments of the available data. Nevertheless, as is the case in most social science research, there is still room for researcher bias in the interpretation of results.

Moreover, it should be noted that my subject area does lend itself to alternative epistemological approaches. Chapter 4 focuses on eudaimonic well-being which finds its roots in the premodern Aristotelian concept of eudaimonia. In Aristotle's understanding, eudaimonia is a normative and objective construct, insofar as one's level of eudaimonia (or happiness) is dependent upon having a certain combination of characteristics (or virtues). Measuring eudaimonia therefore requires the researcher to use certain value judgments as to what constitutes a 'good life'. I avoid this by making an explicit distinction between eudaimonia and eudaimonic well-being. The latter concept is an established component of subjective well-being (see for example Dolan et al. 2011) and measures the extent to which the individual feels that their life has eudaimonic qualities (e.g. the things they do are felt to be meaningful or worthwhile) whether or not this is objectively true. By focusing only on

quantitative self-reported measures of well-being (based on survey questions that have been developed by others), I am able to adopt a positivist approach to the research.

1.3 Outline of thesis

This thesis is structured as follows. Chapter 2 provides a review of the well-being literature, with a focus on studies related to work and well-being, and also presents an overarching theoretical framework for my research. Chapter 3 presents the findings from the first of my three studies, using the Labour Force Survey (LFS) and Understanding Society: The UK Household Longitudinal Survey (UKHLS) to explore the impact of weekend working on subjective well-being outcomes in the UK. In Chapter 4, I use the UK Annual Population Survey (APS) and the US American Time Use Survey (ATUS) to explore the impact of occupation and job type on eudaimonic well-being. The subject for Chapter 5 is specifically related to intra-household effects, exploring the impact of unemployment on the well-being of partners based on data from the Understanding Society harmonised British Household Panel Survey project (harmonised BHPS). Chapter 6 concludes.

Chapter 2: Literature review and theory

2.1 Literature Review

2.1.1 Measuring well-being

The notion that human well-being can be measured directly is a deviation from the marginalist assumption, dominant among economists in the twentieth century, that utility cannot be observed directly in any meaningful way but is rather inferred from observed choices. Since disposable income is generally the constraint which restricts the ability of individuals to achieve higher preferences, it is often assumed that income should be a good predictor, and even proxy, for utility.

MacKerron (2012) identifies a 'counter-revolution', possibly started by Easterlin (1974), in which some economists began to take more notice of the psychology literature and embrace the concept of subjective well-being (SWB). While the preference satisfaction approach assumes that individuals act such as to maximise their own utility without needing to understand or experience this utility directly, the SWB approach assumes that well-being, which can possibly be described as experienced utility (Kahneman et al. 1997), can be understood and reported directly and quantitatively by individuals. Benjamin et al. (2012) explore the congruence between expected SWB and the choices made by individuals in hypothetical scenarios and find that people usually make choices consistent with maximising their SWB but that there are some systematic exceptions to this rule. This implies that SWB is an important determinant of utility but there are other factors that also determine why people make the choices that they do, and hence should also be considered part of the utility function. Dolan and White (2007) discuss the advantages and disadvantages of using SWB to inform and evaluate policy, and conclude that it is a robust measure of how satisfied people really are with their lives.

Dolan et al. (2011) set out three different measures of SWB. Evaluative well-being measures the extent to which respondents are satisfied with their lives as a whole, or particular life domains. Experiential,

affective or hedonic well-being is more focused on how respondents feel in the short term (e.g. happiness, anxiety) without requiring them to evaluate their life as a whole. Eudaimonic well-being measures the extent to which individuals feel that their life is worthwhile, and finds its roots in Aristotle's concept of eudaimonia.

Psychologists have also developed a range of well-being scales which attempt to quantify an individual's well-being by aggregating responses across a number of questions. One example is the General Health Questionnaire (GHQ), which is designed specifically to measure psychological health. Scores on the GHQ have been found to be a good predictor of psychological morbidity (Guthrie et al. 1998; Goldberg and Blackwell 1970). The GHQ has been used widely in the economics literature as an indicator of well-being (e.g. Clark and Oswald 1994; Brown et al. 2005; Roberts et al. 2011).

2.1.2 Determinants of well-being

To put my research into context and construct the empirical models, it is helpful to review the existing literature on the factors that are known to influence subjective well-being. MacKerron (2012) and Dolan et al. (2008) both present reviews of the economic literature that provide evidence of the determinants of well-being. In the next section, I review the literature specifically on work and well-being while in this section I review the literature on other determinants of well-being not related to work.

Substantial research has been undertaken on the relationship between income and well-being. In line with economic theory, income is positively associated with SWB but the marginal utility of income decreases as income rises (Layard et al. 2008). However, the so-called 'Easterlin Paradox' (Easterlin 1974; Easterlin 1995) shows that for developed countries at least, while wealthier individuals are generally happier, average satisfaction or happiness levels within a country do not increase over time even as average incomes increase. The evidence from the literature suggests that this paradox is due to relative income being more important for well-being than absolute income. Clark et al. (2008b) suggest that SWB is dependent both on income relative to others (social comparison) or current

income relative to past income (habituation). In the latter case, individuals are found to adapt their aspirations over time such that increases in income have only a temporary effect on well-being.

In terms of personal characteristics, the lowest levels of life satisfaction are found at middle age.[2] Women tend to report higher levels of self-reported happiness than men (e.g. Alesina et al. 2004) but lower scores on the GHQ (e.g. Clark and Oswald 1994). This suggests that women tend to have higher cognitive or evaluative well-being than men (where SWB is elicited directly) but lower affective well-being (where well-being is inferred from validated psychological scales).

As described by Dolan et al. (2008), the literature presents a mixed picture as to the impact of education on well-being. The authors suggest that observed correlations between education and well-being may be due to the positive health impact of education, as found in Bukenya et al. (2003) and Gerdtham and Johannesson (2001). Health itself has a strong positive correlation with SWB, in particular psychological health (which is by definition close to SWB) but also physical health, and this is found consistently in the literature (Dolan et al. 2008). While in some cases this result may be exaggerated due to reverse causality, Shields and Wheatley Price (2005) find that specific conditions such as heart attacks and strokes reduce well-being.

Relationship status is found to be important to well-being. Married people or those in a partnership report higher levels of SWB than single people (Blanchflower and Oswald 2004) and relationship breakdown, including separation, divorce and widowhood, has a negative effect (e.g. Helliwell 2003). The evidence on having children is mixed. While having children is generally associated with higher life satisfaction, it is also associated with lower levels of day-to-day happiness (Haller and Hadler 2006) and is dependent on other factors such as financial circumstances, parental status, the child's care needs and cultural factors.

[2] Various studies find that a quadratic function in age best predicts SWB, where the coefficient on age is negative and the coefficient on age-squared is positive, suggesting a U-shaped function (MacKerron 2011; Dolan et al. 2008).

Work status and conditions are also important determinants of well-being. As this is the subject of my research, I review this literature in more depth in the next section.

Attitudes and beliefs tend to have an important impact on SWB. Johnson and Krueger (2006) find that perceptions about one's financial situation are a stronger predictor of well-being than actual financial circumstances. Higher levels of trust in society are also associated with higher levels of life satisfaction (Helliwell and Putnam 2004) while those with religious beliefs also have higher well-being, and this can effectively 'insure' them against the potential effects of negative shocks on well-being (Clark and Lelkes 2005). Certain personality traits, such as extraversion and conscientiousness, are also associated with higher well-being (Weiss et al. 2008).

There is also some evidence that SWB is determined by environmental factors which do not directly affect one's own circumstances, such as income inequality (e.g. Fahey and Smith 2004) and unemployment levels in society (e.g. Di Tella et al 2001).

Time use affects well-being in a number of ways. SWB is negatively associated with caring for others, particularly family members (Hirst 2005; Marks et al. 2002), and is also negatively associated with commuting (Stutzer and Frey 2008) although Roberts et al. (2011) and Munford et al. (2018) find that this is only significant for women. On the other hand, there is a positive relationship between SWB and exercise (Biddle and Ekkekakis 2005), religious activities (Clark and Lelkes 2005) and membership of community organisations (Helliwell and Putnam 2004). There is less clear evidence that volunteering leads to greater levels of happiness.

There is an important issue in the well-being literature regarding the persistence of changes to well-being following life events. For example, Clark et al. (2008a) use 20 years of German Socio-Economic Panel (GSOEP) data to show that people adapt fully to marriage, divorce, widowhood and birth of a child, insofar as SWB levels return to prior levels following these events in at most five years. In contrast, unemployment is shown to have a long-lasting impact on SWB particularly for men.

Moreover, the study finds that, for many of these life events, there is also an anticipation effect whereby SWB shifts in the months and years leading up to the event.

2.1.3 Work and well-being

As reviewed in Dolan et al (2008), there are a large number of studies suggesting a significant and causal relationship between unemployment and reduced well-being. For example, Lucas et al. (2004) analyse GSOEP to assess how life satisfaction responds to becoming unemployed and find that life satisfaction on average drops by half a point on a 0-10 scale. This effect persists even when accounting for income, which appears to contradict traditional economic theory where work is assumed to generate disutility (i.e. individuals are assumed to prefer to do less work for the same amount of income). Similar results for the UK are found by Clark and Oswald (1994). They find that the well-being penalty (in terms of GHQ scores) for being unemployed is worse than divorce or marital separation, suggesting that unemployment is not generally a voluntary state and most people would prefer to be in work. Clark and Oswald (1994) and Clark (2003) also find that the well-being penalty for being unemployed is less in regions with high unemployment, which suggests that how people feel about being unemployed is in part a reflection of social norms. While being out of the labour force is also bad for SWB compared to being employed, Winkelmann and Winkelmann (1998) find that unemployment is significantly more damaging to SWB than non-participation.

Among employed individuals, there are a number of factors related to the quality of the job that are found to be associated with well-being, again controlling for income. A review by Jeffrey et al. (2014) finds that factors such as autonomy, variety of work, clear understanding of the role and feedback from managers are all associated with higher levels of job satisfaction and/or life satisfaction. Clark (2015) reports that, in the British Household Panel Survey (BHPS), the nature of the work and the hours of work have the highest correlation with job satisfaction while a similar analysis based on the International Social Survey Programme (ISSP) Work Orientations questionnaire reveals that job satisfaction has a high correlation with relations at work and job content, followed by promotion

opportunities, income and job security. Bardasi and Francesconi (2004) find that casual work is detrimental to SWB compared to permanent work while Blanchflower and Oswald (1998) find that self-employment has a positive impact on well-being in comparison to being employed.

As set out below, there is a substantial literature on the relationship between working hours and well-being. The general conclusion from these studies is that it is primarily a mismatch between desired hours and actual hours which is detrimental for well-being. Similarly to unemployment (which is itself an extreme form of underemployment), both underemployment and overemployment are associated with reduced well-being, and the optimal number of hours varies between individuals. These findings suggest that labour markets do not always migrate to a 'clearing' equilibrium whereby individuals supply their desired number of hours.

Bardasi and Francesconi (2004) estimate a series of logistic regression models to analyse a panel of workers across ten waves of the BHPS, to assess whether transitions between part time and full time employment affect mental health, general health status, life satisfaction and job satisfaction. The results suggest that, controlling for other factors, there is no significant difference between full time and part time workers on general well-being outcomes although part time workers on less than 16 hours a week do have higher levels of job satisfaction.

Booth and van Ours (2008) also use the BHPS to analyse fixed effects estimations of hours-worked satisfaction, job satisfaction and life satisfaction from transitions between full time work and part time work, although their analysis is restricted to individuals with a partner. It is found that men have higher hours-worked satisfaction when working full time without overtime (although there is no relationship between hours worked and job satisfaction or life satisfaction). For women, part time work is associated with the highest hours-worked satisfaction and job satisfaction although there is no effect on life satisfaction, a result which was perplexing to the authors.

Booth and van Ours (2009) also apply a similar model for Australia, using the Household Income and Labour Dynamics in Australia (HILDA) Survey data. Similarly to the UK study, partnered women working part time and partnered men working full time experience the highest satisfaction with hours of work but there is no relationship between job satisfaction and working hours. Unlike in the UK, the Australian data suggests that there is a significant relationship between working hours and life satisfaction. Men's life satisfaction is increased when working full time while women's life satisfaction is reduced if they work full time as opposed to part time. These results are found not to be influenced by whether or not there are children present in the family.

Gash et al. (2012) use BHPS and GSOEP data to analyse the impact of changes to working hours on life satisfaction for women in the UK and Germany. The study finds that partnered women experience enhanced life satisfaction after moving from full time to part time work, as long as they stay in the same job. This appears contradictory to Berger (2013) who finds that German mothers receive a life satisfaction penalty from working part time compared to working full time.

The issue of working hours mismatch is first treated explicitly by Wooden et al. (2009). This study also uses HILDA, and focuses on life satisfaction and job satisfaction as the outcome variables of interest. The explanatory variables for the regression include a set of interaction terms based on actual hours worked and whether the respondent is underemployed, overemployed or matched (based on their desired working hours), again using a fixed effects model. The study finds that, for workers whose actual and desired hours are matched, there is no relationship between working hours and life or job satisfaction. However, there is a life satisfaction penalty for workers where there is an hours mismatch, and the negative impact is stronger for overemployed people than underemployed people. Angrave and Charnwood (2015) apply a similar methodology for the BHPS and find that both overemployment and, to a lesser extent, underemployment are associated with reduced job satisfaction, life satisfaction and psychological well-being, as measured by the GHQ. They also test the extent to which there is adaptation to working time mismatch, and find that people tend to adapt to

underemployment but less so to overemployment. Wunder and Heineck (2013) also assess the well-being impact of hours mismatch, using GSOEP data, and again find that there is a well-being penalty for deviation from preferred working hours, although in contrast to Wooden et al. (2009), in Germany the effects for underemployment are more severe than for overemployment.

2.2 Theoretical framework

The framework that provides the basis for all three theoretical models in the subsequent chapters is derived from the allocation of work over time model presented by Hamermesh (1999). We evaluate the utility of individual i over T time periods. In each period t (where $t = 1, \dots, T$), she spends the time either working ($L_{it} = 1$) or in leisure ($L_{it} = 0$). She also consumes C_{it} in each period. We assume that, in each period t, the individual derives utility from both the activity she is undertaking (work or leisure) and the amount she consumes during that period. Her total utility V_i experienced over the total evaluation period T can be expressed as:[3]

$$V_i = \sum_{t=1}^{T} U_{it}(L_{it}, C_{it}) \tag{1}$$

In Hamermesh's model, it is assumed that the evaluation period is one day, divided into 24 one hour periods (i.e. $t = 1, \dots, 24$), but T can theoretically represent any length of time as long as it is a short enough time horizon not to require discounting. If we also assume that there is no saving or borrowing outside of the evaluation period, there is no non-labour income and the individual can command a wage w_{it} for working in period t, then the individual has the following budget constraint:

[3] This is almost identical to Hamermesh's (1999) equation 1, except that Hamermesh assumes that the individual derives utility only from leisure time not working time such that U_{it} is a function of $1 - L_{it}$ rather than L_{it}. My formulation allows the individual to derive utility (which of course could be negative as well as positive) from any activity including working. As such, it has some similarity to Krueger et al.'s (2008) equation 1 where utility is a function of both the time spent in an activity and the amount consumed during that activity, summed across all activities.

$$\sum_{t=1}^{T}(w_{it}L_{it} - C_{it}) = 0 \tag{2}$$

This basic framework is expanded in different ways in the next three chapters according to the research question being explored. In Chapter 3, I assume that the evaluation period consists of just two periods ($T = 2$), the weekend and the working week, such that each individual works either a weekend or a non-weekend schedule. In Chapter 4, I introduce heterogeneity into L_{it} by allowing utility to vary according to the type of work undertaken by i and also decompose the utility function into hedonic and eudaimonic components. In Chapter 5, I expand the model to accommodate two agents (female and male partners) with interdependent utility functions.

2.3 Estimation strategy

In all three chapters, I adopt an appropriate econometric procedure to identify causal effects of work-related factors on different well-being outcomes. All analysis uses existing survey data for which the necessary permissions have been obtained. In line with Solon et al. (2015), sample weighting is not applied for any causal analysis.

Chapter 3: The impact of weekend working on well-being

3.1 Introduction

The practice of dividing the seven day week into five working days and two rest days is an established social convention that dictates business, community and family life across most of the world today. In the UK, as in most of the Western world, the rest days of Saturday and Sunday have come to be defined as the 'weekend'. Aside from social convention, there is nothing in the natural world and very little in terms of official legislation that marks these two days out as being different from the other five days of the week. However, it is generally accepted that working hours that include the weekend are 'atypical' in the same sense that evening or night work is deemed atypical (e.g. Barnes et al. 2006).

This chapter explores whether weekend working has a detrimental impact on well-being in the UK. The practice in some sectors of paying workers a premium wage for working at the weekend compared to doing the same job at other times of the week suggests that weekend working does involve an enhanced level of disutility for which workers demand to be compensated. The existing literature suggests that, relative to those not working at the weekend, weekend workers experience lower satisfaction with days worked (Martin and Lelchook 2011), are more likely to leave their job (Martin et al. 2012) and experience higher levels of stress (Davis et al. 2008). Parents working at the weekend experience higher levels of work-family conflict (Hosking and Western 2008) and spend less time with their children (Hook 2012; Barnes et al. 2006) although there is no impact on marital stability (Presser 2000; Davis et al. 2008) or maternal or child outcomes (Gassman-Pines 2011). There are also significant differences to be found in how weekend workers spend their non-working time compared to non-weekend workers, suggesting an impact on the amount of time they spend with others (Craig and Brown 2015). Moreover, people are found to be less happy when at work during the weekend relative to the normal working week (Bryson and MacKerron 2017).

This chapter adds to the literature by using two large national datasets (the LFS and UKHLS) to analyse the effects of weekend working on eight different measures of SWB. Both datasets contain panel data, which allows for a fixed effects estimation, such that results should not be confounded by unobserved time invariant factors. This fixed effects approach sets my research apart from much of the existing literature on the effects of weekend working, including Davis et al. (2008), Hosking and Western (2008) and Craig and Brown (2015) which are all based on cross-sectional data. The study by Bryson and MacKerron (2017) does use a fixed effects estimator but the sample is drawn from a self-selecting population of users of the Mappiness app,[4] which is not representative of the wider population in the same way that national surveys are designed to be representative.

3.1.1 History and meaning of the weekend

As described by Zerubavel (1985), the week as a unit of time is an entirely social phenomenon with no basis in the natural world. Unlike days, months and years, whose lengths are determined by the relative movements of the earth, sun and moon, the concept and length of the week have no such astronomical motivation. The seven-day week, which is in almost universal use today, has its roots in the Jewish idea of Sabbath[5] and may have been introduced to the Jewish nation during its exile in Babylon following the destruction of the Temple in Jerusalem by the Babylonians in 586 B.C.

While Saturday was established as the Sabbath day or peak day in the Jewish calendar, the growth of Christianity and Islam as major religions in the first millennium A.D. led to the emergence of alternative 'peak days' within the established seven-day week. In Christianity, Sunday emerged as the chosen day of rest and worship[6] while Mohammed chose Friday as the weekly day of public worship for Islam.

[4] https://www.mappinessapp.com/. Accessed August 2018.
[5] The Sabbath is a prominent theme in the Old Testament and its origins are traced back to the creation story itself, in which God created the heavens and the earth in six days and then rested on the seventh, declaring that day to be holy (Genesis 2:1-3). Observance of the Sabbath is referenced explicitly in the Law of Moses, and is included as one of what we now know as the Ten Commandments (Exodus 20:8-11) thus instituting this weekly cycle into the lives of the Jewish people.
[6] The Jewish 'first day' (Sunday) is described by all four Biblical gospels as the day of Christ's resurrection, and was hence renamed 'the Lord's Day' (*dies Dominica* in Latin).

In Christian Britain, there is clearly a long history of social and working life revolving around a six-day working week plus a weekly rest day on Sunday. However, the emergence of a two-day weekend is much more recent. In pre-industrial Britain, the custom of 'Saint Monday' was widely practised among the working classes (Reid 1976; Bienefeld 1972; Rybczynski 1991).[7] Following industrialisation, the short Saturday was introduced to Britain gradually for different industries, following the rise of trade unions in the nineteenth century. By 1876, according to Bienefeld (1972), the Saturday half-holiday was "all but universal". Rybcynski (1991) suggests that the word 'week-end' (originally hyphenated) started to enter common parlance at about this time. The five-day working week with a full two day weekend emerged as the standard pattern across the UK and other industrialised countries from the early twentieth century.[8]

3.1.2 Weekend working in the UK

The industrial revolution brought about a significant change in occupational structure, involving a shift from a largely agricultural economy to one of mass employment in manufacturing. It is likely that this shift precipitated the establishment of standard working hours but, as Presser (2003) points out, more recent trends in developed countries away from manufacturing and towards services, involving increased levels of female labour force participation, have led to the emergence of the '24/7 economy'. Personal services in particular (including retail, hospitality and healthcare) involve workers interacting with customers in real time and as such demand dictates that these services must be available when the customers are themselves available and not working. Presser (2003) also refers to the contribution of demographic changes in industrial societies (higher incomes and an ageing population leading to greater demand for personal services) and technological change, leading to the

[7] Rather than being an official day off, Mondays and sometimes Tuesdays were characterised by large numbers of people staying away from work as an unofficial extension to the Sunday rest. At a time when most of the population was self-employed, the practice of taking time off at the start of the week usually involved longer working hours towards the end of the week to 'catch up' on lost productivity.

[8] Sopher (2014) suggests that in 1908 a New England mill became the first American factory to institute a five-day week, in order to accommodate Jewish workers who observed a Saturday Sabbath. Other sources attribute the full two-day weekend to car manufacturer Henry Ford.

need for an increased proportion of the workforce to be employed at the weekend or non-standard times of day.

Although it is a widely accepted and practised social convention, it is important to note that, in the UK at least, the weekend receives very little official recognition in legislation. While there is legislation regarding working hours, regular rest days and holiday allowance, the only special legislation restricting weekend working specifically relates only to shop workers and betting shop workers.[9]

The proportion of the UK labour force working at the weekend is similar to that of other European countries. As shown in Figure 3.1, 40% of UK employed persons usually or sometimes worked on Saturdays in 2014, compared to 44% across the EU on average. Figure 3.2 shows that a lower proportion (27%) usually or sometimes worked on Sundays, but again this was similar to the EU average (25%). However, among the 28 EU countries, only Ireland, Slovakia and the Netherlands had more than the 19% of UK workers who usually worked on Sundays.[10] Data from the European Company Survey (Eurofound 2010) finds that, in 2009, 54% of establishments in the UK required at least some of their staff to work on Saturdays compared to 40% across the EU as a whole, while 40% of UK establishments required Sunday working, second only to Latvia in the European rankings and much higher than the 24% EU average. However, it should be noted that these establishment-level statistics are heavily weighted by the large number of small employers relative to large employers, so do not reflect the average experience of workers.

[9] Shop workers who have been with the same employer since August 1994 and betting shop workers who have been with the same employer since January 1995 have the right not to work on Sundays. Workers who started with their employer more recently also have the right to opt out of Sunday working if they give their employer three months' notice. (Source: https://www.gov.uk/sunday-working - Accessed January 2016)

[10] Data extracted from Eurostat (ec.europa.eu/Eurostat) in January 2016. Measure is employed persons working on Saturdays (Sundays) as a percentage of total employment. Denominator is all employed persons aged 15-64. Numerator is number who "usually", "sometimes" or "never" work on Saturdays (Sundays).

3.2 Literature review

While the literature on working hours appears to be well established (see Chapter 2), there is relatively limited quantitative analysis focusing on the well-being effects of different work schedules (i.e. the times during the day or week that people undertake paid work).

Some studies have used the BHPS to assess the mental health impact of different shift patterns. For example, Bardasi and Francesconi (2000) specify a fixed effects model to analyse the association between 'non-standard employment' (which includes shift work) and GHQ scores, as a measure for mental health. They find that overall there is not a significant relationship between rotating shifts and mental health scores (with the exception of women with less than O-level qualifications where there is a mental health penalty from starting a job with rotating shifts), although entering a job that involves working mornings only is associated with a mental health improvement for both men and women, a result which is driven by the significant effects for younger age groups. Ulker (2006) applies fixed effects and random effects models to HILDA data to explore the impact of non-standard work schedules on physical and mental health in Australia. He finds a significant effect for men on self-rated health, general health (SF-36),[11] physical functioning and, to a lesser extent, mental health, but no significant effects for women.

Bara and Arber (2009) exploit the longitudinal aspect of BHPS to assess the impact of sustained shift work on mental health, finding that for men undertaking night work for four years or more is associated with reduced GHQ scores and increased self-reported anxiety and depression. For women, these adverse effects are observed for those working varied shift patterns for two to three years, or four years or more, but sustained night working has no adverse impact for women. Robone et al. (2011), also using the BHPS, find that working unpaid overtime is associated with reduced GHQ scores

[11] Short Form Health Survey. See Ware et al. (1994).

for women and working not during the day or on a rotating shift is associated with reduced GHQ scores for men, with no impact on self-assessed health.

Less has been written on the well-being impact of weekend working. The BHPS does not contain any variables indicating weekend working, so this has limited scope for analysis of this issue in the UK. Such a variable is included in HILDA, however, and this was analysed as part of a cross-sectional study by Hosking and Western (2008). They explore the effects of non-standard employment on work-family conflict in Australia, using data from the first wave of HILDA. In this study, the outcome variable of interest is an index based on a set of questions related to the conflicts parents might experience between work and family life, but there is no analysis of well-being. Regular weekend working is associated with increased work-family conflict for parents, with the result being significant for fathers but not mothers. The possible reasons for this finding appear to be twofold. Firstly, the authors speculate that mothers have a greater propensity than fathers to self-select into non-standard employment patterns, due to placing a higher value on their childcare role. The positive effect on work-family conflict experienced by these self-selecting mothers counteracts the potentially negative impact caused by employer demand for non-standard working hours, which affects both men and women. They also find that part-time working was a much stronger predictor of reduced work-family conflict for mothers but not fathers, suggesting that there are differences in working time preferences between genders. Secondly, the authors cite evidence that, as secondary carers, fathers' time with children is concentrated in playful or interactive activities (sports activities, outdoor play etc.) where weekend time is more valuable. While mothers also engage in such activities with their children, this constitutes a lower proportion of mothers' total time spent with children as proportionally more time is spent on other activities such as day-to-day physical care where there is no weekend premium. The analysis includes a large number of conditioning variables (e.g. occupation and sector, number and age of children, sex role attitudes and education level) but does not account for any unobserved factors that may be correlated both with working patterns and perceptions of work-family conflict. A

model based on panel data rather than cross-sectional data would enable these unobservable factors to be controlled for as long as they do not vary over time.

Tausig and Fenwick (2001) also consider the effects of weekend working, and other non-standard schedules, on perceptions of work-life balance although their analysis is not restricted to parents. Using US data from 1992, they find that individuals working a non-Monday to Friday schedule are significantly less likely to report good work-life balance than individuals working a standard schedule and that this association persists even when controlling for the extent to which the individual perceives that he/she has control over working hours. This is also a cross-sectional study which does not control for the possible mitigating fixed effects. Moreover, the data used in this study is nearly 25 years old so it is possible that expectations and norms around weekend working may have changed substantially in a quarter of a century.

A study by Cooke et al. (2009) finds that, among a cross-section of Canadian employees, there is very little difference overall in job satisfaction levels between part time weekend workers and all other workers but speculate that this result may be due to partnered women having a preference for non-standard working schedules in order to facilitate domestic and family responsibilities.

Davis et al. (2008) find that weekend working in the US is not associated with perceived marital instability or negative spillovers between family and work, and vice versa, although night working is found to be associated with these negative outcomes. However, the incidence of daily stressors (a more hedonic assessment of well-being) is found to be higher among weekend workers than weekday workers. White-collar weekend workers report higher incidence of work-related stressors while blue-collar weekend workers report higher incidence of spouse-related stressors. Again, this study is based on between-person analysis from a cross-sectional dataset and only controls for observable life course and background characteristics. A difference between night working and weekend working in the US is also found by Gassman-Pines (2011), based on a survey of 61 low income mothers of pre-school children. While night working is shown to have an adverse effect on maternal mood, mother-child

interactions and child behaviour, there are no such negative associations among women working at the weekend, although the interaction between night working and weekend working is significantly related to reduced child positive behaviour. This also confirms the (now somewhat dated) findings of Presser (2000), in which non-day work schedules are associated with marital instability among American couples with children but these effects are not observed for people working during the day at the weekend.

Other studies have used the UK's National Survey of Time Use (UKTUS) 2000 to assess the effects of weekend working. For example, Hook (2012) analyses the time use of fathers in the UK and finds that those who work at the weekend spend less time with their children than those not working at the weekend, partly as a result of higher overall hours. Once total working hours are controlled for, fathers are able to compensate in terms of time spent alone with children but not on family time or time spent as a couple. The data is cross-sectional and no inference is provided about the causality of weekend working on other time use. Barnes et al. (2006) also conduct detailed analysis of the 2000 UKTUS. Using a cross-sectional ordinary least squares (OLS) regression, they find that time spent with children, and time spent on particular activities involving children, is negatively associated with atypical working patterns (including weekend working) of both fathers and mothers. However, Brayfield (1995) finds that fathers in the US are more likely to engage in childcare of pre-school children when the mother works at the weekend, although there is no effect for school-age children.

Similarly, Craig and Brown (2015) and Craig and Brown (2014) use the Australian Bureau of Statistics (ABS) Time Use Survey to assess whether weekend workers 'make up' for lost non-work time during the week, focusing on all workers not just parents. They find that weekend workers, and particularly those working on a Sunday, spend less non-work time in the company of others (including family and friends both inside and outside of the household) and more time alone than people who do not work weekends. It is suggested that this may lead to a negative well-being impact, although this is not captured in the data. The study finds that weekend workers are also not able to compensate for lost

recreation time and women working on Sundays spend less time overall engaged in childcare. Bittman (2005), using an earlier ABS Time Use Survey, finds a similar result insofar as people working on a Sunday spend significantly less time engaged in leisure with others on a Sunday than people not working that day, but do not compensate for this by spending more time in similar activities on a weekday.

Martin and Lelchook (2011) analyse a survey of employees of a large retailer in the US to assess the extent to which weekend working affects attitudes to days worked. They find that workers who worked fewer weekend days in 2010 compared to 2007 report a higher satisfaction with days worked in 2010 than those who worked on both Saturdays and Sundays in both years. They also find that workers who experienced a higher level of weekend working in both years had a lower satisfaction with days worked than those who undertook less weekend working in both years. This is counteracted somewhat by self-selection into weekend working as those who prefer to work on Saturdays have a lower satisfaction penalty for working on Saturdays than those who would have preferred not to work on Saturdays. The same does not hold true for Sunday working, however, which is consistent with a higher wage premium being offered to Sunday workers to compensate them for working a non-preferred schedule. The same authors (Martin et al. 2012) also find that, among retail workers in a particular US company, those working weekend schedules or non-day shifts remain with their employer for a shorter duration than those on standard schedules.

There is limited evidence on the direct link between weekend working and well-being. Based on a survey of 376 Canadian workers, Jamal (2004) finds that employees involved in weekend work report higher emotional exhaustion, job stress and psychosomatic health problems than employees not involved in weekend work, but this study does not appear to control for other factors so the results should be treated tentatively.

Possibly the strongest evidence from the existing literature on the impact of weekend working on SWB is provided by Bryson and MacKerron (2017). In this study, data was collected from UK individuals via

a smartphone app called Mappiness. At random points in time, the app prompts the participant to report their mood (specifically, levels of happiness and relaxation) and also report what they are doing at the time. This is an example of the Experience Sampling Method (ESM) in which SWB is elicited in real time (see Hektner et al. 2007; Stone and Shiffman 2002). This can be contrasted to the Day Reconstruction Method (DRM), where subjects report their SWB retrospectively after reviewing their activities on the previous day (see Kahneman et al. 2004). Bryson and MacKerron (2017) find that participants on average report very low levels of happiness and relaxation while working or studying, second only to being sick in bed among all coded activities. Average happiness is even lower when the working or studying occurs at the weekend relative to the hours of 6am-8pm on Monday-Friday. Due to the fact that Mappiness collects multiple observations from each participant over time, the analysis is able to control for fixed effects, using a similar method that I adopt to analyse ATUS in Chapter 4. However, Mappiness users are self-selecting by nature and should not be expected to be representative of the wider UK population.[12]

Finally, it is worth summarising the literature on day of the week effects on well-being, as this provides some indication of whether there is anything 'special' about the weekend in terms of how people feel. Ryan et al. (2010) report results from a survey of 74 employed individuals in the US in which participants recorded their mood, alongside their activities at different times of the day and week. The study finds that reported well-being is significantly higher between Friday evening and Sunday afternoon, which is found to be mediated by participants experiencing higher levels of autonomy and relatedness. The effects of not working account for all of the difference in unpleasant feelings between weekdays and weekends, but only partially account for the difference in pleasant feelings, suggesting that a 'weekend effect' does exist even taking account of different work schedules. Helliwell and Wang (2014) also find strong weekend effects on affective well-being (but not evaluative well-being) using

[12] Bryson and MacKerron (2016) show that Mappiness respondents differ in number of ways from the population at large. Specifically, Mappiness users are more likely to be young, in a higher income band and in employment or education compared to the rest of the population.

a larger national dataset (the Gallup/Healthways US daily poll). The data does not contain information on weekend working, although it is found that full time workers experience greater happiness at the weekend than part time workers, suggesting that these results are dominated by people working a traditional Monday to Friday working week. Also, about half of the difference in affective well-being between weekdays and weekends is explained by the difference in time spent with family and friends, which is much higher at weekends among this sample.

3.3 Theoretical framework

Recall from equation (1) in section 2.2 that the representative individual i derives utility both from the activity she undertakes (either work or leisure) and the amount she consumes in each period t where $t = (1, \dots, T)$. Expanding on this, now let $T = 2$ such that period t refers either to the weekend ($t = 1$) or the working week ($t = 0$). Equation (1) can hence be rewritten as:

$$V_i = U_{i0}(L_{i0}, C_{i0}) + U_{i1}(L_{i1}, C_{i1}) \quad (3)$$

Here, V_i is the individual's total utility and U_{i0} and U_{i1} are the utilities gained from non-weekend working and weekend working respectively. The dummy variables L_{i0} and L_{i1} are equal to 1 if the individual works on a weekday or a weekend day respectively, and 0 otherwise, and the continuous variables C_{i0} and C_{i1} denote the amount consumed on weekdays and weekend days respectively.

Similarly, the budget constraint in equation (2) can be rewritten as:

$$w_{i0}L_{i0} + w_{i1}L_{i1} = C_{i0} + C_{i1} \equiv C_i \quad (4)$$

Here, the parameters w_{i0} and w_{i1} refer to the wages that i would receive if she were to undertake a weekday shift or a weekend shift respectively. Let us now restrict the individual to working either a weekend or a weekday shift, but not both, such that $L_{i0} + L_{i1} = 1$. Hence equations (3) and (4) can be rewritten as:

$$V_i = U_i(W_i, C_i) \tag{5}$$

$$w_{i0}(1 - W_i) + w_{i1}W_i = C_i \tag{6}$$

Here, W_i is a binary parameter which equals 1 if the individual works at the weekend ($L_{i1} = 1$) and 0 if she does not work at the weekend ($L_{i0} = 1$), while C_i is total consumption over the week ($C_{i0} + C_{i1}$).

The empirical analysis in this chapter aims to test the null hypothesis that $U_i(0, C_i) = U_i(1, C_i)$ across all i keeping C_i (and all other variables that may influence well-being) constant.

3.4 Data

The data for my analysis is derived from both the quarterly LFS (Office for National Statistics 2016a) and the UKHLS (University of Essex 2015).[13] The two datasets measure weekend working in very different ways. In the LFS, the respondents are asked to report the days on which they were scheduled to work in the reference week (that is the week immediately preceding their participation in the survey). The UKHLS, however, simply asks respondents to state whether they sometimes or usually work at weekends. As such, the UKHLS definition is much broader as it pools together those working weekends only occasionally with regular weekend workers, while the LFS definition is more precise as it identifies actual scheduled weekend working in a given week. The two datasets also differ in terms of how well-being is measured. While both datasets include a measure of life satisfaction, the LFS measures this alongside happiness, anxiety and eudaimonic well-being while the UKHLS also measures GHQ and domain satisfaction (that is satisfaction with specific aspects of life). My approach of

[13]Although all efforts are made to ensure the quality of the materials, neither the original data creators, depositors or copyright holders, the funders of the data collections, nor the UK Data Archive, nor the UK Data Service bear any responsibility for the accuracy or comprehensiveness of these materials. Due to the potentially sensitive nature of the SWB data in LFS, access to the Quarterly Labour Force Survey was granted via the Secure Access framework. This involved accessing the data through a virtual laboratory. All research outputs were independently checked by UK Data Service officers before being released from the laboratory, to ensure compliance with data protection procedures.

estimating the same model using both datasets provides a much richer set of results than would be possible if only one dataset were selected.

3.4.1 Labour Force Survey

The LFS is a large scale survey undertaken in the UK since 1973, and on a quarterly basis since 1992. It is a simple random sample of all persons normally resident in private households in Great Britain and (from 1994) Northern Ireland, with a total sample size of between 90,000 and 157,000 individuals. Each individual, within sampled households, is interviewed five times over a 12 month period (at quarterly intervals) before leaving the sample, with a new batch of households joining the sample every quarter. The first interview is conducted face-to-face and subsequent interviews are conducted by telephone where possible. Some questions are asked in all five waves of the survey while others are asked at specific waves or in specific quarters only. Four questions on SWB have been included in the LFS since 2012, and are asked to all respondents in the first and fifth waves only.[14]

The analysis presented in this chapter is based on a pooled sample of individual adult respondents across 11 quarters, between January-March 2012 and July-September 2014. This period was chosen as it includes all quarters available to date where questions on well-being are included in the datasets.

3.4.1.1 Explanatory variables of interest – weekend working

The LFS quarterly data contains a number of different variables that can indicate the extent of weekend working at individual level. In the 'Employment Pattern' section of the questionnaire, respondents are asked to state the days of the week on which they normally work. They are also asked

[14] It should be noted that SWB variables are not normally included in quarterly LFS datasets. While SWB is collected at waves 1 and 5 of the LFS, the purpose of this collection is to provide well-being data for the APS. The reader should be aware of two analytical issues relating to the use of the LFS for SWB analysis. Firstly, the correct weighting variable to be used for SWB analysis is not provided in the LFS. This does not pose a problem for my research as the main findings are derived from unweighted regression analysis, and no descriptive statistics are provided in relation to SWB outcomes. Secondly, the LFS contains only a subset of the APS sample, as the APS sample is also derived from an APS boost. Therefore, the sample I have used does not constitute the full set of individuals from whom SWB data is collected for the APS. Nevertheless, the samples achieved from pooling together all LFS respondents appear to be sufficient for a robust analysis (over 25,000 reporting a wave 1 and wave 5 score for each of the four SWB variables).

whether they ever work on Saturdays and, separately, Sundays, and if so on how many Saturdays (or Sundays) they worked in the past four weeks. However, these questions are only asked once to each cohort in the survey (i.e. they are not asked every quarter or every wave) and therefore are useful for cross-sectional analysis only.

A different part of the questionnaire does, however, contain a question about days worked that is asked in every quarter. The first question in the 'Sickness' section of the questionnaire asks respondents who reported working in the reference week (effectively the seven-day period ending on the Sunday before the interview took place) to state on which days they were scheduled to work that week. From this information, I create three dummy variables to indicate the incidence of weekend working W_{it}: whether or not the individual was scheduled to work on the Saturday of the reference week; whether or not the individual was scheduled to work on the Sunday of the reference week; and whether or not the individual was scheduled to work at any time on the weekend of the reference week (i.e. on either the Saturday or Sunday or both).

It should be noted that these three variables do not necessarily reflect the usual working patterns of respondents and also exclude people who were working but were not scheduled to work in the reference week (e.g. due to holidays). Also, these variables do not measure the days actually worked in the reference week (as some scheduled working days may have been taken off due to illness or other unexpected reason, or respondents may have ended up working on a day on which they were not scheduled to work). However, bearing in mind that LFS interviews take place across the year, aggregated across cohorts these variables do provide a good snapshot of the extent of weekend working on an average week for different subsets of the working population. Also, the fact that the question is asked in every wave allows this variable to be used in a panel data specification.

3.4.1.2 Dependent variables of interest

Since the start of 2012, the LFS has included four well-being questions that have been used by the Office for National Statistics to measure average levels of well-being over time for the UK population

and various sub-populations. Each individual who stays in the survey for all five waves is asked these four questions on two occasions: at wave 1 and then approximately twelve months later at wave 5. The four variables can take any integer value between 0 and 10 and are summarised as follows.

The variable denoted 'Satisfaction' is derived from the question "Overall, how satisfied are you with your life nowadays, where nought is 'not at all satisfied' and 10 is 'completely satisfied'?" This variable measures overall life satisfaction and is designed as an indicator for evaluative well-being.

The variable denoted 'Worthwhile' is derived from the question "Overall, to what extent do you feel that the things you do in your life are worthwhile, where nought is 'not at all worthwhile' and 10 is 'completely worthwhile'?" This variable is designed as an indicator for eudaimonic well-being. I explore the subject of eudaimonic well-being in much greater detail in the next chapter, in the context of investigating the impact of job type on eudaimonic well-being.

The variable denoted 'Happy' is derived from the question "Overall, how happy did you feel yesterday, where nought is 'not at all happy' and 10 is 'completely happy'?" This variable is designed as an indicator for current levels of happiness, or hedonic well-being.

The variable denoted 'Anxious' is derived from the question "On a scale where nought is 'not at all anxious' and 10 is 'completely anxious', overall, how anxious did you feel yesterday?" This variable is designed as an indicator for current levels of anxiety, and is also a measure of hedonic well-being.

The distributions of these variables are shown in Figure 3.3 through to Figure 3.6. These histograms show that most people report relatively high well-being, with 8 out of 10 being the modal response for 'Satisfaction', 'Worthwhile' and 'Happy' and 0 out of 10 being the modal response for 'Anxious'.[15]

[15] It should be noted that the 'Anxious' variable is missing from the April-June 2012 dataset so individuals entering the survey (wave 1) in this quarter are effectively excluded from the analysis for this variable only. The three other dependent variables ('Satisfaction', 'Worthwhile' and 'Happy') are included in every quarter between January-March 2012 and July-September 2014 (the latest available quarter at the time of analysis). Hence, the regressions involving 'Anxious' as the dependent variable are based on a smaller pooled sample compared to the other three dependent variables.

3.4.1.3 Other explanatory variables

As summarised in section 2.1.2 above, the existing well-being literature reports that there are a number of personal characteristics that are consistently correlated to well-being so it is important that these are controlled for in the regressions, in order to isolate the effects of weekend working.

The first set of control variables include personal characteristics not directly related to employment and work. To control for whether the individual experiences a change in marital status in the 12 month period between wave 1 and wave 5, I include a dummy variable which takes the value of 1 if the individual is either married, co-habiting or in a civil partnership and 0 otherwise. I also include a dummy variable to account for the presence of children in the household which takes the value of 1 if the individual has dependent children aged under 19 living in the household and 0 if not.

Health is an important determinant of well-being. In each wave, respondents are asked to report their general level of health on a scale of 1 to 5, where 1 is “very good” and 5 is “very bad”. I reverse this scale so that higher scores indicate better health.

It is likely that income is correlated with well-being so, to control for this, I include as an explanatory variable the natural log of the net weekly income earned by the individual in their main job. This log-linear specification assumes that well-being is more likely to be sensitive to a proportional change in income rather than an absolute change.

The pooled regressions also contain covariates to account for gender, age (specified as a quadratic), highest qualification and whether or not the individual is from an ethnic minority (BME). However, as these characteristics are assumed to be constant across time (or, in the case of age, non-varying over time between individuals), these variables are not included in the panel data regressions.

In terms of work-related covariates, a public sector variable is included which takes the value of 1 if the individual works in the public sector and 0 otherwise. Similarly, a dummy variable is included for

temporary employment status (taking the value of 1 if the individual is in a non-permanent job and 0 if their job is permanent).

To account for the fact that a change in weekend working status may be associated with a change of job, I include a dummy variable entitled 'new job' which is set to 0 for all wave 1 observations and 1 for any wave 5 observations where the individual had changed job since wave 1. If the individual had not changed jobs, this variable is 0 in both waves.[16] Additionally, we might expect that change in well-being is not only affected by moving to a new job but is also affected by a change in the quality of job. To account for this, similarly to Gash et al. (2012), I include an indicator of job quality which is derived from the three-digit Standard Occupational Classification (SOC) code of the respondent's main job. I compute a ranking for these SOC codes based on the mean hourly gross pay in 2010, from the Annual Survey of Hours and Earnings (ASHE) (Office for National Statistics 2011).[17] Separate rankings are calculated for males and females. Where an individual changed SOC code between wave 1 and wave 5, the change variable takes the value of 1 if the individual moved into an occupation with a higher ranking (taking into account their gender) and -1 if they moved into an occupation with a lower ranking.[18]

Finally, we might expect that well-being is also influenced by the number of hours an individual works during the week. While alternative specifications have been tested for the robustness checks below,

[16] This variable is derived from the LFS variables CONMPY (year started working with current employer) and CONMON (month started current job). An individual is defined as having a new job in wave 5 if their current employment started more recently than the end of the quarter in which they undertook their wave 1 survey.
[17] Adapted from data from the Office for National Statistics licensed under the Open Government Licence v3.0.
[18] This variable was calculated by first observing the mean hourly wage for men and women for each 3-digit SOC 2000 classification according to ASHE 2010. These occupations were ranked by gender-specific hourly wage, thus creating separate male and female ranks. For all individuals in the sample, the 'Quality' variable is set to zero if *t* = wave 1. If the LFS individual is male, his value on 'Quality' in *t* = wave 5 is set to 1 if his wave 5 occupation is ranked higher (i.e. higher paid on average) than his wave 1 occupation on the male ranking, and -1 if his wave 5 occupation is ranked lower than his wave 1 occupation on the male ranking, and 0 if he was in the same occupation as in wave 1. The values for Quality are set similarly for female respondents based on the female ranking.

the core analysis for the LFS regressions uses total hours worked (main and second job combined) in the reference week.

3.4.1.4 Sample sizes

The total pooled (wave 1 and wave 5) sample size of working individuals aged 18 or above for whom weekend working status is known is 61,456 (see Table 3.13). A substantial number of these individuals did not complete the SWB questions, while a few completed some but not all of the four SWB questions. Moreover, the 'Anxious' variable is missing from the April-June 2012 quarter. Therefore, the sample size of those where both well-being and weekend working status are known is 38,033 for 'Satisfaction', 37,986 for 'Worthwhile', 38,028 for 'Happy' and 34,950 for 'Anxious' (see Table 3.11). Including the full set of control variables further reduces the sample size due to missing values on one or more control variable (net personal income in particular has a large number of missing values) so the sample sizes used for the main regressions are 29,236 for 'Satisfaction', 29,206 for 'Worthwhile', 29,234 for 'Happy' and 26,839 for 'Anxious'.

3.4.2 Understanding Society

The UKHLS is a longitudinal study of 26,000 UK households intended to be representative of the UK population in 2009. The remaining households (about 8,000) from BHPS were added to the UKHLS sample from wave 2. The sample also includes an Ethnic Minority Boost (EMB) of 4,000 households where at least one household member identified as being from an ethnic minority.

The sample of individual respondents used for this analysis is composed of all members of selected households at the time of the first wave of interviewing, known as Original Sample Members (OSMs), plus individuals subsequently joining a household with one or more OSMs in later waves. Only individuals completing the adult questionnaire and aged 18 or over are included in this analysis.

To date, data from the first seven waves of the UKHLS is available for analysis. Questions about life and domain satisfaction and the GHQ are asked in all waves and, with the exception of job satisfaction, form part of a self-completion questionnaire which all adult (age 16+) respondents are asked to

complete during the interviewer visit. However, questions about weekend working are included in the work conditions module and are asked only in every other wave. Therefore, to date only three waves containing this key explanatory variable (waves 2, 4 and 6) are available for analysis. The wave 2 interviews were conducted over the calendar years 2010 and 2011, the wave 4 interviews were conducted over the calendar years 2012 and 2013 and the wave 6 interviews were conducted over the calendar years 2014 and 2015. For a given household, the interviews took place at 12 month intervals (i.e. the time elapsed between waves 2 and 4 and between waves 4 and 6 was 24 months for each interviewee).

3.4.2.1 Explanatory variable of interest – weekend working

The relevant question in UKHLS, asked to all adult respondents that had a paid job (employed or self-employed) at the time of the interview, is expressed as follows: "Do you ever work at weekends?" If the respondent answers "yes" to this question, she is then asked the supplementary question: "Is that most/every weekend, or some weekends?" The combined answers to these two questions are then used to divide the responses into three categories: "Yes – most/every weekend"; "Yes – some weekends"; and "No weekend working". To simplify the analysis and boost cell sizes, I convert the weekend working variable from an ordinal to a binary variable by combining 'most weekends' and 'some weekends' into a single category. The resulting binary variable W_{it} takes the value of 1 if individual i worked at least some weekends in wave t and 0 otherwise. However, in the robustness checks reported in section 3.6.3.3 below I also test the model using the original weekend working categories to explore whether the extent as well as the incidence of weekend working are relevant to explaining variations in well-being.

3.4.2.2 Dependent variables of interest

The GHQ questions, which form part of the self-completion questionnaire to be completed by all adults, are derived from a validated scale designed to measure the general mental well-being of an individual. Respondents have a choice of four responses to each of these 12 questions, which can be

converted into an ordinal scale between 0 and 3, where 0 indicates good psychological health and 3 indicates poor psychological health. For each individual, the responses for all 12 questions are aggregated to generate a combined score of between 0 and 36. This scale can then be reversed such that lower scores indicate worse psychological health and higher scores indicate better psychological health. Appendix A provides details of the questions asked in the GHQ section of UKHLS and further details about the GHQ and its use is available from Goldberg and Williams (1988).

The satisfaction with leisure time and life satisfaction questions, also asked in the self-completion questionnaire, are expressed as follows: “Here are some questions about how you feel about your life. Please choose the number which you feel best describes how dissatisfied or satisfied you are with the following aspects of your current situation.” The respondent then reports a score of between 1 and 7, where 1 is “completely dissatisfied” and 7 is “completely satisfied” for “The amount of leisure time you have” and “Your life overall” respectively. These numerical values are retained for the analysis.

The job satisfaction question appears elsewhere in the questionnaire, following questions about the individual’s employment and commuting, and forms part of the face-to-face interview rather than the self-completion section. In all other respects, the job satisfaction question is similar to the satisfaction questions in the self-completion section and is treated the same. The job satisfaction question is expressed as: “On a scale of 1 to 7 where 1 means ‘Completely dissatisfied’ and 7 means ‘Completely satisfied’, how dissatisfied or satisfied are you with your present job overall?”

The histograms presented in Figure 3.7 through to Figure 3.10 show the distribution of each of these dependent variables, pooling all three waves in the analysis and excluding individuals not in the balanced panel (i.e. those that do not have three responses to the weekend working question). It can be seen that all four distributions are skewed towards higher well-being with the modal response being close to (but less than) the highest possible response. Unlike the other three variables, the satisfaction with leisure time variable has a secondary peak at a relatively low level of well-being (3 out of 7), indicating a relatively polarised distribution.

3.4.2.3 Other explanatory variables

To control for marital status, I include a dummy variable which takes the value of 1 if the individual is in a partnership at time t (married, in a civil partnership or living together), and 0 otherwise. Further dummies are included to control for carer status (equal to 1 if the individual reports caring for someone in the household and 0 otherwise), and for whether or not dependent children are living in the household. To control for health, I use a question from the self-completion questionnaire in UKHLS in which respondents are asked to rate their general level of health on a five-point scale where 1 is "Excellent" and 5 is "Poor". In my analysis this variable is reversed (so that 5 represents excellent health and 1 poor health) and is assumed to be cardinal. As a robustness check, I substitute self-assessed health for a disability / long term illness dummy. This makes little difference to the results.

Similarly to the LFS analysis, I also include monthly net personal income expressed in logarithmic terms. Note that, unlike the corresponding LFS variable, the UKHLS variable is derived from all personal income, not just wage income.

The pooled regressions also contain covariates to account for gender, age (specified as a quadratic) and highest qualification. However, as these characteristics are assumed to be constant across time, these variables are not included in the panel data regressions.

My analysis also includes a number of other variables related to changes in job or working conditions. UKHLS contains a question that asks the respondent to state whether or not they have changed job since the last wave.[19] I have combined the responses to this question in both waves 3 and 4 to compute

[19] Specifically, there are three questions about job changes in UKHLS. Respondents are first asked whether they have been continuously working with the same employer as at the last wave. If they are with the same employer, they are then asked whether they have been continuously working at the same workplace. If they are at the same workplace, they are then asked whether they have been continuously in the same job. My analysis assumes that all people that have changed employer or workplace have also changed jobs. Similar variables were calculated for whether or not the individual changed workplace (a subset of those that changed jobs) or changed employer (a subset of those that changed workplace) and these are addressed in the robustness checks in section 3.6.3.1 below.

for each individual whether or not they changed jobs between waves 2 and 4, and used the respective responses in waves 5 and 6 to compute whether or not they changed jobs between waves 4 and 6.[20]

A further variable is included to signify whether the individual has made an upward or downward shift in job quality. Similarly to the method described in section 3.4.1.3 above, this latter variable is derived from whether any change in occupation (3-digit SOC 2000 classification) between observations represents an upward or downward shift according to average gender-specific hourly pay rate as reported in ASHE 2010.[21]

I also include a dummy variable for whether the individual is self-employed and a dummy variable for whether the individual is in temporary employment (where the respondent considers their job to be in some way not permanent).

As discussed in the literature review in section 2.1.3 above, working hours can also be a significant predictor of well-being. UKHLS includes a question that asks both employed and self-employed people to state their usual hours of work excluding overtime. I also add to this the number of overtime hours usually worked per week (asked only to employees) to compute a variable denoting usual weekly hours of work. Much of the literature treats working hours as a binary or categorical variable (for

[20] This effectively generates two dummy variables, named Newjob1 and Newjob2. Where *t* = wave 2, both Newjob1 and Newjob2 are set to zero for all individuals. Moreover, Newjob2 is set to zero for all individuals in *t* = wave 4. Newjob1 is set to 1 in both *t* = wave 4 and *t* = wave 6 if the individual changed job between waves 2 and 4, and Newjob2 is set to 1 in *t* = wave 6 if the individual changed jobs between waves 4 and 6.

[21] This variable is calculated by first observing the mean hourly wage for men and women for each 3-digit SOC 2000 classification according to ASHE 2010. These occupations are ranked by gender-specific hourly wage, thus creating separate male and female ranks. For all individuals in the sample, the 'Quality' variable is set to zero if *t* = wave 2. If the UKHLS individual is male, his value on 'Quality' in *t* = wave 4 is set to 1 if his wave 4 occupation is ranked higher (i.e. higher paid on average) than his wave 2 occupation on the male ranking, and -1 if his wave 4 occupation is ranked lower than his wave 2 occupation on the male ranking, and 0 if he was in the same occupation as in wave 1. Where *t* = wave 6, the value of 'Quality' depends on both its value in wave 4 and any subsequent change in occupation between waves 4 and 6. A value of 2 in *t* = wave 6 denotes that the individual experienced an increase in job quality between waves 2 and 4 and again between waves 4 and 6, while a value of -2 denotes that the individual experienced a drop in job quality in both time intervals. A value of 1 (-1) at *t* = wave 6 indicates that the individual experienced an increase (decrease) in job quality either between waves 2 and 4 or between waves 4 and 6, but not both. A value of 0 where *t* = wave 6 indicates that either the individual did not change occupation classification across the three time periods or that he moved in one direction between waves 2 and 4 and then in the other direction between waves 4 and 6. The values for 'Quality' are set similarly for female respondents based on the female ranking.

example part time versus full time). However, this transformation results in a loss of data insofar as small changes in working hours (that do not affect full time / part time status) may still impact on well-being, so I have opted to retain hours worked as a continuous variable, assumed to be linearly related to well-being. Alternative definitions of working hours are tested in the robustness checks in section 3.6.3.1 below.

A final dummy variable controls for the individual's daily working schedule, defined as whether or not they work in the daytime only compared to other non-daytime shifts.[22] This is an important control, which is not available in the LFS data, as there is significant correlation between shift working and weekend working and it is important to separate out any adverse effects due to working non-daytime shifts from the effects of weekend working.

3.4.2.4 Sample sizes

The total pooled (waves 2, 4 and 6) sample size of working individuals aged 18 or above for whom weekend working status is known is 41,889 (see Table 3.14). The sample size of those where both well-being and weekend working status are known is 41,850 for job satisfaction, 39,479 for satisfaction with leisure time, 39,468 for life satisfaction and 39,387 for GHQ (see Table 3.12). Including the full set of control variables further reduces the sample size due to missing values on one or more control variable so the sample sizes used for the main regressions are 29,968 for job satisfaction, 29,885 for satisfaction with leisure time, 29,879 for life satisfaction and 29,806 for GHQ.

It should be noted that, while the LFS is a simple random sample, there is sample selection bias in the full UKHLS sample. For example, households in Northern Ireland and households containing at least one person of an ethnic minority are purposely over-sampled. For this reason, one of my robustness

[22] In all waves, respondents who were working were asked to state which time of day they normally work. Those that responded "mornings only", "afternoons only" or "during the day" are assumed to be daytime workers while all other responses ("evenings only", "at night", "both lunchtimes and evening", "other times of day", "rotating shifts", "varies/no usual pattern", "daytime and evenings" and "other") are assumed to be non-daytime working. The computed variable codes 1 for individuals that were working a daytime schedule in a given wave and 0 otherwise.

checks (see section 3.6.3.6 below) repeats the OLS regression on the core Great Britain sample only, which is itself a simple random sample.

I also remove all respondents under the age of 18 from both datasets, so that my analysis only includes the adult population. There is no upper age limit, although people not in work are effectively excluded from the sample.

3.5 Methodology / Specification

I use two main models to test the hypothesis that weekend working has an effect on well-being. Firstly, I use an OLS fixed effects model and, secondly, I use the Blow Up and Cluster (BUC) method, which is a version of the conditional logit model adapted for ordinal data. The results from both methods are reported and they yield very similar results.

To assess the impact of weekend working on different measures of satisfaction and well-being, I assume that the relationship between weekend working and well-being takes the following form:

$$S_{it}^{*} = \beta_0 + \beta_1 W_{it} + \mathbf{X}_{it}'\boldsymbol{\beta} + \upsilon_i + \varepsilon_{it} \qquad (7)$$

In this model, S_{it}^{*} denotes the outcome of interest (i.e. measure of satisfaction or well-being) for individual i at time t. Note that this is assumed to be a continuous variable which is not directly observed in the data. In line with the theoretical model described in section 3.3 above, the variable W_{it} is a dummy variable which takes the value of 1 if individual i worked weekends at time t and 0 if the individual did not work weekends at time t. The vector $\mathbf{X}_{it}$ contains all other observable time variant factors that are thought to impact on S_{it}^{*}. The fixed effects error term υ_i contains all unobservable variables that are assumed not to change over time, while the time variant error term is ε_{it}.

In the data, SWB is reported on an ordinal scale. If person i's response to a given subjective well-being question at time t is denoted as S_{it}, then S_{it} can be assumed to be a proxy response for 'true' unbounded well-being S_{it}^{*}. In its least restricted form, we can say that:

$$S_{it} = f(S_{it}^*) \tag{8}$$

As discussed by Ferrer-i-Carbonell and Frijters (2004), economists usually assume that actual well-being and reported well-being are ordinally comparable over time and between individuals. Therefore, if $S_{it} > S_{is}$ then $S_{it}^* > S_{is}^*$, and if $S_{it} > S_{jt}$ then $S_{it}^* > S_{jt}^*$, such that $f' > 0$ for all values of S_{it}^* in equation (8). Psychologists, however, tend to place stronger assumptions on the relationship between S_{it} and S_{it}^* such that:[23]

$$S_{it} - S_{jt} = S_{it}^* - S_{jt}^* \tag{9}$$

In other words, self-reported satisfaction can be assumed to be interpersonally cardinal insofar as the difference between, say, a score of 1 and 2 on a given well-being scale is equal to the difference between a score of 6 and 7 in terms of actual well-being.

If S_{it} can be assumed to be cardinal, then we can simply substitute S_{it}^* with S_{it} in the original specification (7) as follows:

$$S_{it} = \beta_0 + \beta_1 W_{it} + \mathbf{X}_{it}'\boldsymbol{\beta} + \upsilon_i + \varepsilon_{it} \tag{10}$$

An important component of the fixed effect υ_i is personality. The literature suggests that personality is strongly correlated with well-being (Diener and Lucas 1999) and it is also reasonable to expect that personality is correlated with weekend working and the other co-variants in the model. In other words, $\text{cov}(\upsilon_i, W_{it}) \neq 0$. Therefore, estimates of β_1 based on equation (10) will be biased. Where panel data is available, this fixed effect can be controlled for by taking the mean (over time) of equation (10) as follows:

$$\bar{S}_i = \beta_0 + \beta_1 \bar{W}_i + \bar{\mathbf{X}}_i'\boldsymbol{\beta} + \upsilon_i + \bar{\varepsilon}_i \tag{11}$$

Here, $\bar{S}_i = T^{-1}\sum_{t=1}^{T} S_{it}$ and similarly for all right hand side variables, where T is the number of periods in the panel. If we subtract equation (11) from equation (10), we get the 'within' transformation:

$$\ddot{S}_{it} = \beta_0 + \beta_1 \ddot{W}_{it} + \ddot{\mathbf{X}}_{it}'\boldsymbol{\beta} + \ddot{\varepsilon}_{it} \tag{12}$$

[23] A review of more than 50 psychological studies (Argyle 1999) finds that all studies based on cross-sections used this assumption.

Here, $\ddot{S}_{it} = S_{it} - \bar{S}_i$ and similarly for all right hand side variables. Equation (12) can be estimated using OLS. Ferrer-i-Carbonell and Frijters (2004) recommend applying the OLS fixed effects estimator to panel data where the outcome variable of interest is an ordinal SWB measure. After reviewing the literature and undertaking their own analysis on the GSOEP, they find that OLS produces similar results to the alternative methods of ordered probit and ordered logit in models with a self-reported satisfaction score as the dependent variable. However, the ordinal assumption does not lend itself easily to the inclusion of unobserved individual heterogeneity and the conclusion of Ferrer-i-Carbonell and Frijters (2004) is that the difference in results between whether or not the model accounts for time-invariant unobserved factors is much greater than the difference between using a linear or non-linear model.

More recent developments in methodology, however, have led to the emergence of alternative estimators applicable to longitudinal SWB data. Such estimators can control for the fixed effect but maintain the ordinal nature of the SWB variable (i.e. do not require the strong restriction given in equation (9)). One such estimator is the BUC method developed by Baetschmann and Staub (2015) and described and applied by Dickerson et al. (2014).[24]

We can start with the initial assumption, set out in equation (7), that weekend working and other factors are linearly related to actual well-being S_{it}^* and then make the weaker assumption that reported well-being is only ordinally related to actual well-being, such that equation (8) holds and $f' > 0$ for all values of S_{it}^*. Therefore, the data fits an ordered choice model where each discrete score that a person could give when reporting their well-being in the LFS or UKHLS indicates the bounds within which their true well-being lies. Where there are K possible responses to the SWB indicator of interest, we can say that:

$$S_{it} = k \text{ if } \mu_k < S_{it}^* \leq \mu_{k+1} \text{ where } k \in \{1, \dots, K\} \quad (13)$$

[24] This latter paper also contains Stata code for programming and running the BUC estimator, which I have used for this research.

Here, μ_k represents the lower bound of S_{it}^* when $S_{it} = k$ and μ_{k+1} is the upper bound. Note that the threshold parameters are strictly increasing in k such that $\mu_k < \mu_{k+1} \forall k$, and, as S_{it}^* is continuous, $\mu_1 = -\infty$ and $\mu_{K+1} = \infty$.

To estimate this using Chamberlain's conditional logit model (Chamberlain 1980), one then needs to reduce the ordinal dependent variable S_{it} to a dummy variable $d_{it}^{k^*}$, such that $d_{it}^{k^*} = 1$ if $S_{it} \geq k^*$ and $d_{it}^{k^*} = 0$ if $S_{it} < k^*$, where k^* is an arbitrarily chosen cut-off from the set $k \in \{2, \dots, K\}$. As shown in Dickerson et al. (2014), the probability of observing a particular sequence of outcomes $d_i^{k^*} = (d_{i1}^{k^*}, \dots, d_{iT}^{k^*})$ conditional on the number of ones in the sequence a_i is given by:

$$\Pr\left(d_i^{k^*} \middle| \sum_{t=1}^{T} d_{it}^{k^*} = a_i\right) = \frac{\exp[\sum_{t=1}^{T} d_{it}^{k^*}(\beta_1 W_{it} + \mathbf{X}_{it}'\boldsymbol{\beta})]}{\sum_{l_i \in B_i} \exp\left[\sum_{t=1}^{T} l_{it}(\beta_1 W_{it} + \mathbf{X}_{it}'\boldsymbol{\beta})\right]} \tag{14}$$

Here, l_{it} is either zero or one, $l_i = (l_{i1}, \dots, l_{iT})$ and B_i is the set of all possible l_i vectors with the same number of ones as $d_i^{k^*}$. From Chamberlain (1980), it can be shown that maximising the conditional log-likelihood $LL^{k^*} = \sum_{i=1}^{N} \ln[\Pr\left(d_i^{k^*} \middle| \sum_{t=1}^{T} d_{it}^{k^*} = a_i\right)]$ gives a consistent estimate of the coefficient of interest $\beta_1$and all other coefficients in the vector $\boldsymbol{\beta}$.

The obvious problem of using a binary logit estimator on our data is that it necessarily ignores a substantial amount of information contained in the observed outcome S_{it}. Any individual reporting $S_{it} < k^*$ for all t or reporting $S_{it} \geq k^*$ for all t would be deemed not to have experienced any change in well-being over time. For example, if a cut-off of $k^* = 5$ were to be chosen, only individuals whose reported well-being was lower than 5 in at least one period and higher than 5 in at least one period would affect the estimate. A change in well-being between 6 and 7, for example, would have no effect on the estimate.

As explained by Dickerson et al. (2014), the BUC method addresses this problem by estimating the conditional logit model using all $K - 1$ possible values of k^* simultaneously, imposing the restriction that $\beta^2 = \beta^3 = \cdots = \beta^K$ (i.e. the coefficients are the same for each estimation). The method creates

a dataset where each individual is repeated $K-1$ times, each time using a different cutoff k^* to collapse the dependent variable S_{it} into a binary form $d_{it}^{k^*}$. The model is then estimated on the expanded sample using the standard Chamberlain approach. As some individuals contribute to several terms in the log-likelihood function, the method also adjusts the standard errors for clustering at the level of the individual.

3.6 Results

3.6.1 Descriptive analysis

Analysis of over 450,000 individuals in the LFS over the period January 2012 to September 2014[25] reveals that weekend working in the UK has remained relatively consistent over the last few years. Table 3.1 shows that weekend working is more prevalent among men than among women, and Saturday working is more common than Sunday working. Across the sample as a whole, 24% of working men and 19% of working women were scheduled to work on the Saturday of the reference week, while 14% of men and 11% of women were scheduled to work on the Sunday. It appears that most of those working on Sunday also worked on Saturday (i.e. were completing a full weekend shift) as the numbers working at any time during the weekend are only a little higher than the numbers working on Saturday (26% of men and 22% of women).

As shown in Table 3.2, age is an important predictor of weekend working. More than half of 18-19 year old working people worked at the weekend, and weekend working is also higher than average for the 20-24 and 25-29 age groups. This is likely to be related to the sectors and occupations in which younger workers are concentrated (for example relatively low-skilled service sector work) but may also be related to the fact that many younger workers are likely to schedule their working hours around their educational commitments. Beyond the age of 30, there appears to be no relationship between age and prevalence of weekend working, although weekend working does increase again for

[25] This is a pooled sample which only uses wave 1 responses. Therefore, there are no duplicate responses in the sample used for the descriptive statistics.

the 65+ age group. It is also clear from the analysis in Table 3.3 that having dependent children is not on average related to whether or not one works at the weekend.

Table 3.4.shows that there are significant differences in weekend working across occupations. More than half (51%) of those working in sales and customer service occupations were scheduled to work at the weekend in the reference week, with Saturday working being particularly common for this group. Weekend working is also higher than average for: caring, leisure and other service occupations; elementary occupations; process, plant and machinery operatives; skilled trades occupations; and managers, directors and senior officials. Only three occupational groups (professional occupations, associate professional and technical occupations, and administrative and secretarial occupations) have lower than average levels of weekend working. In other words, weekend working is concentrated among low-skilled workers (which may be a demand or supply effect). In general, weekend working is less prevalent among intermediate to higher skilled workers, although there is a 'spike' in weekend working for the highest level occupations. This suggests that those with significant management responsibility in organisations are more likely than average to work at the weekend.

This analysis can be broken down another way by considering the industrial sector in which workers are employed. As shown in Table 3.5, weekend working is most prevalent in the agriculture, forestry and fishing sector, although this sector accounts for only a small proportion of the UK workforce. Among the larger sectors, distribution, hotels and restaurants has the highest level of weekend working, with 51% of the workforce scheduled to work at the weekend. Other services and transport and communication also have higher than average levels of weekend working. Weekend working is lower than average in the 'blue collar' sectors of manufacturing and construction as well as the 'white collar' sectors of banking and finance, and public administration, education and health.

Table 3.6 shows that self-employed people are much more likely to work at the weekend than employees. Over a third of self-employed workers were scheduled to work at the weekend compared to less than a quarter of employees. Table 3.6 also shows that there is no overall association between

temporary employment and weekend working while part-time work is associated with slightly higher levels of weekend working. Also, weekend working is much higher for private sector workers compared to public sector workers.

A descriptive analysis of transitions into and out of weekend working reveal that, over a 12 month period (between waves 1 and 5 of LFS), most people did not change their working schedule. Table 3.7 shows that 73% of people working in both time periods were not scheduled to work on Saturday in either wave, while 14% worked on Saturday in both waves. The remaining 13% either moved into or out of Saturday working. Table 3.8 shows similar results for Sunday working where just 7% worked on Sunday in both waves while 10% either moved into or out of Sunday working. For weekend working as a whole, Table 3.9 shows that 71% of people did not work at the weekend in either wave, 16% were working weekends in both waves and the remaining 13% made a transition either into or out of weekend working.

The UKHLS data also shows that weekend working is prevalent in the UK. Table 3.10 shows that just over a quarter (27%) of the employed population in the UK reported that they never worked at the weekend in all three waves and two fifths (40%) worked at least some weekends in all three waves. The remaining 33% reported a change in their weekend working status at some point over the three waves, according to the binary definition.

According to these statistics, the estimated incidence of weekend working is higher in the UKHLS data than the LFS data. This is not surprising as the LFS definition refers to actual or scheduled weekend working in a specific week while the UKHLS has a much more general definition of weekend working. Many people who report often or sometimes working weekends will not have worked on either weekend day in a specific given week.

3.6.2 Regression analysis

I begin by comparing the raw means of well-being according to whether the individual was working at the weekend (or on Saturday or Sunday specifically) at the time, based on a pooled cross-section of

all waves in the sample. Table 3.11 and Table 3.12 show that those not working at the weekend had higher well-being than those working at the weekend on all measures across both datasets, although this is likely to reflect other differences (e.g. occupational profile) between the two groups.

To test the extent to which these associations persist once other explanatory factors are included, I firstly conduct a series of pooled regressions, based on both OLS and ordered choice specifications. The means of the explanatory variables included in these regressions are presented in Table 3.13 and Table 3.14. These tables clearly show that the incidence of weekend working is much higher in the UKHLS dataset than the LFS dataset, reflecting the much broader definition of weekend working used in the UKHLS. Also, the higher average income in the UKHLS sample reflects the fact that this includes non-wage income while the LFS variable includes only wage income. Table 3.15 shows the regression results from a pooled OLS specification based on the LFS data, including a full set of controls. Here, weekend working is associated with lower life satisfaction, and the same is true for Saturday and Sunday working analysed separately. Happiness is also lower for people working on a Sunday, but all other coefficients relating to weekend working are not significant.

The pooled OLS estimates using the UKHLS data, shown in Table 3.16, suggest that weekend working is associated with higher job satisfaction but lower satisfaction with leisure time, lower overall life satisfaction and lower GHQ scores.

While these results are interesting and appear to be consistent with some cross-sectional studies reviewed above where weekend working is found to be associated with certain negative outcomes, these cross-sectional analyses are arguably not reliable due to the potential for unobserved interpersonal differences captured in the error term to be correlated with both independent and dependent variables. As explained above, a fixed effects specification controls for these interpersonal differences (assuming they do not change systematically over time). The remaining regression results presented in this chapter are based on the linear fixed effects specification expressed in equation (1215). Results based on the conditional logit specification shown in equation (14), estimated

simultaneously for all possible binary cut-offs in the dependent variable using the BUC method, are shown in Appendix E. The BUC results are very similar to the OLS fixed effects results and lead to the same conclusions.

Table 3.17 shows that, once fixed effects are controlled for, there is no longer any significant relationship between weekend working and life satisfaction. However, there is a significant negative association between weekend working and happiness. Specifically, the results suggest that, everything else being equal, working at the weekend during the reference week is associated with a two percentage point decrease in how happy one felt yesterday compared to not working at the weekend in the reference week.[26] A similar result is found for Saturday working although the coefficient pertaining to Sunday working is not significant. The BUC results presented in Appendix E confirm these findings.

The three-period fixed effects models based on the UKHLS data also generate some interesting results. As shown in Table 3.18 , weekend working is negatively associated with both satisfaction with leisure time and GHQ score. In both cases, this negative relationship is stronger than for daytime versus non-daytime working (in fact, somewhat surprisingly, the relationship between daytime working and GHQ is not significantly different from zero). Comparing the OLS coefficients pertaining to weekend working and hours implies that the average worker would have to work six fewer hours per week to be compensated for weekend working in terms of satisfaction with leisure time and 15 fewer hours per week to be compensated for the impact on mental health due to weekend working.[27]

[26] The coefficient linking happiness and weekend working in Table 3.17 is -0.185. Where a happiness report of 0 implies not happy at all and 10 implies completely happy, and the happiness scale is assumed to be linear, a -0.185 coefficient implies that a weekend worker is approximately 2 percentage points less happy than someone who did not work on the previous weekend (e.g. the difference between a 7 out of 10 and a 7.2 out of 10).

[27] These figures are calculated by finding the ratio between the coefficient on weekend working and the coefficient on working hours in the satisfaction with leisure time and GHQ columns in Table 3.18. For example, working one hour more per week is associated with a 0.016 reduction in satisfaction with leisure time on a seven-point scale, while moving from non-weekend working into weekend working is associated with a 0.094 reduction. Therefore, assuming linearity, a shift between weekend and non-weekend working has the same effect as a change of six working hours per week (0.094 / 0.016 = 6).

While there appears to be no relationship between weekend working and overall life satisfaction, similarly to the LFS results, the UKHLS results show a positive relationship between weekend working and job satisfaction. When we include a gender interaction term in Table 3.19, it is clear that this positive association is particularly pronounced for men, insofar as the positive impact on job satisfaction has about the same magnitude as the negative effect on satisfaction with leisure time for men only. In contrast, weekend working has no impact on the job satisfaction of women but still has a negative impact on both satisfaction with leisure time and mental health to approximately the same extent as men.[28]

3.6.3 Further analysis and robustness checks

3.6.3.1 Change in definition of covariates

Table 3.20 and Table 3.21 show how the coefficients pertaining to weekend working change in response to a change in how one of the other covariates in the regression is defined.

Firstly, there is an argument that including self-assessed health as an explanatory variable for well-being risks the problem of endogeneity insofar as a person's sense of well-being may affect how they perceive their own health. This endogeneity may be particularly strong for the GHQ measure, as this includes questions about health. A more objective measure of health status is whether or not the individual has a disability or long term illness. Table 3.21 shows that including disability (as a dummy variable) rather than self-assessed health (as an assumed cardinal variable) in the UKHLS regression does not alter the results with respect to weekend working.

I also test the extent to which the results are sensitive to the way in which working hours are specified in the model. Firstly, it is possible that well-being may be affected not just by time spent in paid work

[28] The LFS model was also tested with gender interactions but no significant differences between men and women were found, so these results have not been presented.

but also by time spent in other non-leisure activities. Table 3.21 shows that the weekend working coefficients are robust to the inclusion of time spent on housework and commuting in the UKHLS.

Secondly, much of the literature looking at the relationship between working hours and well-being (e.g. Bardasi and Francesconi 2004; Booth and van Ours 2008; Booth and van Ours 2009; Gash et al. 2012) specifies working hours as a full time / part time dummy variable, rather than as a continuous variable as in my model. In the LFS, respondents are specifically asked whether they work full or part time while, in the UKHLS, I have assumed that individuals work full time if they work 30 or more hours per week (including overtime) or part time otherwise. The results show that the coefficient on weekend working with respect to satisfaction with leisure time in the UKHLS regression (Table 3.21) is increased slightly as a result of this change in specification, while the change in specification does not affect the LFS regressions (Table 3.20).[29]

Thirdly, we also might conceive that working hours are related to well-being in a non-linear fashion. To test this, I adjust the models to include working hours in a quadratic form. In the UKHLS, this quadratic specification does not alter significantly the coefficients with respect to weekend working. In the LFS, this specification, relative to the specification where working hours are linearly related to well-being, yields slightly lower coefficients for the relationship between weekend working and happiness but the relationship is still significant.

Due to the fact that moving into a new job appears to be an important determinant of change in well-being, I also test two alternative definitions for what constitutes a new job in the UKHLS analysis (a narrow definition where only those who moved to a new employer between respective waves are counted as having a new job, and an intermediate definition which includes changes in workplace even if the employer has not changed). These different specifications increase slightly the positive

[29]I also checked whether interacting a full time / part time dummy variable with the weekend working dummy variable has any effect. The LFS results show that combining weekend working with full time work has a significantly positive effect on 'Worthwhile' (eudaimonic well-being) while combining weekend working with part time work has a significantly negative effect on the same. There are no interaction effects on any of the other dependent variables in either the LFS or UKHLS datasets.

relationship between weekend working and job satisfaction but otherwise make no substantive difference to the overall results.

3.6.3.2 Inclusion of interaction terms

Table 3.22 and Table 3.23 show the results of introducing interaction terms into the models.

Much of the literature on the impact of weekend working has a particular focus on parents with dependent children living in the household. To explore whether the effects of weekend working are significantly different for those with children, I introduce an interaction term in both the LFS and UKHLS regressions where the presence of dependent children in the household is multiplied by weekend working status (as both are dummy variables, this creates a new dummy variable). The one interesting result relates to the 'Worthwhile' variable in the LFS regressions (Table 3.22). For people without children, weekend working is associated with an improvement in eudaimonic well-being of about 0.1 points but there is a similarly sized negative effect on eudaimonic well-being for those with children, although these results are on the margins of being significant. One interpretation is that spending time with one's children is viewed as a worthwhile activity and that weekend working is a significant barrier to this activity. This appears to be consistent with the observation by Dolan and Kudrna (2016) that time with children is found to be a particularly purposeful (if not pleasurable) activity in some studies. On all other outcomes in both the LFS and UKHLS regressions, the coefficients on this interaction term are not significant, indicating that on average parents are no more or less likely than non-parents to experience reduced well-being from working weekends. This may suggest that there is indeed no systematic heterogeneity between those with or without children with respect to weekend working. Alternatively, this result may be hiding a dichotomous situation whereby some parents are more adversely affected by weekend working due to impact on family life while others actually prefer weekend working due to ease of childcare arrangements, with these two groups cancelling each other out on aggregate.

Another hypothesis is that preference for weekend working may be related to people's attitudes towards the role of women and mothers in the family and the labour market. This is not shown in the tables as gender attitude questions are not included in the UKHLS wave 6 questionnaire. However, an interaction term between weekend working and gender attitudes[30] was tested in a first difference model including waves 2 and 4 only, and no significant effects were found.

It is possible that age might determine attitudes and preferences towards weekend working. A dummy interaction term based on the age of the worker, where an older worker is defined as being 45 years or older (and hence the other group is composed of those between the ages of 18 and 44) is added to both the LFS and UKHLS regressions. The LFS results suggest that older people working at the weekend appear to have higher life satisfaction, while the UKHLS results suggest that weekend working is positively associated with job satisfaction for younger people but negatively associated for older people. When considered alongside the gender interaction terms discussed above, this implies that the positive coefficient between weekend working and job satisfaction observed overall is driven solely by men and younger people.

The working conditions module of UKHLS (asked in every other wave of the survey) contains questions related to autonomy at work and the extent to which work life is emotionally challenging. It is possible that how a person feels about their work may affect the extent to which weekend working impacts on well-being. This hypothesis is tested by introducing further interaction terms into the model.

No significant associations are found when autonomy at work is combined with working a weekend schedule. A further question was asked about the extent to which the respondent had autonomy over hours worked, and this is treated separately in the analysis as hypothetically one might expect this is to be particularly relevant to weekend working. There is some indication that working at the weekend neutralises any positive effects of working hours autonomy on both satisfaction with leisure time and

[30] As described more fully in section 6.2.2 and Appendix B, factor analysis (one factor solution) is used to create an index of the extent to which the individual expresses egalitarian views.

overall life satisfaction. In other words, people reporting more autonomy over working hours experience higher leisure time and life satisfaction as long as that does not involve weekend working.

I also assess whether the extent to which people feel depressed at work is a mediating factor on the well-being effects of weekend working. However, the presence of weekend working does not affect this relationship at all.

Details about how these attitudinal variables have been derived are included in Appendix B.

3.6.3.3 Intensity of weekend working

Recall that the original weekend working variable in UKHLS takes three values: most/every weekend; some weekends; and no weekends. For my main analysis, those working most/every weekend and those working some weekends are grouped together. Table 3.24 shows the results of using an alternative definition of weekend working such that only those working most/every weekend are assumed to be weekend workers in a given time period. Hence those working some weekends are grouped together with those who report no weekend working. It is possible, but not certain, that this definition separates people with regular and intensive weekend shifts (e.g. in the retail or hospitality sectors) from those doing small and occasional work activities during the weekend (e.g. managers or professionals working from home). This change to the specification does change the results. The large negative effect with respect to GHQ and the small positive effect with respect to job satisfaction are no longer observed under this alternative definition. However, the negative coefficient with respect to satisfaction with leisure time actually increases under this definition. This implies that there is little difference between regular and occasional weekend working in terms of effects on mental health and job satisfaction but more regular or intense weekend working does have an impact on satisfaction with leisure time.

3.6.3.4 Non-managerial or professional occupations

There is a case for suggesting that experience of weekend working, and hence its impact on well-being, may be different across the occupational structure. In particular, one would expect people outside of

managerial or professional occupations to have less autonomy about when they complete their work tasks and, if they do work at the weekend, they would be more likely to be undertaking scheduled shifts rather than, for example, ad hoc homeworking. This hypothesis is tested by removing managers and professionals from both the LFS and UKHLS study samples[31] and repeating the regressions on this smaller sample. As shown in Table 3.25 through to Table 3.27, this does make some difference to the results. For the UKHLS sample (Table 3.26 and Table 3.27), the results are robust to the removal of managers and professionals and, if anything, the observed associations are slightly stronger. The LFS results (Table 3.25) still show a negative relationship between weekend working and happiness but the size of this relationship is lower for the sample which includes only lower level occupations compared to the full sample, and is significant only at the 10% level.[32]

3.6.3.5 Excluding younger workers

Although working people under the age of 18 have been removed from the sample, there is an argument to suggest that younger adults in the 18-24 age bracket are atypical in terms of their preference for weekend working. As shown in Table 3.2, younger adults are highly concentrated into weekend working and this may be related to a higher tolerance of or preference for non-standard hours, for example to allow them to schedule work around educational commitments.

Table 3.25 through to Table 3.27 also show how the estimates change when people under the age of 25 are removed from the sample. In both the LFS and UKHLS regressions, the results are not substantially affected by the removal of younger people.[33]

[31] Specifically, people with a SOC 2000 code starting with the digits 1, 2 or 3 are removed from the analysis and hence those with a SOC code starting with 4, 5, 6, 7, 8 or 9 are retained.
[32] A further robustness check, not shown in the tables, involves the removal of self-employed people from the sample. This is only relevant for the UKHLS sample (as the main LFS sample used in my analysis did not include self-employed people), and is found not to make any substantial difference to the results.
[33] As a further robustness check, not shown in the tables, I remove full time students from the sample and again this does not affect the results.

3.6.3.6 UKHLS Great Britain sample only

Thus far, the UKHLS analysis has been conducted on the basis of the full UKHLS sample. However, due to the way the sample is put together, there is a possibility that this full sample is biased, due to overrepresentation of ethnic minority households, households in Northern Ireland and households that have survived from the BHPS. As a further robustness check, I repeat the main analysis on just the UKHLS Great Britain sample which should be representative of households in England, Scotland and Wales. The results (shown in Table 3.26 and Table 3.27) reveal that the use of this smaller sample makes little difference to the coefficient on satisfaction with leisure time but, importantly, the coefficient on GHQ almost halves and is no longer significant. Further investigation reveals that weekend working has a particularly strong relationship with GHQ in both the EMB and BHPS samples, and that this is driving the observed effect on the overall UKHLS sample. There is no obvious explanation for this although we might speculate that, possibly due to cultural factors, people from an ethnic minority or older people (likely to be concentrated in the BHPS sample) may be more sensitive to weekend working than others.

3.6.3.7 Individual questions in GHQ

Table 3.28 shows the results of a series of regressions where the dependent variable is one of the twelve questions that together compose the GHQ score. As shown in Appendix A, each question in the GHQ questionnaire is coded on a four-point scale where 1 indicates good psychological health on that aspect and 4 indicates poor psychological health. Note that in this case scores have not been reversed so a positive coefficient indicates an association with poorer psychological health. The results in Table 3.28 show that overall only four of the twelve questions have a significant association with weekend working. These are loss of sleep due to worry (B), feeling constantly under strain (E), being able to face up to problems (H) and feeling reasonably happy (L). This is perhaps not surprising as we would expect weekend working to have an impact on mental health through, if anything, disrupted rhythms and threatened work-life balance. This also seems to be consistent with the LFS results that

find an association with feelings of happiness. No overall effect is observed in relation to other aspects of mental health, such as efficacy, confidence and self-esteem.

A further robustness check substitutes the Short Form 12 (SF12) Mental Component Summary (MCS) score for the GHQ score as a measure of mental health. Similarly to the GHQ, the SF12 is a set of 12 questions with graded responses which can be combined to form indices, in this case separate physical health and mental health components (Ware et al. 1996). The results (not tabulated) reveal that using this alternative dependent variable also yields a negative coefficient on weekend working, but it is not significant.

3.6.3.8 Reason for job change

While some people may transition into and out of weekend working while remaining in the same job,[34] a change in weekend working status may be a result of a change of job. It is possible that the well-being effects of moving into or out of weekend working may be impacted by whether or not this job change was voluntary or involuntary. Specifically, we might expect work schedules to have a less detrimental effect when the individual has resigned from an old job in favour of a new job than when the individual was forced to leave an old job and must therefore take whatever new job is available. This hypothesis can be tested by interacting the weekend working dummy variable with a dummy variable for whether or not the person left their last job voluntarily ('quit') and a dummy variable for whether or not the person was either made redundant or dismissed from their previous job ('fired'). Details about how these interaction terms are calculated are included in Appendix C.

Table 3.29 to Table 3.30 show the results of these interactions. In the LFS data, the interaction of weekend working and quitting one's previous job appears to have a significant positive effect on life satisfaction, worthwhileness, anxiety and, to some extent, happiness. This indicates the presence of some selection effects, whereby moving into weekend working can have a positive impact on well-

[34] In the case of the LFS definition, this would include people who have not changed their shifts patterns over time but just happen to be working at the weekend in the reference week of one time period but not the other.

being if the individual has chosen to do this job (having resigned a previous post). However, this effect is not found in the UKHLS data. While quitting overall is associated with higher well-being on some measures, there is no interactive effect with weekend working. Perhaps due to small samples, there appears to be no interactive effect between being dismissed or made redundant and weekend working. One result in the UKHLS analysis suggests that weekend working may counteract the life satisfaction penalty of being fired from one's last job, but this is possibly a spurious result.

3.7 Discussion

The analysis of UKHLS indicates that satisfaction with the amount of leisure time one has is to some extent determined by whether or not a person works at the weekend, even after controlling for total hours. As expected, a reduction in the number of hours worked in the week is significantly associated with an increased satisfaction with leisure time but transitioning away from weekend working improves this satisfaction still further. This is an interesting result as it seems to suggest that, even if there is no change in working hours (and hence amount of leisure time) over the week as a whole, people on average value leisure time taken at the weekend more than at other times of the week.

The analysis also suggests that working at the weekend has a negative impact on psychological health, mainly through losing sleep due to worry, feeling constantly under strain and feeling depressed or unhappy.

The LFS analysis also suggests that weekend working has an impact on people's happiness (specifically how happy they felt yesterday), and that Saturday working has more of a negative impact on happiness than Sunday working.

However, there are some issues that should be explored before making firm inference from this analysis. The first is the issue of self-selection. In many cases, people work weekends because they choose to do so. This means either that people absolutely prefer to undertake a given hour of work at the weekend compared to undertaking that same hour of work during the week (i.e. they value an

hour of leisure time during the week higher than an hour of leisure time during the weekend) or the uplift in hourly pay available for weekend working is sufficient to compensate people for the extra disutility of working at the weekend. Of course, there are also people who would not otherwise choose to work at the weekend but due the requirements of the job, and other constraints that they may face, find themselves involuntarily working at the weekend. Nevertheless, on average we would expect to see a certain level of sorting such that those people actually working at the weekend experience less disutility from this than if those people not actually working at the weekend were to move into weekend working. We might assume that part of one's preference to work at the weekend is incorporated in the fixed effect, insofar as this preference does not change over time, and has therefore implicitly been controlled for in the model. However, it is possible that for some individuals a change in weekend working status reflects a change in this preference and therefore is not included in the fixed effect. The effect of this self-selection, however, is to dampen the correlations observed in the data. If individuals were to be randomly assigned to weekend working, there is an argument to suggest that the observed impact on well-being would be larger. The finding from the LFS analysis that weekend working has a positive impact on well-being for those who left their last job voluntarily seems to confirm the presence of this selection effect.

The second issue is that of causality. While I have tried to control for any other time variant factors that may be expected to have an impact on well-being (including factors that themselves might be driving selection into weekend working), the possibility remains that a change in well-being may be causing a change in people's propensity to work at the weekend, rather than the other way round. For example, somebody experiencing increased family-related stress caused by factors not related to work may respond to this by choosing to change their work schedule in order to spend less time with their family at the weekend. In this case, it is reduced well-being that causes weekend working rather than the other way round.

The third issue is a more general issue in the well-being literature, and relates to the extent to which an increase or decrease in well-being persists into the future. Much of the literature points to the fact that positive or negative 'shocks' (and we can think of transitions into and out of weekend working as shocks in this sense) have only a temporary effect on well-being and people revert back to normal levels of reported well-being over time. It would be reasonable to expect the same phenomenon here. Individuals may receive a temporary boost from a change in working patterns that they perceive as favourable but this improvement may not persist for long even if the working patterns remain in place. It is likely that this fixed effects model, that effectively captures recent changes in working schedules, is picking up much of this temporary impact, so further research is needed to explore whether weekend working continues to be associated with a well-being penalty on a long term or permanent basis.

Fourthly, the design of the model only includes people that were in work in at least two time periods covered in the analysis. Therefore, the results in this chapter are only applicable to individuals with a relatively high attachment to the labour market, and may not translate to people with a more transitory relationship to the labour market.

Fifthly, in the LFS analysis it might be particularly important to consider the day of the week on which the survey interview took place as this may significantly affect how people answer the well-being questions. Specifically, the happiness question asks people to state how happy they were yesterday (i.e. the day before the interview). If, for example, all interviews were to take place on a Sunday, then it is very likely that those respondents who had been at work on the Saturday would report lower happiness than those who were not working,[35] and this would clearly bias the results. However, on the assumption that interviews are undertaken on all seven days of the week, there should not be any such bias. While there is likely to be a significant correlation between when an individual is at work

[35] The findings from Bryson and MacKerron (2016), where people are found to be least happy while they are at work, would support this hypothesis.

and when they undertake the interview (i.e. they are most likely to be reached by the interviewer on a day when they are not at work), there should not be any difference in the propensity for the day before the interview to be a work day depending on whether or not the person works at the weekend. In other words, someone who is interviewed on Saturday having been at work on Friday is unlikely to report being any more or less happy than someone who is interviewed on Monday having been at work on Sunday, unless there is a genuine weekend effect. Unfortunately, to my knowledge day of interview is not available in the LFS datasets released to researchers so it is not possible to investigate this issue further.[36] Day of interview is, however, available in UKHLS. The main regressions (both OLS and BUC) are repeated with an additional dummy variable denoting whether or not the interview took place at the weekend, and this did not significantly affect the results.

3.8 Conclusion

The analysis presented in this chapter suggests that weekend working does significantly affect some aspects of subjective well-being among employed adults in the UK.

The results from the LFS show that weekend working has an effect on short-term affective well-being as people scheduled to work on the previous Saturday or Sunday report significantly lower happiness than those not having scheduled work on the previous weekend.

The results from the UKHLS show that it is not just recent weekend working which is important for affective well-being. People at least sometimes working at the weekend are found to have worse mental health, as measured by the GHQ, than those never working at the weekend. This is caused by

[36] An important caveat should be added here. Further exploration of the LFS data used in this analysis reveals that 57% of people working weekends in Wave 1 and 54% of people working weekends in Wave 5 did not have two consecutive days off during the reference week while, by definition, 100% of people not working weekends had at least two consecutive days off during the reference week. Assuming survey interviews tend to take place on a non-working day, this suggests that weekend workers were more likely to be interviewed on a day where 'yesterday' was a working day, relative to non-weekend workers. It is therefore possible that it is this two-day effect that is driving at least some of the difference in happiness yesterday observed between weekend workers and non-weekend workers.

unhappiness, loss of sleep, being constantly under strain and inability to face up to problems, although this result is sensitive to the sample used in the analysis.

Moreover, weekend working also affects evaluative well-being insofar as those never working at the weekend report significantly higher satisfaction with the amount of leisure time they have, even after controlling for the number of hours worked.

In many ways, these findings are surprising. While we would expect a nonstandard daily work schedule (i.e. night working including early mornings and late evenings) to affect the well-being of workers, due to its interference with natural circadian rhythms, the deviation from standard weekly work schedules, which are culturally rather than naturally determined, would not be expected to have the same direct health effects. The fact that it does affect happiness, mental health and satisfaction with leisure time supports the notion that adherence to culturally determined temporal cycles is important for well-being. These findings are consistent with previous literature showing a negative association between weekend working and well-being (e.g. Davis et al. 2008; Martin and Lelchook 2011; Bryson and MacKerron 2017). Moreover, evidence from other sources suggests that intermediate effects of weekend working such as time use and family and social cohesion (e.g. Barnes et al. 2006; Hosking and Western 2008; Hook 2012; Craig and Brown 2015) may be driving these well-being effects. For the same reasons, we might expect to find similar impacts from working on other days with religious, cultural and national significance, such as Christmas Day and other designated public holidays in the UK. It is not straightforward to identify holiday working from the datasets used in this chapter, but this is an idea for further research.

It is important to note that this research finds evidence of an impact mainly on hedonic and affective well-being. In terms of evaluative well-being, weekend working only affects satisfaction with leisure time. Importantly, I find no evidence of a weekend working penalty on life satisfaction, often regarded

as the most comprehensive measure of well-being.[37] While being in work is a very important determinant of life satisfaction, an association which I explore further in Chapter 5 in relation to cross-partner effects of unemployment, the evidence suggests that the timing of work is not relevant. Moreover, eudaimonic well-being (as measured by the 'worthwhile' question in LFS) is also not affected by weekend working. As explored in the next chapter, the extent to which people find meaning and purpose in their lives is significantly impacted by the work that they do, but again we see that this is not affected by how the work is scheduled within the weekly cycle.

With some minor exceptions (e.g. restrictions to Sunday trading), the issue of weekend working does not appear to be high on the policy agenda in the UK, with decisions about the weekly scheduling of work largely being left to the market. However, this research suggests that moves to reduce the number of people working at the weekend should cause an aggregate improvement in the well-being of workers in the UK, at least in terms of affective well-being (how people feel) and satisfaction with leisure time, if not overall evaluative well-being (how satisfied people are with their lives). These could include direct legislation limiting the amount of nonstandard hours worked, incentives for employers such as a higher minimum wage for weekend working or changes to how public services are delivered. However, any such policy change would have to be balanced against any potential negative effects of restricted weekend working, such as reduced productivity and output or reduced access to public and consumer services, both of which may erode total well-being.

[37] There is a striking similarity here with Helliwell and Wang (2014) who find that there is no day of the week effect for life evaluations but, in terms of emotions, people are significantly happier at the weekend. This suggests that hedonic well-being does follow a weekly pattern and it is not surprising that the weekly timing of work has an effect on this.

Chapter 4: The impact of job type and sector on eudaimonic well-being

4.1 Introduction

Work is a central part of many people's lives, involving significant time and effort. In economics, work is traditionally assumed to be a source of disutility, undertaken only for its value in exchange for consumption goods. As discussed in Chapter 2, this is an assumption that has been repeatedly refuted in the SWB literature. For example, Clark and Oswald (1994) show how employment contributes to utility directly aside from its instrumental value. There is also a substantial body of literature that highlights the benefits that work can bring to the jobholder in its own right. Much of this literature describes how work can foster a sense of meaning and purpose which is an important aspect of well-being.

Eudaimonic well-being is a definition of well-being that goes beyond feelings of pleasure and encompasses what it means to have a flourishing life. Therefore, we might expect that eudaimonic well-being would capture these intrinsic benefits of work in a way that a hedonic description would not. We might also expect these intrinsic benefits, and the extent to which the work provides meaning and purpose, to vary across different types of job.

This chapter adds to the literature by using two large national datasets to show how the observable characteristics of one's job (e.g. sector, industry and occupation) have a statistically significant impact on a subjective measure of eudaimonic well-being. This is the first study to establish such large scale quantitative evidence of the effects of job type on eudaimonic well-being across the whole population. The study uses ATUS, a US survey in which respondents are asked to report how meaningful they find their work and other activities undertaken during the day. The analysis investigates whether job type affects the extent to which working is meaningful relative to the meaningfulness of non-work activities.

I also conduct an analysis of UK data, using APS. This takes a different approach as the eudaimonic well-being indicator measures an overall sense of having worthwhile activities in one's life as a whole. This analysis explores how job type affects this sense of worthwhileness, using a matching approach to control as far as possible for selection into different jobs.

The results reveal considerable heterogeneity in the extent to which different job types affect eudaimonic well-being. Specifically, jobs that combine professional autonomy with having a direct social impact within the context of a trusting relationship are consistently found to be the most meaningful and worthwhile. With a few notable exceptions, these findings provide support for the prevalent theories in the existing literature.

4.2 Literature review

4.2.1 Origins of eudaimonia

'Eudaimonia' is an ancient Greek word that can be approximately translated as 'happiness'.[38] However, as explained by Broadie (2002), the English word 'happiness' does not fully convey the meaning of 'eudaimonia'. Happiness often implies an affective state which can last only a short time and may be related to one's feelings towards certain objects or experiences. Eudaimonia, on the other hand, is not a feeling or subjective attitude but rather a status that one acquires over time. According to Broadie (2002), regarding someone as *eudaimōn* "is to imply that the person is admirable, even enviable, an exemplar of life at its best". Eudaimonia has variously been described as 'flourishing' (e.g. Huppert and So 2013), 'positive functioning' (e.g. Ryff 1989) or 'worthwhileness' (e.g. Dolan et al. 2011).

Eudaimonia is an important concept in the writings of Aristotle. The opening line of the *Nicomeachean Ethics* (Aristotle 2002)[39] is as follows: "Every sort of expert knowledge and every inquiry, and similarly

[38] The literal translation is 'good demon'.
[39] This and all references from the *Nicomachean Ethics* come from the translation by Sarah Broadie and Christopher Rowe.

every action and undertaking, seems to seek some good." This 'good', sometimes referred to as the 'chief good', is considered by Aristotle to be the ultimate goal or purpose of all human activity. He concludes that eudaimonia is the chief good because all other goods that humans may pursue (e.g. wealth, health, relationships etc.) are intermediate goods in the sense that they are pursued only for the purpose of achieving eudaimonia.

The Aristotelian view of eudaimonia has a strong moral component. While the acquisition of external goods (e.g. health and material possessions) can help to increase eudaimonia, the cultivation of internal goods or virtues is at least as important. To attain eudaimonia, a person must desire and practise a life characterised by 'the virtues', such as justice, generosity, courage and friendship. A surplus of external goods can be harmful to eudaimonia. This is in line with the Aristotelian concept of the 'doctrine of the mean' whereby one accesses the good life through moderation rather than extremes.

This eudaimonic definition of well-being stands in stark contrast to the utilitarian understanding of well-being as articulated by Bentham (1907) and dominant in the modern study of economics. In essence, this is an epistemological divergence. Aristotelianism (and neo-Aristotelianism) is premodern in its epistemology. In this paradigm, our knowledge of the world ('science' or 'how things are') is inseparable from our normative and ethical prescriptions of 'how things should be'. The separation between science and normative morality, and in particular religious doctrine, is a product of the Enlightenment and it was from this positivist epistemology that utilitarianism emerged. In this positivist framework, individuals form their own preferences and therefore that which constitutes 'happiness' may look different for different people. Unlike the Aristotelian definition of eudaimonia, there is no single prescription of a good life that must apply to all humans.

It is often assumed that a Benthamite concept of utility is concerned only with hedonic well-being, an account of experienced pleasure and pain. This is not necessarily the case, however. As Dolan and Kudrna (2016) point out, individuals are able to experience feelings of purpose as well as feelings of

pleasure and both may dictate their choices. In that sense, it is possible to graft the concept of eudaimonic well-being into a utilitarian framework such that some individuals have preferences for some aspects of eudaimonia and this forms part of their experienced utility. Nevertheless, it is acknowledged in the literature that eudaimonic aspects of well-being are experienced differently to hedonic aspects of well-being and it may not be possible to 'add' them together into a single account of utility. Dolan et al. (2011) propose a separate SWB measure explicitly aimed at capturing eudaimonic well-being alongside other measures of subjective well-being. This question, adopted by the UK Office for National Statistics as part of its measurement of national well-being, reflects the notion of purpose by asking people to report the extent to which the things they do in their lives are felt to be worthwhile. This question is the key dependent variable used in the UK analysis in this chapter.[40]

While the terms 'eudaimonia' and 'eudaimonic well-being' can be interchangeable, it is convenient to define 'eudaimonia' as the holistic Aristotelian concept of a flourishing life and 'eudaimonic well-being' as the more utilitarian concept of a component of SWB which encompasses many of the characteristics of eudaimonia. Under these definitions, it is eudaimonic well-being (or a proxy for it at least) that is being investigated and my results say little or nothing about eudaimonia. Nevertheless, in constructing my hypothesis it is helpful to consider the literature on eudaimonia in order to understand the kinds of thoughts, feelings and experiences that may lie behind individuals' reporting of subjective eudaimonic well-being.

In this respect, it is helpful to think of eudaimonic well-being as a 'good' which may be preferred or valued to different degrees by different individuals. Some recent literature provides evidence on the extent to which eudaimonic well-being is preferred in relation to other 'goods'. A survey of stated preferences conducted by Benjamin et al. (2014) finds that, out of over 100 different measures of

[40] This is the 'Worthwhile' question introduced in Chapter 3 with regard to the LFS analysis. The other three SWB questions proposed by Dolan et al (2011) and currently collected by the Office for National Statistics refer to life satisfaction, happiness and anxiety respectively.

SWB, aspects of well-being associated with eudaimonia were among the most preferred. Being a good, moral person and living according to personal values was the fourth ranked measure while having a life that is meaningful and has value ranked tenth and feeling the things one does in one's life are worthwhile ranked 20th. Adler et al. (2017) conduct a similar stated preference experiment and find that most people prefer high SWB to other 'goods' such as income and physical health, although they find a higher relative preference for affective well-being in comparison to eudaimonic well-being. Similary, Dolan et al. (2017) using the ATUS find that life evaluations (which may be considered a proxy for subjective preferences) are more strongly associated with experiences of positive and negative affect than with experiences of meaningfulness. The evidence is therefore mixed in the sense that eudaimonic well-being does appear to be important for utility but to a lesser extent than more hedonic or affective aspects of well-being.

4.2.2 Measuring eudaimonia and eudaimonic well-being

In the *Nicomachean Ethics*, eudaimonia is described by Aristotle in qualitative terms. A number of more recent authors have attempted to provide a more rigorous definition of eudaimonia, although much of this work has also been qualitative in nature.

Ryff (1989) identifies the primary components of psychological well-being, on the basis of a theoretical understanding of eudaimonic well-being. The six components are self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth. In a quantitative study of 321 respondents, Ryff (1989) finds that some of these dimensions (namely positive relations with others, autonomy, purpose in life and personal growth) have low correlation with existing measures of psychological well-being, suggesting that an understanding of eudaimonia may help to challenge a more narrow view of positive functioning which influenced psychological assessment measures at that time.

Seligman (2011) proposes five components of positive psychology, or a flourishing life, spelling out the acronym PERMA: positive emotion, engagement, relationships, meaning and accomplishment.

These are considered to be "the best approximation of what humans pursue *for their own sake*" and together they define well-being.

Huppert and So (2013) attempt to derive an operational definition of flourishing in terms of a bundle of indicators. Their starting point is to identify the polar opposites of measures of mental disorders in order to construct an index of positive mental health. The features making up this index are competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self-esteem and vitality. Huppert and So (2013) use indicators from the European Social Survey to measure these ten features and are thus able to compare well-being levels across countries.

Dolan et al. (2011) review the literature on eudaimonia and eudaimonic well-being and propose a single measure for eudaimonic well-being which has now been adopted by the Office for National Statistics in the UK and is collected in a number of surveys alongside evaluative well-being (life satisfaction) and hedonic well-being (happiness and anxiety). The eudaimonic question is: "Overall, to what extent do you feel that the things you do in your life are worthwhile?" This is the indicator that I focus on for my UK analysis in this chapter. The indicator used for my US analysis is to some extent similar but uses the word 'meaningful' rather than 'worthwhile' and is focused on feelings during particular activities rather than an overall evaluation of life.

4.2.3 Eudaimonic well-being and work

Work is an important part of many people's lives. It typically takes up a significant proportion of one's waking hours and is also the domain of life in which one would expect to attain self-actualisation. Therefore, it is likely that work plays a significant role in determining a sense of eudaimonic well-being for many people.

There is a large amount of literature exploring eudaimonia and work, or the extent to which work provides meaning to people's lives. A reading of the literature suggests that there are various channels through which work can provide meaning and these channels are summarised in turn. Work can be

defined quite broadly to include roles and activities such as housework, study, voluntary work, creative hobbies or job search activities. However, the focus of my research is on paid work so this is also the focus of the literature review.

4.2.3.1 Extrinsic versus intrinsic rewards

When discussing the benefits one attains from paid work, a number of authors make the distinction between extrinsic and intrinsic rewards. In line with standard labour market theory, people are motivated to work in order to earn a wage that in turn finances consumption thus generating utility. Other aspects of a job, for example working conditions, prospects for career progression or the timing of work (as explored in Chapter 3), may also contribute to utility or limit disutility more directly. As formulated by Rosen (1986), these non-pecuniary benefits can be implicitly incorporated into remittance contracts through compensating wage differentials. These rewards can be considered extrinsic in the sense that they are derived not from the work itself but from the returns to work. For people motivated by extrinsic rewards, the work is a means to an end rather than an end in itself.

In contrast, intrinsic rewards describe the well-being derived from undertaking the job itself irrespective of any payments received in exchange for completing the work. For people motivated by intrinsic rewards, the work is an end in itself and there is no reliance on its instrumental role to bring about further ends. Of course, for many people both intrinsic and extrinsic rewards contribute to the well-being derived from work.

The distinction between intrinsic and extrinsic rewards from work is made explicit by Spencer (2015), although he suggests that meaningful work requires both. Although one can derive meaning directly from performing one's job, this meaningfulness can be greatly reduced if one is exhausted through long hours or unable to meet one's material needs due to low pay. Conversely, Kamarade and McKay (2015) suggest that the intrinsically motivated workforce in the voluntary sector creates a competitive advantage for the sector as the ability to offer intrinsic rewards can compensate for lower financial

rewards. A literature review by Chalofsky (2003) suggests that values[41] act as "intrinsic motivators to performing a task and deriving satisfaction from the accomplishment of that task" (p73) although meaning in work is described as being "more deeply intrinsic than values" (p73) insofar as "the act of performing is the motivator … not the accomplishment of the task" (p75).

4.2.3.2 Work as an end in itself

Aristotle (2002) does not make the distinction between intrinsic and extrinsic rewards but does distinguish between instrumental goods and final goods. As discussed above, eudaimonia is defined in the *Nicomachean Ethics* as the only truly final good. Therefore, the purpose of most jobs (or *technē*, translated as 'craft' or 'expert knowledge') is to provide instrumental goods which can be a means to creating eudaimonia. The only vocation which creates eudaimonia directly is, according to Aristotle, political expertise. We could perhaps conclude from this that work cannot be an end in itself but is rather a necessary means to achieving eudaimonia.

Hinchcliffe (2004) challenges this conclusion by highlighting Aristotle's distinction between different types of activity. The activity of 'making' (*poiesis*) is distinct from Aristotle's concept of 'action' (*praxis*). In Book VI of the *Nicomachean Ethics*, Aristotle asserts that "the end of production [*poiesis*] is something distinct from the productive process, whereas that of action [*praxis*] will not be; here, doing well [*eupraxia*, or good action] itself serves as end" (1140b 6-7). According to Hinchcliffe (2004), work can encompass both the productive process (which is technical and ethically neutral in nature and is performed as a means to an end) and ethically significant actions which are undertaken for the sake of human flourishing (eudaimonia) itself. Hinchcliffe (2004) provides examples of jobs that exhibit the qualities of *poiesis* and *praxis*. Shelf-stacking and planting turnips (quoting from MacIntyre, 1981) are given as examples of job roles that do not in themselves contribute to flourishing but produce instrumental goods. The role of caring for a terminally ill patient, however, is considered to have a much greater ethical dimension. Unlike many other jobs, it is difficult to separate out the practice of

[41] These include cognitive judgments or emotions that motivate action.

caring with the end-product, and therefore the activity makes an intrinsic contribution to eudaimonia. Hinchcliffe (2004) goes on to describe how any job can have elements of *praxis* as well as *poiesis*, using the example of a software designer.

It is also relevant to mention the views of Marshall (1961). In the *Principles of Economics*,[42] Marshall discusses wants in relation to activities. He suggests that men in more primitive stages of development undertake activities (i.e. work) for the sake of satisfying wants. He observes, however, that more sophisticated men desire activities for their own sake and not just as a means to consume material goods. He recognises that people's desire for excellence is an important motivator for work, as illustrated by this quote:

> "… the desire for excellence for its own sake graduates down from that of a Newton, or a Stradivarius, to that of the fisherman who, even when no one is looking and he is not in a hurry, delights in handling his craft well, and in the fact that she is well built and responds promptly to his guidance. Desires of this kind exert a great influence on the supply of the highest faculties and the greatest inventions; and they are not unimportant on the side of demand. For a large part of the demand for the most highly skilled professional services and the best work of the mechanical artisan, arises from the delight that people have in the training of their own faculties, and in exercising them by aid of the most delicately adjusted and responsive implements." (Book III, Chapter II, p89)

Despite being an eminent proponent of modern utility theory, Marshall recognises that work has value in itself and is not merely a means to consumption.

[42] Book III Chapter II

4.2.3.3 Authenticity

In light of the connection between the ethical dimension of work and the intrinsic rewards that it can provide, it is not surprising to read that jobs that enable workers to act in accordance with their own morality are considered to be particularly meaningful.

Menard and Brunet (2011) investigate the relationship between authenticity at work (understood as being true to oneself and acting in congruence to one's values) and well-being. Based on a survey of 360 French Canadian managers in the public sector, they find that authenticity at work explains a significant proportion of variance in both hedonic and eudaimonic well-being indices, and that this is in part mediated by meaning in work.

Authenticity is also a feature of an empirical study by Lips-Wiersma et al. (2016). They hypothesise that white-collar workers have more ethical autonomy[43] in their jobs and so are least likely to experience ethical conflicts at work, while pink-collar workers (those in low skilled service occupations) are most likely to experience such conflicts, but this hypothesis is not supported by the data.

In a literature review, Rosso et al. (2010) identify authenticity as one of the seven categories of mechanisms through which work acquires meaning.[44] Again, behaving consistently with one's values is one aspect of authenticity but it also encompasses identity affirmation and personal engagement at work. The identity affirmation aspect is explored more fully in a theoretical paper by Akerlof and Kranton (2005), showing how the congruence between one's identity and the values of an organisation or the requirements of a job may affect motivation and payoffs. They cite military institutions as an example of how employers can manipulate workers' sense of identity to incite motivation and loyalty regardless of extrinsic rewards.

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[43] Ethical autonomy can be understood as having the freedom and discretion to react to ambiguous situations as they arise rather than being bound by prescribed protocols.

[44] The others are self-efficacy, self-esteem, purpose, belongingness, transcendence and cultural and interpersonal sensemaking.

The notions of authenticity and identity have a strong connection to having a sense of vocation or calling in one's job role. This is also explored by Rosso et al. (2010) who cite theories suggesting a tripartite model of work orientation whereby individuals see their work primarily as either a job, a career or a calling. Those with a 'calling orientation' to work are motivated by the fulfilment the work brings or the greater good it contributes. This is distinct from a 'job orientation' (motivated by the material benefits of work) or a 'career orientation' (motivated by the rewards that come from advancement). An empirical study by Hirschi (2011) finds that those with a meaning or engagement orientation to happiness were more likely to experience vocational identity achievement than those with a pleasure orientation to happiness.

4.2.3.4 Altruism

Having preferences for altruism, social impact or serving others is also a mechanism through which work can provide intrinsic rewards and be perceived as meaningful. Formal models that account for altruistic preferences are common in the economics literature. A relevant example is a theoretical study by Besley and Ghatak (2005) in which different types of agents (workers) are endowed with preferences for personal rewards (as in the standard principal-agent model) and 'mission' (i.e. making a positive contribution to society through their work). Principals (employers) are also divided into types according to whether they are mission-oriented or profit-oriented. The matching between principals and agents leads to an equilibrium where mission-oriented (e.g. public or voluntary sector) organisations do not have to pay a premium to motivate effort and productivity, as the opportunity to contribute to the mission compensates the lower pay for suitably motivated individuals. Similarly, Polidori and Teobaldelli (2013) conduct a review of the empirical and theoretical literature and conclude that pro-social behaviour and 'public service motivation' are important drivers of effort in the non-profit sector. A similar principle is tested empirically by Binder (2016), who finds that people working in the non-profit sector experience significantly higher life satisfaction, and that this life satisfaction 'premium' is equivalent to £22,000 per year in income.

Turban and Yan (2016) identify social significance as a primary component of eudaimonia at work, alongside personal growth and purpose, which in turn is found empirically to predict job satisfaction and extra-role behaviours. In another empirical study, Lips-Wiersma et al. (2016) hypothesise that 'serving others' is a key dimension of meaningful work and that perceptions of pro-social impact are related to the proximity of one's work to the beneficiaries it serves. They suggest that pink-collar workers are most likely to experience this dimension of meaningful work, although the results show that in fact this is experienced most acutely by white-collar workers.

4.2.3.5 Relatedness

Lopes (2011) identifies relational goods as being paramount in what motivates people to work. She describes relational goods as "intangible entities, jointly created by the relation between oneself and particular others, that are valued by the participants because they satisfy the human need for relatedness" (p64), and cites evidence to show that relationships with co-workers explain job satisfaction to a greater extent than economic benefits. Relatedness also plays a significant role in Arendt's (1958) concept of action, whereby the need to live a good and meaningful life is fulfilled by engaging in action together with others rather than in isolation.

The Lips-Wiersma et al. (2016) study identifies 'unity with others' as being an important dimension of meaningfulness at work but finds that there is no difference between occupational groups in the extent to which this sense of relatedness is experienced.

4.2.3.6 Self-determination

Self-determination theory was developed by psychologists Deci and Ryan (2000) and explains how individuals are intrinsically motivated to act. In this theory, social and cultural conditions can dictate the extent to which people are able to act on this need for self-determination and it is argued that conditions that support the individual's experience of autonomy, competence and relatedness are most conducive to facilitating this. Therefore, we might expect working conditions to influence the extent to which people are able to practise self-determination.

For Turban and Yan (2016), personal growth (the freedom to develop and use one's potential) is considered to be an important component of eudaimonia at work while Lips-Wiersma et al. (2016) find that white-collar workers are more likely than blue-collar or pink-collar workers to be able to express their full potential at work. This is not surprising as often higher skilled jobs have the most scope for autonomy and give workers a greater opportunity to develop and use their talents and experience a sense of accomplishment.

4.3 Theoretical framework

The purpose of this chapter is to explore the extent to which the observable characteristics of one's job influence one's subjective sense of eudaimonic well-being or meaningfulness. Ideally, this is to be identified independently of a person's own characteristics, including her tendency to value eudaimonic well-being (or, specifically, the intrinsic rewards from work) or experience eudaimonic well-being in life generally, as well as her propensity to choose certain types of job or career.

Our original theoretical framework set out in equations (1) and (2) in section 2.2 asserts that the utility experienced by an individual over the whole evaluation period T (e.g. one day) is a sum of the utilities experienced in each period $t = (1, \dots, T)$, which is in turn a function of $L_{it} = (0,1)$ (whether or not the individual worked in period t) and C_{it} (the amount consumed in period t).

To motivate the analysis in this chapter, let us now assume that the utility derived from work or leisure is not dependent on the timing of work but instead is dependent on the type of job one does. Similarly, the wage gained from each period spent in work is dependent not on the timing of work but the type of job. We can therefore rewrite equations (1) and (2) as:

$$V_i = \sum_{t=1}^{T} U_{ij}(L_{ijt}, C_{ijt}) \tag{15}$$

$$\sum_{t=1}^{T} (w_{ij} L_{ijt} - C_{ijt}) = 0 \tag{16}$$

As before, V_i denotes the total utility experienced by individual i over the whole period T. We now let j indicate the job held by individual i, and assume that this does not change over the evaluation period T. Hence U_{ij} is the utility that i gets from either working or consuming in period t given that she works in job type j, and w_{ij} is the wage received by i from spending period t working in job j.

Let us now assume that utility experienced in any given time period is composed of both hedonic (experiences of pleasure net of pain) and eudaimonic (experiences of purpose or meaning) aspects. If we think of these two types of well-being as two goods that generate utility, then it is reasonable to assume a negative marginal rate of substitution between the two goods (i.e. convex indifference curves). These assumptions would fit a Cobb-Douglas functional form. It is also convenient to assume perfect consumption smoothing over the evaluation period such that $C_{ij} = \frac{1}{T}\sum_{t=1}^{T} C_{ijt}$. We can therefore rewrite equation (15) as:

$$V_i = E_i^{\theta} H_i^{1-\theta} = \left[\sum_{t=1}^{T} E_{ij}(L_{ijt}, C_{ij})\right]^{\theta} \left[\sum_{t=1}^{T} H_{ij}(L_{ijt}, C_{ij})\right]^{1-\theta} \quad (17)$$

Here, $E_{ij}(.)$ is the eudaimonic well-being that individual i holding job j experiences in period t, which depends only on whether or not the individual is working at the time (L_{ijt}). Similarly, $H_{ij}(.)$ expresses the hedonic well-being experienced at time t. The parameter $0 \leq \theta \leq 1$ is a measure of the weight that individual i places on the hedonic and eudaimonic aspects of utility. It is not possible to identify θ from my empirical analysis as hedonic and eudaimonic well-being are estimated separately for each activity. Instead, my empirical approach is to examine the two different measures of well-being side-by-side for a given activity. My results show that the ranking of activities and jobs is markedly different depending on whether one focuses on hedonic or eudaimonic well-being, suggesting that these measures of well-being are capturing two distinctly different things.

Let us now assume that i can hold one of two jobs such that $j = (1,2)$. Therefore, eudaimonic well-being experienced in any period can take one of four values for a given individual: $E_{i1}(1, C_{i1})$; $E_{i2}(1, C_{i2})$; $E_{i1}(0, C_{i1})$; or $E_{i2}(0, C_{i2})$. There is a case for assuming that the latter two utilities are equal. We would not expect job type to have any bearing on how one experiences one's leisure time directly although clearly the amount consumed during one's leisure time will be dependent on one's job given that $w_{i1} \neq w_{i2}$. However, while consumption is nominally included in the eudaimonic component of the utility function, the literature would suggest that the consumption of market goods plays at most a minimal role in determining eudaimonic well-being. Therefore, we could propose that:

$$\hat{E}_i \equiv E_{i1}(0, C_{i1}) = E_{i2}(0, C_{i2}) \tag{18}$$

Here, $\hat{E}_i$ can be interpreted as a baseline eudaimonic well-being that i experiences during any period when she is not working, regardless of the job she holds and the amount she consumes over that period.[45] We can also define the eudaimonic well-being that i gains from spending period t working in job j (again assuming that consumption has no bearing on eudaimonic well-being) as:

$$E_{ij} \equiv E_{ij}(1, C_{ij}) \tag{19}$$

We want to test the null hypothesis that job type has no bearing on how much eudaimonic well-being one derives from one's work. That is:

$$E_{i1} = E_{i2} \tag{20}$$

This can also be expressed as:

[45] There is also the implicit assumption that leisure time is homogenous and one's job type or income does not determine how one spends one's leisure time. This is a more difficult assumption to defend than the assumption that consumption has no direct impact on eudaimonic well-being, as clearly one can derive different amounts of meaningfulness depending on the types of activities one does during one's leisure time. However, the empirical analysis does control for this heterogeneity.

$$E_{i1} - \hat{E}_i = E_{i2} - \hat{E}_i \tag{21}$$

Let us now assume that there are two individuals such that $i = (1,2)$. The two individuals derive different levels of eudaimonic well-being from leisure and work such that $\hat{E}_1 \neq \hat{E}_2$ and $E_{1j} \neq E_{2j}$ for both j. We might also assume that there is a set ordinal ranking of the available time use activities (time spent in each available job and time spent in leisure) according to their contribution to eudaimonic well-being that is consistent across individuals such that if $\hat{E}_1 > E_{1j}$ then $\hat{E}_2 > E_{2j}$ for both j and if $E_{11} > E_{12}$ then $E_{21} > E_{22}$. Moreover, we could assume that this ranking is not just ordinally consistent but cardinally consistent such that:

$$E_{1j} - \hat{E}_1 = E_{2j} - \hat{E}_2 \text{ for both } j \tag{22}$$

We can use this latter assumption to test the null hypothesis that both jobs are perceived as equally meaningful. Let us assume that individual 1 holds job 1 and individual 2 holds job 2. Then let us say that we observe that:

$$E_{11} - \hat{E}_1 > E_{22} - \hat{E}_2 \tag{23}$$

Taking equations (22) and (23) together implies the following counterfactual results:

$$E_{11} - \hat{E}_1 > E_{12} - \hat{E}_1 \tag{24}$$
$$E_{21} - \hat{E}_2 > E_{22} - \hat{E}_2$$

In other words, individual 1 experiences more eudaimonic well-being from working in job 1 than she would do from working in job 2 and individual 2 experiences less eudaimonic well-being from working in job 2 than he would do from working in job 1. This implies that job 1 is perceived as more meaningful than job 2 independently of the individuals selecting into those jobs. If these inequalities are significant, then this provides the evidence required to reject the null hypothesis in equation (20).

I now consider the theoretical arguments that may help to predict which job types j may be most likely to yield higher reports of meaningfulness within the framework set out above.

The literature review above suggests that there are certain job characteristics that should be more likely than others to bestow intrinsic rewards to the jobholder. The first thing to say is that many of these job characteristics will not be observable in the data. A work environment which is conducive to eudaimonic well-being is to a large extent dependent on the specific employer, the specific department or team in which the individual works, or indeed the specifics of the job description itself. For example, fostering a good sense of relatedness is possible in any job and is in the most part dependent on the culture of the organisation, the attitudes and personalities of managers and the way in which the work is organised (e.g. whether there is a significant focus on teamwork). Likewise, the ability to work authentically is theoretically possible in many jobs, as employers in many different sectors can have strong ethical policies which enable their staff to stay true to their values. As highlighted by Spencer (2015), it is not just the work itself but the context of the work (i.e. how it is organised in particular workplaces) that makes it meaningful.

However, there is reason to expect a degree of systematic relationship between certain sectors and occupations, and the sorts of job characteristics conducive to eudaimonic well-being. For example, we may expect to observe a vertical pattern. Self-determination theory would imply that people in more highly skilled and senior positions would be more likely to experience autonomy and competence in their work compared to those in lower ranked occupations. Moreover, higher levels of autonomy may also foster greater levels of authenticity which is also conducive to eudaimonic well-being. Similar arguments might also be put forward to hypothesise that self-employed people may experience higher levels of eudaimonic well-being than employed people, who are more likely to be constrained in how they go about their job (Benz and Frey 2008).[46]

[46] It is possible that this effect will vary according to the type of self-employment. Those in more modern forms of self-employment (e.g. the so-called 'gig economy') may be expected to experience less autonomy and hence

We might also expect to see the impact on eudaimonic well-being to vary horizontally between sectors and occupations. In other words, it is not just the level of job but also the type of job which matters for meaningfulness. Specifically, we might hypothesise that the nature of the good being produced by the jobholder would influence the extent to which the job is perceived as meaningful. Jobs where the good produced is indistinguishable from the work itself (for example, the caring job described by Hinchcliffe 2003) may be particularly conducive to eudaimonic well-being. If the jobholder perceives her work as an activity which is an end in itself rather than a means to an end, we might expect her to experience eudaimonic well-being in the midst of undertaking the work. There are also many jobs and sectors where service to the community is an underlying mission. In particular, public sector and voluntary sectors organisations tend to have the feature whereby job performance is assessed on the basis of creating value to society rather than contributing to firm profits. As a result, working for such an organisation might make the jobholder feel that what she is doing is altruistic and hence more meaningful. Note, however, that this is a different concept than that put forward by Besley and Ghatak (2005), where naturally altruistic people sort into mission-orientated jobs. The hypothesis being developed here is that certain jobs cause the jobholder to become more altruistic than they would be otherwise had they been randomly allocated into a different job.

4.4 Data

Two datasets are used for this chapter: ATUS (Bureau of Labor Statistics 2016a, 2016b) and APS (Office for National Statistics 2016b).

4.4.1 American Time Use Survey

ATUS is a federally administered survey in the United States (US) with the purpose of developing nationally representative estimates of how American people spend their time. Since 2003, a sample of individuals has been randomly selected from the population that completed the final month of

meaningfulness than those in more traditional forms of self-employment. However, I cannot make this distinction from my data.

interviews for the Current Population Survey (CPS). As such, the ATUS covers all residents living in households in the US that are at least 15 years of age, with the exception of active military personnel and people living in institutions such as nursing homes and prisons. These respondents are contacted by telephone and are asked about how they spent the previous day (the diary day), where they were and whom they were with. These activities are then categorised into a coding lexicon. The ATUS data is cross-sectional in the sense that respondents are interviewed only once.

The first year of ATUS (2003) has an estimated sample size of 40,500 with subsequent years having an estimated sample size of 26,400. Half of the sample is allocated to report on their time use on a weekday (10% on each weekday) and the other half is allocated to a weekend day (25% on Saturday and Sunday respectively).

In three years of the survey (2010, 2012 and 2013), a Well-Being Module was added to ATUS to capture how people felt during three randomly selected activities in the diary day (excluding sleeping, grooming and personal activities). Specifically, respondents are asked how happy, tired, sad, stressed and in pain they were at the time and how meaningful the activity was.

I use a pooled dataset of 20,055 individuals (interviewed in 2010, 2012 or 2013) who were in work and reported their well-being in three activities each. Therefore, the total number of observations is 60,165.[47]

4.4.1.1 Dependent variable of interest – meaningfulness of activity

The dependent variable of interest for my analysis of ATUS is the extent to which the respondent found the activity meaningful. As described above, this question was asked to each respondent in

[47] Due to limited missing data in the ATUS, the full sample of 60,165 is used in the regressions involving industry and occupation. A small number of observations are lost for the regressions involving sector, where the sample size is 60,108. However, there is a large amount of data missing on earnings so the sample size for the regressions involving earnings is 29,299.

relation to three randomly selected activities reported for the diary day, for individuals completing ATUS in 2010, 2012 or 2013.

Having completed the main part of the questionnaire, the telephone interviewer then asked the respondent to refer back in turn to three episodes during the diary day selected randomly by the computer. The respondent was reminded about the start and end time of each episode and the single activity that they reported doing during that time. The respondent was instructed to "please use a scale from 0 to 6, where a 0 means you did not experience this feeling at all and a 6 means the feeling was very strong. You may choose any number 0, 1, 2, 3, 4, 5 or 6 to reflect how strongly you experienced this feeling during this time." The respondent was initially asked to report, on a 0-6 scale, the extent to which they were happy, tired, stressed, sad and in pain during the activity in question. These five affective questions were asked in a random order. They were then asked the eudaimonic question: "From 0 to 6, how meaningful did you consider what you were doing? 0 means it was not meaningful at all to you and a 6 means it was very meaningful to you." Finally, they were asked whether or not they were interacting with anyone (including over the phone) during the specified time period.

Although my research is particularly interested in the meaningfulness question, I also repeat my analysis using the five affective states as the dependent variable as a comparison.[48] These dependent variables can be interpreted as either ordinal or continuous in nature. Similarly to my approach in the previous chapter, in the empirical analysis I model the dependent variable separately using both linear and ordinal specifications.

4.4.1.2 Explanatory variables

The explanatory variables of interest in the ATUS analysis can be divided into two groups: those that vary by activity and those that vary by person. The main activity-level variable of interest is the

[48] Scales are reversed for the four negative feelings (tired, stressed, sad, pain) so as to be in the same direction as the happy and meaningful outcomes, where 0 denotes very low well-being and 6 denotes very high well-being.

categorisation of the activity itself. A qualitative description of the activity provided by the respondent was coded into one of over 400 categories, grouped together into 17 major time use categories (plus an 18th 'unknown' category) which are described in detail in Appendix D. These categories are converted into a set of 18 dummy variables.

The activity category of most interest in this study is 'working and work-related activities'. Among the 20,055 individuals included in the sample, 5,298 (26%) were recorded as working during at least one of the three activities for which they reported their well-being, including 890 (4%) recorded as working during at least two activities and 54 (<1%) in all three activities.[49] Most time use coded into this category covers time when the individual is doing their job (or working for the business if self-employed) but the category also includes other work-related activities, such as job-search activities and income generating activities. Most of my analysis treats this as a single homogenous category but, as a robustness check, I also separate out activities relating to the person's main job from other work-related activities. This makes no substantial difference to the results.

Aside from the nature of the activity itself, some other characteristics of the activity are also captured in the data and may be expected to influence how one feels during that activity. These other variables are: duration of the activity in minutes, time of day (whether morning, afternoon, evening or night),[50] whether also looking after children at the time,[51] location of activity (whether home, workplace, travelling, other place or unspecified), and whether one was interacting with anyone else at the time (asked in the Well-Being Module).

The data also includes many person-level variables. These include personal characteristics such as sex, age, ethnicity and region. Moreover, there are a number of variables relating to an individual's job

[49] Therefore, the sample for whom there is a variation across the three activities in terms of the work / non-work split is 5,298 – 54 = 5,244.
[50] For each activity, ATUS records the start time and end time. For simplicity, I use just the start time to code each activity into whether it takes place in the morning (04.00-11.59), afternoon (12.00-17.59), evening (18.00-23.59) or night (00.00-03.59).
[51] As a secondary activity, distinct from looking after children as the primary activity.

including sector, industry, occupation and earnings. In the fixed effects model, these person-level factors are interacted with the work activity dummy to test whether different job variables are associated with finding work more or less meaningful relative to the mean of the three activities.

4.4.2 Annual Population Survey

The APS is an annual repeated cross-sectional dataset covering individuals living in households across the UK. The data is derived from the quarterly LFS which covers approximately 41,000 households. Data from waves 1 and 5 of the quarterly LFS plus the Local Labour Force Survey (LLFS) for England, Wales and Scotland are combined to form the APS. Each annual dataset contains responses from about 155,000 households and 360,000 individuals. The APS contains data on a range of personal and labour market characteristics and, since 2011-12, contains responses to the SWB questions introduced by the Office for National Statistics to measure well-being in the UK. My analysis uses a pooled dataset covering the years 2011-12 through to 2015-16.

4.4.2.1 Dependent variable of interest – worthwhileness

One of the four SWB questions in APS, and other UK datasets, is designed specifically to capture eudaimonic well-being. See Dolan et al. (2011) for a rationale for its inclusion. The question is included in the SWB section of the LFS questionnaire, which is introduced as follows: "Now I would like to ask you four questions about your feelings on aspects of your life. There are no right or wrong answers. For each of these questions I'd like you to give an answer on a scale of nought to 10, where nought is 'not at all' and 10 is 'completely'." As described in section 3.4.1.2 above but repeated here for convenience, the question on eudaimonic well-being is worded as follows: "Overall, to what extent do you feel that the things you do in your life are worthwhile, where nought is 'not at all worthwhile' and 10 is 'completely worthwhile'?" The other three SWB questions (life satisfaction, happiness and anxiety) are similarly worded and also measured on a 0-10 scale, as described more fully in section 3.4.1.2. For comparison, my analysis models these three other SWB variables alongside

worthwhileness as alternative well-being outcomes. Again, the model is analysed both with a continuous and ordinal dependent variable.

4.4.2.2 Explanatory variables

My APS analysis uses a two-stage matching method following the Rubin Causal Model (Rosenbaum and Rubin 1983). As such, there are three types of explanatory variable included in the model: pre-treatment variables, treatment variables and other covariates introduced in the second stage.

The pre-treatment variables are personal characteristics that are assumed not to be influenced by career choices. These include characteristics that are, in the vast majority of cases, determined at birth, namely gender, ethnicity and age. There is no question that these variables are strict pre-treatments in the sense that they could not have been influenced by labour market choices. I also consider a wider group of pre-treatment variables, namely qualifications, religion, marital status, disability and region of residence. One might reasonably assume that, for most people, most of these characteristics would have been determined independently of career choice but this is less certain, relative to the birth characteristics. To ensure robustness, all the model specifications are tested using both the birth pre-treatments only and the wider set of pre-treatments.

The treatment variables are the job types that individuals select into, or are selected into. This selection might be influenced by pre-treatment characteristics (e.g. gender or prior qualifications) but may also be a function of various unobservable factors. The treatments are all defined as dummy variables, and analysed in separate regressions. These are: whether or not the individual is in work; whether or not the individual is economically active (either in work or unemployed and looking for work); whether or not the individual is self-employed; whether or not the individual is working in the public sector; and a set of dummy variables that classify individuals into particular sectors (types of organisation), industries or occupations. Aside from the working and economically active regressions, individuals not in work are removed from the analysis.

Other covariates included in the second stage of the model (i.e. they are not pre-treatments but may conceivably influence well-being) are whether or not the work is full time, whether or not the job is temporary, whether or not the job is new (where the individual has worked for their current employer for less than 12 months) and the log of net weekly earnings.[52]

4.4.2.3 Sample sizes

The pooled dataset contains more than half a million (588,718) adults of working age (18-64) with a valid response on the 'Worthwhile' question (see Table 4.9) of which 419,364 were in employment and 448,617 were economically active (see Table 4.10). In the regression analyses, some observations are lost due to missing data in either the pre-treatment variables, treatment variables or covariates but a sample size of at least 300,000 is achieved for each regression.

4.5 Methodology / Specification

4.5.1 American Time Use Survey

The basic model for the ATUS analysis assumes that the well-being S_{in} reported by person i during activity $n \in (1,2,3)$ is a function of the nature of that activity. [53]

$$S_{in} = \alpha + \mathbf{A}_{in}\boldsymbol{\beta} + \mathbf{X}_{in}\boldsymbol{\gamma} + \nu_i + \varepsilon_{it} \qquad (25)$$

Here, $\mathbf{A}_{in}$ is a 1x17 vector $(A_{1in}, A_{2in}, \dots, A_{17in})$ in which $A_{1in} = 1$ if individual i's nth activity is work-related and 0 otherwise. Likewise, the dummy variables A_{2in} through to A_{17in} denote whether or not the nth activity falls into each of the other categories. As these are mutually exclusive categories, at most one element of $\mathbf{A}_{in}$ is 1 with the remaining elements in the vector set to zero. A vector of 17 zeroes implies that the activity falls into the omitted category. The vector $\mathbf{X}_{in}$ in equation (25) contains

[52] These work covariates are not relevant when the treatment variable is 'whether working' or 'whether active' so are not used for these regressions. Moreover, data on earnings and whether or not job is permanent are not available for self-employed people, so these covariates are removed from the self-employed regression.

[53] This specification implicitly assumes that $S_{in} - S_{jn} = S^*_{in} - S^*_{jn}$ for any two individuals i and j selected from the population, where S_{in} denotes reported well-being and S^*_{in} denotes actual well-being. As discussed in section 3.5, this is a strong assumption which allows one to interpret S_{in} as a cardinal variable that can be estimated using OLS. If this assumption is relaxed such that S_{in} is only an ordinal proxy for S^*_{in} then an ordinal estimator should be used. As in Chapter 3, I also estimate the ATUS model using the BUC method. See section 3.5 for the theory underpinning this method.

all other explanatory variables that vary in i and n. This includes duration of activity, time of day, location, whether or not one was looking after children at the time and whether or not one was with other people at the time. The error term v_i contains all personal characteristics (including job characteristics) that do not vary across activities, while the error term ε_{in} accounts for all residual variation across activities.

By averaging equation (25) across the three activities for each i, such that $\bar{S}_i = \frac{1}{3}\sum_{t=1}^{3} S_{it}$ (and similarly for all left hand side variables) we get the following:

$$\bar{S}_{in} = \alpha + \bar{\mathbf{A}}_{in}\boldsymbol{\beta} + \bar{\mathbf{X}}_{in}\boldsymbol{\gamma} + v_i + \bar{\varepsilon}_i \tag{26}$$

Subtracting equation (26) from equation (25), such that $\ddot{S}_{it} = S_{it} - \bar{S}_i$ (and similarly for all right hand side variables) implies:

$$\ddot{S}_{in} = \alpha + \ddot{\mathbf{A}}_{in}\boldsymbol{\beta} + \ddot{\mathbf{X}}_{in}\boldsymbol{\gamma} + \ddot{\varepsilon}_{in} \tag{27}$$

We can think of equation (27) as the activity-demeaned transformation, where all variables are expressed in terms of the difference from individual i's mean value across the three activities. Notice, as $v_i - v_i = 0$, any person-specific variables are not featured in equation (27). This demeaned specification can be estimated with the fixed effects estimator.

To answer our research question, we do not just need to estimate how well-being is affected by whether or not the activity in question is work-related (i.e. whether $A_{1in} = 1$) but also whether the impact of an activity being work-related is affected by the type of job held by individual i. This can be tested by introducing interaction terms into equation (27). Let us assume that every individual in the data can hold one of K job types. This information can be represented by a set of dummy variables J_{1i} through to J_{Ki}, only one of which can be equal to 1 for any given i. We can then interact these job type dummies with whether or not the activity is work-related to generate the vector $\mathbf{J}_{in} =$

$(J_{1i}A_{1in}, J_{2i}A_{1in}, \dots, J_{(K-1)i}A_{1in})$. This can be expressed in demeaned form such that $\ddot{\mathbf{J}}_{in} = (J_{1i}\ddot{A}_{1in}, J_{2i}\ddot{A}_{1in}, \dots, J_{(K-1)i}\ddot{A}_{1in})$ and hence included as an additional term in the regression to be estimated.

$$\ddot{S}_{in} = \alpha + \ddot{\mathbf{A}}_{in}\boldsymbol{\beta} + \ddot{\mathbf{X}}_{in}\boldsymbol{\gamma} + \ddot{\mathbf{J}}_{in}\boldsymbol{\delta} + \ddot{\varepsilon}_{in} \quad (28)$$

When S is specified as meaningfulness, the specification in equation (28) relates directly to the theory in section 4.3 above. Where individual i's nth activity is work-related, then $\ddot{S}_{in}$ can be interpreted as the additional meaningfulness that i gets from working over and above a baseline level of meaningfulness derived from non-work activities (that is $E_{ij} - \hat{E}_i$ in the theoretical notation of section 4.3) conditional on the combination of activities undertaken during the day and other characteristics that vary across activities. The vector of interaction terms $\ddot{J}_{in}$ can be used to test the hypothesis that $E_{ij} - \hat{E}_i$ is significantly different for different values of j.

4.5.2 Annual Population Survey

Unlike the ATUS data, the available APS data is wholly cross-sectional in the sense that only one observation is provided per individual. Therefore, it is not possible to control for fixed effects. Instead I estimate the impact of job type on well-being by using a two-stage matching model, following the Rubin Causal Model (Rosenbaum and Rubin 1983).

We first of all define a treatment variable $J_i = \{0,1\}$ such that each individual i either receives the 'treatment' or does not. This treatment refers to the individual's current labour market status which can be defined, separately, across a large number of domains. For example, J_i could express whether or not individual i is in work, whether or not she is self-employed (where $J_i = 0$ means that i is in work but not self-employed) or whether or not she is in the chief executives and senior officials occupational group (where $J_i = 0$ means that i is in any other occupational group).

We also define a subjective well-being outcome variable $0 \leq S_i \leq 10$. This variable is strictly ordinal, but could also be interpreted as a continuous variable. My discussions in Chapter 3 (based on Ferrer-i-Carbonell and Frijters 2004) consider the issues of modelling SWB outcomes as a dependent variable in more detail, but for robustness, as in the ATUS analysis, I treat S_i separately as a continuous and ordinal variable. S_i can refer to the extent to which i finds that the things she does in her life are worthwhile (i.e. eudaimonic well-being) but can also refer to the other three SWB outcomes which are measured on a similar scale.

Given that S_i can be assumed to be at least partially determined by J_i (i.e. job type influences well-being), each individual i has two potential outcomes based on whether or not she is in the treatment group. If $J_i = 1$ then $S_i = S_{1i}$ and if $J_i = 0$ then $S_i = S_{0i}$ where S_{1i} and S_{0i} are the potential outcomes of treatment and non-treatment respectively. Therefore:

$$S_i = S_{1i}J_i + S_{0i}(1 - J_i) = S_{0i} + (S_{1i} - S_{0i})J_i \quad (29)$$

Of course, for each i we only observe one of the two potential outcomes. If selection into J_i were completely random, this would not matter as the expected value for the unobserved potential outcome for i could be estimated as the average of the observed outcomes of all individuals who received the other treatment. However, in the case of labour market choice, selection into J_i is likely to be highly endogenous and determined by other factors which will also influence S_i.

We now define a vector of pre-treatment characteristics $\mathbf{X}_i$. This stratifies the sample according to the combination of personal characteristics assumed to have been determined before anticipated or actual selection into J_i. As explained in section 4.4.2.2 above, some aspects of $\mathbf{X}_i$ (e.g. gender, ethnicity and age) will have been determined at birth for the vast majority of people while other aspects (e.g. highest qualification or region of residence) may not be strictly pre-treatment as they may have been determined as a result of, or in anticipation of, particular career choices. This problem is dealt with in

the analysis by estimating the model both using all pre-treatments and restricting the pre-treatment vector to birth characteristics only.

To ensure unbiased estimates of the treatment effect, the following assumptions must hold. Firstly, estimates must be unconfounded such that individual i has the same probability of receiving the treatment as individual j if both are identical with respect to their pre-treatment characteristics $\mathbf{X}_i = \mathbf{X}_j$. In other words:

$$(S_{0i}, S_{1i}) \perp J_i | \mathbf{X}_i \tag{30}$$

In reality, it is possible that the orthogonality expressed in equation (30) does not hold, insofar as unobservable characteristics not captured in $\mathbf{X}_i$ may nonetheless influence the probability of selection into the treatment group. For example, an individual naturally inclined to pursue eudaimonic well-being though their work may be more likely to choose a 'worthwhile' career but at the same time have the potential to report high levels of worthwhileness whether or not they end up in that career. This issue needs to be borne in mind when interpreting the results.

Secondly, there must be overlap in the data such that both the treatment and non-treatment groups contain representatives from across the major combinations of pre-treatment characteristics contained in $\mathbf{X}_i$. In other words:

$$0 < p[(J_i = 1) | (\mathbf{X}_i = x)] < 1 \tag{31}$$

The inequality in equation (31) states that, for any specific vector of pre-treatment characteristics x, the probability of an individual with those characteristics being in the treatment group must be strictly greater than zero and less than one. Lack of overlap may cause a problem where treatment is defined as selection into a particular occupation. For example, people with low qualifications may be necessarily excluded from certain occupations and therefore the estimation would not be able to

account for the potential well-being impact of being in these occupations for those unqualified to be in those occupations. However, this is likely to be less of an issue than the problem of confoundedness described above. Observations with pre-treatment characteristics that perfectly predict selection or non-selection into a treatment are removed from the analysis for that particular treatment.

Assuming unconfoundedness and overlap, we can use the pre-treatment variables to estimate the average treatment effect (ATE). The ATE estimates the average difference in outcomes attributable to the treatment for the whole population, whether or not they actually receive the treatment, and can be expressed as follows:

$$\tau = \sum_{x} \{\mathrm{E}[S_i|(\mathbf{X}_i = x), (J_i = 1)] - \mathrm{E}[S_i|(\mathbf{X}_i = x), (J_i = 0)]\} p(\mathbf{X}_i = x) \tag{32}$$

When there are multiple possible values for x, the summation of expectations expressed in equation (32) is not practical. Instead, as shown by Rosenbaum and Rubin (1983), one can derive a propensity score variable $e(\mathbf{X}_i)$ such that:

$$e(\mathbf{X}_i) = p(J_i = 1|\mathbf{X}_i) \tag{33}$$

The inverse of this propensity score can be used to weight the outcomes of treatment and non-treatment, such that individuals with characteristics atypical of the treatment group (low propensity score) are given a higher weighting when in the treatment group and a lower weighting when not in the treatment group, and vice versa. The ATE is thus expressed as the expected difference between the outcomes observed in the treatment group $J_i S_i$ weighted by the inverse of the propensity to be in the treatment group $\frac{1}{e(\mathbf{X}_i)}$ and the outcomes observed in the control group $(1 - J_i)S_i$ weighted by the inverse of the propensity to be in the control group $\frac{1}{1-e(\mathbf{X}_i)}$:

$$\tau = \mathrm{E}\left[\frac{J_i S_i}{e(\mathbf{X}_i)} - \frac{(1-J_i)S_i}{1-e(\mathbf{X}_i)}\right] \quad (34)$$

The first stage of the analysis involves calculating an estimate of the propensity score for each combination of pre-treatment variables $\hat{e}(\mathbf{X}_i)$. This involves conducting a logistic regression where the dependent variable is J_i and the explanatory variables are the pre-treatment characteristics contained in $\mathbf{X}_i$.

The second stage involves using weighted least squares (or a weighted ordinal model) to estimate the effects of treatment J_i on well-being S_i. An estimate of the ATE ($\hat{\tau}$) involves weighting all individuals in the treatment group ($J_i = 1$) by $\frac{1}{\hat{e}(\mathbf{X}_i)}$ and all individuals in the control group ($J_i = 0$) by $\frac{1}{1-\hat{e}(\mathbf{X}_i)}$, effectively substituting $\hat{e}(\mathbf{X}_i)$ for $e(\mathbf{X}_i)$ in equation (34). Other covariates (e.g. aspects of the job that may also influence well-being, for example hours and earnings) are estimated alongside the treatment dummy in this second stage regression.

Note that, in contrast to the ATUS model, the APS model does not estimate well-being experienced during any particular activity but rather an overall assessment of well-being. The life satisfaction and worthwhileness outcomes refer to the respondent's evaluation of their life as a whole (presumably over a short time period but more than just a day) while the happiness and anxiety outcomes refer specifically to the previous day, although we do not know the activities undertaken during that day (including whether or not they were working). Therefore, an estimated positive ATE with respect to worthwhileness does not necessarily imply that the average person with job j (i.e. $J_i = 1$) finds their work more worthwhile than if they were in a different job ($J_i = 0$) but rather that the things they do in their life as a whole are deemed more worthwhile. Essentially, therefore, we are estimating the effects of job type on a summation of meaningfulness experienced across all activities (i.e. a measure of $E_{ij} + \hat{E}_i$ weighted implicitly by how much time and how much importance person i apportions to work relative to other activities) rather than the difference between the eudaimonic well-being

experienced at work and baseline eudaimonic well-being ($E_{ij} - \hat{E}_i$). However, if we assume that type of job j does not affect the eudaimonic well-being experienced during non-work activities $\hat{E}_i$, then estimating the effect of j on $E_{ij} + \hat{E}_i$ is equivalent to estimating the effect of j on $E_{ij} - \hat{E}_i$.

4.6 Results

4.6.1 American Time Use Survey

I first of all present some descriptive statistics to illustrate the distributions of the key variables in the regression analysis. Figure 4.1 through to Figure 4.6 show the distributions of the six well-being outcome measures used in the analysis. The histograms show a degree of truncation in all six distributions insofar as the highest possible well-being is the modal response in all cases. This truncation is particularly evident for pain and sadness, where the individual reports not suffering at all during the activity in over three-quarters of cases. There is somewhat more variation in the meaningfulness outcome, although in nearly 40% of cases the activity is reported as being very meaningful (the highest possible score).

Table 4.1 shows the means and distributions of all activity-level variables used in the regression analysis.[54] Just over 10% of activities reported by those in work (the sub-population used for this analysis) are coded as work-related, the fifth most common category after travelling (26%), socialising, relaxing and leisure (16%), household activities (15%) and eating and drinking (15%). Note that the design of the survey (where 50% of the sample are allocated a weekend day as their diary day) implies that work-related activities are likely to be under-represented in the sample compared to a survey design with the sample spread equally across the week. As one would expect, most activities occur during daytime hours (sleeping, grooming and personal activities are excluded from the well-being questions and hence do not form part of our sample) with 39% starting between the hours of midday and 6pm. Close to half (45%) of activities took place at the respondent's home, and about a quarter

[54] Only activities for which a well-being report is provided are included in these statistics. The sample of 20,055 working individuals reported well-being for three activities each so the total sample of activities is 60,165.

(24%) involved looking after children at the same time. Two-fifths (40%) of activities were undertaken alone with the remaining 60% involving interaction with others. The mean duration of an activity was 69 minutes (minimum duration 5 minutes).

All 20,055 individuals included in the sample for this analysis were in work at the time of the survey, and Table 4.2 shows the distribution by job type. Nearly two-thirds (63%) of individuals worked as an employee in the private for-profit sector, 18% worked in the government sector,[55] 11% were self-employed and 8% worked in the private non-profit sector.[56] Individuals are spread across all occupations, with management occupations (13%) and office and administrative support occupations (13%) the most common categories. The most common industries are health care and social services (15%) and educational services (11%). The mean hourly earnings of the sample are $16.78 but note that less than half of the sample provided this information.

In terms of personal characteristics (Table 4.3), 51% of the sample is female and the majority of the sample is non-Hispanic (86%) and/or white (81%). About half (53%) are married (or living with a partner) and a similar proportion (51%) have children living in the household. The mean age is 43 and 4% report being disabled. Similarly to the whole ATUS sample, about half of the respondents in this sample reported their activities on a weekday with the other half reporting on a weekend day.

Observing the raw mean well-being scores shown in Table 4.4 suggests that overall working is a moderately meaningful activity. It is considered more meaningful than consumer purchases, personal care, travelling, socialising, relaxing and leisure and household activities. However, it scores less well on average than religious and spiritual activities, volunteer activities, caring for and helping others both inside and outside the household, sports, exercise and recreation and telephone calls. Table 4.4 also shows how working compares to other activities on the five affect scales included in the survey (happy, in pain, sad, stressed and tired). Compared to some activities (e.g. caring for other household

[55] The government sector includes all public sector workers at the federal, state or local level.
[56] The private non-profit sector includes non-government organisations such as churches, unions, associations or foundations.

members, religious activities, volunteering and sport), working is both less meaningful and is associated with lower affect on all five measures. However, there are also activities where affect is higher but meaningfulness is lower than work-related activities (i.e. considered more pleasurable but less purposeful than working). These include household activities, consumer purchases and travelling. Socialising, relaxing and leisure is also associated with higher affect than working, except for tiredness where there is no significant difference. These findings are consistent with Dolan and Kudrna (2016), who use the same data (but only the 2010 sample) to show how different activities are associated with different average levels of 'pleasure' and 'purpose'.

We now turn to the regression results, applying the fixed effects specification in equation (28) as well as a BUC equivalent specification which treats the dependent variable as ordinal.[57] The BUC results are tabulated in Appendix F. Unless otherwise stated, these results are consistent with the OLS results reported.

Recall that we are interested in assessing whether the type of job one has is related to the extent to which work is considered meaningful relative to the other activities one does during the day. Table 4.5 shows the results of interacting the work dummy with sector. In this case, all working individuals are divided into four sectors: government (which includes federal, state and local), private for-profit, private non-profit and self-employed (the omitted category in this regression). A very small number of people reported that their main job was without pay, but these individuals have been removed from this particular regression.

The results suggest that sector does make a difference to how much meaningfulness people attribute to their working lives. Those in the private for-profit sector report the lowest levels of meaningfulness while those in the private non-profit sector are most likely to find their work meaningful. This perhaps supports the hypothesis that work that is considered to have a social impact can feel more meaningful

[57] See section 3.5 for more details about the BUC estimation.

to the jobholder. Moreover, the finding that self-employed people experience significantly more meaningfulness than private sector (for-profit) employees supports the hypothesis that meaningfulness can be related to how much autonomy one has while at work. These differences are not so stark when we look at the affect measures. In fact, non-profit workers report the highest relative stress levels at work which suggests that work can feel both meaningful and stressful at the same time.

The results suggest, however, that even accounting for sector, working remains less meaningful than many other non-work activities, including caring for others, sport, religious activities, volunteering and telephone use. The inclusion of other activity-specific controls finds that any activity generates more meaningfulness and happiness when it is undertaken while interacting with others or looking after children. This supports the notion from the literature that relating to others brings meaning to one's life, but it evidently has affective benefits as well.

Table 4.6 shows the same regression results but with work interacted with occupation. Again, we see some significant differences between occupations in how work is found to be meaningful. The occupation group with the highest coefficient for meaningfulness is community and social service occupations. Legal occupations, education, training and library occupations, and healthcare practitioner and technical occupations also score highly on this measure. Once again, this suggests that jobs with a perceived high social impact are felt to be more meaningful. These occupations seem to share the characteristic of directly helping others with some important aspect of their lives (e.g. their health, education or legal concerns) within the context of a trusting relationship.

When compared to other activities, working in these occupations is still considered less meaningful than caring for one's own household members, engaging in sport or exercise and participating in

religious activities. However, the results suggest that paid work in these occupations is at least on a par with volunteering.[58]

In general, more highly skilled occupational groups report more meaningfulness at work than those at the lower end of the occupation spectrum. This may support the hypothesis that autonomy at work and the freedom to be authentic in how one carries out one's job also contribute to a sense of meaningfulness. However, a few lower ranked occupations do 'buck the trend'. For example, those working in personal care and service occupations and construction and extraction occupations experience more meaningfulness than those in business and financial occupations.

The results also suggest that there may be some 'trade-offs' between meaningfulness and affect. For example, despite being one of the most meaningful occupations, people in legal occupations are the least happy, most sad and most stressed while at work compared to all other occupations. Education and health practitioners also have among the most stressful jobs. The same cannot be said for community and social service occupations, however. As well as being the most meaningful occupation, workers in this occupation are also the most happy and the least in pain while at work, while stress levels are moderate compared to other occupations. There are also some occupations which are low ranking in terms of both meaningfulness and affect, including protective service occupations, sales and related occupations and office and administrative support occupations.

The next set of results, shown in Table 4.7, look at the impact of industry on the meaningfulness of work. This presents a similar story to the analysis by occupation. The industries where workers report the highest level of meaningfulness while at work are: agriculture, forestry, fishing and hunting; professional and technical services; educational services; and health care and social services. Again, this sense of work being meaningful does not necessarily translate to higher levels of affect at work. Aside from finance and insurance, professional and technical services and educational services are the

[58] For example, looking at Table 4.6, adding the meaningfulness coefficient for Work to the coefficient for Work * Community yields an aggregate coefficient of 0.378. This is higher than the coefficient for volunteering (0.287) suggesting that working in a community and social service occupation is at least as meaningful as volunteering.

most stressful industries to work in. Moreover, people working in professional and technical services report being among the least happy while at work. However, workers in the agriculture, forestry, fishing and hunting industry are among the most happy and least stressed people while working, as well as finding the work meaningful.

Table 4.8 shows the results of interacting the work dummy with the logged hourly earnings of the individual. There is a positive coefficient between higher wages and higher meaningfulness at work which is on the margins of statistical significance. This suggests that higher pay (or other factors that go along with higher pay, such as greater responsibility or recognition) may help to make work more meaningful. The results also show that more highly paid people experience more stress at work relative to the rest of their lives. This makes intuitive sense as one would expect higher earners to have more responsibility in their job but also have the means to protect themselves from stressful situations outside of work.

Let us consider these latter results in the context of the utility function set out in equation (14). It is reasonable to assume that, in any given time period, $\frac{\partial H_{ij}}{\partial C_{ij}} > 0$ and $\frac{\partial^2 H_{ij}}{\partial {C_{ij}}^2} < 0$ (i.e. hedonic well-being increases with consumption but at a decreasing rate) and therefore hedonic well-being could be a linear transformation of the logged wage earned by individual i in job j.[59] In other words, higher earnings produce monotonically higher hedonic utility H_{ij} but at a decreasing rate. We do not observe the relationship between H_{ij} and C_{ij} directly from the time use data, but if we relax the assumption that consumption is smoothed across the day and assume rather that people consume more during non-work time than work time such that $\left(C_{ijt} \middle| L_{ijt} = 0\right) > \left(C_{ijt} \middle| L_{ijt} = 1\right)$, then we would expect an increase in wages to lead to a decrease in hedonic well-being experienced in work time relative to non-work time. This may either be exacerbated or offset by the direct effects on the hedonic experiences of work of job characteristics correlated with wages.

[59] Under the assumption that w_{ij} and C_{ij} are linearly related.

This complex relationship between utility gained from earnings (via consumption) and experienced utility on the job is illustrated in the results in Table 4.8. Ignoring the first column (meaningfulness) for now, it is clear that hourly earnings are negatively related to relative stress levels at work[60] but not significantly related to any of the other affective measures of well-being. This suggests that higher earnings either make non-work life less stressful through higher consumption or reflect aspects of the job that make work life more stressful or, most likely, both. Hence we observe the negative relationship between wages and relative stress at work.[61] As for the other hedonic measures (e.g. happiness), the results may be indicating an exacerbating relationship. Higher wages imply higher consumption concentrated in non-work time leading to higher levels of happiness. However, higher wages may also imply higher job satisfaction leading to higher levels of happiness at work as well, thus leaving the differential between work and non-work time unchanged.

Let us now consider eudaimonic well-being. While it is clear that there should be a positive relationship between consumption and hedonic well-being, in theory we would not expect consumption to have a bearing on eudaimonic well-being (i.e. $\frac{\partial E_{ij}}{C_{ij}} = 0$). Therefore, at first sight the positive relationship (albeit on the margins of significance) between the work x log wage interaction term and meaningfulness is surprising. Of course, this result may be picking up other unobserved aspects of the job which are positively correlated with wages and help to make work feel more meaningful to the individual.

The ATUS analysis also finds some notable differences between men and women, with respect to the jobs they find meaningful. When running the same regressions separately for males and females, it can be shown that both men and women report high meaningfulness from working in community and social service occupations, but men attribute higher meaningfulness to education, training and library

[60] Recall that this scale has been reversed so this result implies that high earners experience relatively higher stress while doing a work-related activity.

[61] This assumes that stress is always a negative emotion. If we were to interpret people with moderate levels of stress as being no worse off, or even better off, than people with low levels of stress (other things being equal) then this interpretation would change.

occupations while women attribute higher meaningfulness to healthcare practitioner and technical occupations. Men working in healthcare practitioner and technical occupations enjoy similar levels of meaningfulness to men working in computer and mathematical science occupations and architecture and engineering occupations, while for women these latter two occupations are among the least meaningful. Even more starkly, legal occupations are also among the least meaningful occupations for women, but this is the highest ranked occupation for men.

There is also a gender difference in the extent to which wage levels are associated with meaningfulness. For women, the log of hourly wage when interacted with working is significantly and positively related to meaningfulness but significantly and negatively related to stress, suggesting the trade-off between meaningfulness and stress is particularly pronounced for women as they climb the career ladder. While men also experience a negative association between stress and earnings, this is lower than that of women and there is no relationship at all between wages and meaningfulness, suggesting that status matters much less to men in terms of how meaningful they feel the work is. Finally, we should note that there are no notable differences in types of non-work activities that men and women find meaningful. Both genders find caring for and helping household members, educational activities, sports, exercise and recreation and religious and spiritual activities meaningful, although women attribute relatively higher meaningfulness to volunteer activities and men attribute relatively higher meaningfulness to telephone calls.

4.6.2 Annual Population Survey

Figure 4.7 through to Figure 4.10 show the distribution of well-being scores for all APS respondents over the period 2011-12 to 2015-16. Anxiety is the only one of the four SWB indicators where the modal response is also the maximum response (i.e. not at all anxious). For worthwhileness, life satisfaction and happiness, the modal response is 8 out of 10, with the majority of responses clustered in the higher part of the scale (7 to 10).

Table 4.9 displays the distribution of individuals by pre-treatment characteristics. As explained above, these variables are divided into two types – those determined at birth (gender, ethnicity and age) and those characteristics which are likely to change after birth (qualifications, marital status, religion, region of residence and disability status). Note that any individual may have more than one of the qualifications listed, and may have no qualifications.[62] For all other pre-treatment variables, each individual is in a single category. The total sample of 588,718 contains only individuals with a valid response to the worthwhileness question and who were between the ages of 18 and 64.

The treatment variables themselves are described in Table 4.10. These denote the different labour market categories that describe the current status of the individuals in the sample. As shown in the table, 76% of working age adults are actively participating in the labour market and 71% are in work. Of those who are working, 14% are self-employed and 28% are in the public sector. The table also shows the distribution of workers across types of organisation, industries and occupations. Table 4.11 shows the means and distributions of other job characteristics (namely full time status, temporary status, whether new job and net weekly earnings) that may also have an impact on well-being independently of occupation or sector. These are included as covariates alongside the treatment dummies in the second-stage weighted least squares (WLS) and weighted ordered logit regressions.

The linear regression results are shown in Table 4.12 and are discussed here while the ordered logit regression results (which are consistent with the WLS results) can be found in Appendix F. Note that each cell in these tables represents a different specification. The coefficient shown pertains to the main explanatory variable (the 'treatment') described in the left hand column, and can be interpreted as the ATE for that treatment. Note that, to ensure robustness, effectively four ATEs have been

[62] I considered using highest qualification as a pre-treatment variable instead of all qualifications. This would have the advantage of stratifying each individual into a single category but would also create a much lower number of strata altogether, resulting in a loss of information. Moreover, there is a discontinuity in the highest qualification derived variable in the APS. Any qualifications that predict perfect success or failure for certain treatments (job outcomes) are removed and hence certain observations are not given propensity scores for certain treatments and are removed from the analysis. However, due to the very large sample size, there is overlap for most qualifications in most treatments.

estimated for each job categorisation (depending on whether or not the full set of pre-treatments has been used, and whether the dependent variable is assumed to be cardinal or ordinal). I only report with confidence those ATEs which are significant in each of these four specifications.

In the two regressions where the treatment is 'working' or 'active', no other covariates are included. In the 'self-employed' regression, whether full time and whether a new job (started in last 12 months) are included as covariates. In all other regressions, whether full time, whether new job, whether permanent and log of net weekly earnings are all included as covariates. The coefficients pertaining to these covariates are not shown in the table. The columns of the table refer to whether the regression was weighted by the inverse propensity score of the birth-defined pre-treatments (gender, age and ethnicity) or all the identified pre-treatments (gender, age, ethnicity, qualifications, religion, marital status, disability and region), and the dependent SWB variable.

The results show that working is associated with higher SWB on all four measures. In the linear model, the ATE of working on worthwhileness is about 0.6 (on a 0-10 scale) when one weights by birth-defined pre-treatments only and less than a third of this (but still significant) when one includes all pre-treatments. When analysed separately by gender (not shown), men are found to have an ATE from working double that of women, but the effect for both genders is positive and significant. These effects are lower than the estimated ATEs on life satisfaction but higher than the estimated ATEs on happiness and anxiety. The effect of being economically active (where unemployed people are also included in the treatment group alongside working people) is more ambiguous, insofar as being active has a positive effect on all SWB measures when weighted by birth pre-treatments only but a negative effect when weighted by all pre-treatments. This is presumably due to the strong negative effect on well-being of being unemployed, such that one might be better off overall if not in the labour market. The 'treatment' of self-employment is also associated with higher SWB on all measures except for anxiety when compared against the control group of employed people, while working in the public sector also

has a positive effect on all SWB indicators except for anxiety. In both cases, the ATE on worthwhileness is higher than the ATEs on the other well-being outcomes.

People working in local government (which includes local authority controlled schools), universities and grant-funded schools, health authorities or NHS trusts and charities are all more likely than not to report that the things they do in their lives are worthwhile. They also generally report higher life satisfaction and happiness yesterday (with the exception of workers in universities and charities when weighted by all pre-treatments) but only workers in health authorities or NHS trusts report lower anxiety than workers in other sectors. Working for central government appears to have a negative ATE for all SWB measures.

Analysis by industry tells a similar story. Among the major industries (employing more than 2% of the workforce), only construction, education, health and social work and other services are associated with higher worthwhileness. This does not necessarily equate to a positive impact on the other SWB indicators. For example, people in the health and social work industry have lower life satisfaction and happiness while education workers have higher anxiety.

When different occupations are specified as the treatment, this seems to support the notion that higher skilled jobs are associated with higher worthwhileness. Among managers and directors (the highest occupational category), only managers and directors in transport and logistics and managers and directors in retail and wholesale are estimated to have a non-significant or negative ATE with respect to worthwhileness. As far as professional occupations are concerned, the type of work seems to matter. Those working in jobs with primarily a direct social impact (health professionals, therapy professionals, nursing and midwifery professionals, teaching and educational professionals and welfare professionals, such as social workers and probation officers) are all significantly more likely than others to feel that the things they do in their lives are worthwhile. Professionals with arguably less of a direct social impact (including engineering professionals, information technology and telecommunications professionals and business, research and administrative professionals) are

significantly less likely than others to feel that the things they do in their lives are worthwhile. In the ATUS data, legal professionals also score highly on meaningfulness at work, but this does not come out clearly from the APS data, with the sign of the ATE very much sensitive to the definition of pre-treatment characteristics.

Similarly, among associate professionals, those working in health, social care and protective service occupations report high worthwhileness, although sports and fitness occupations have the highest ATE in this category. However, those associate professionals and technicians in information technology or business and public service occupations tend to have a negative association with worthwhileness. This negative association is also observed for all administrative occupations (with the exception of office managers where a non-significant ATE is observed when weighted by all pre-treatments).

Most people in a skilled trade occupation are also more likely than average to report low worthwhileness, although those working in agricultural, construction and building trades appear to buck the trend in this category.

Those in lower skilled caring occupations, such as childcare, animal care and caring personal services have a positive association with worthwhileness, as do hairdressers and beauticians. The opposite is true for people in sales and customer service occupations. All occupations within this latter category have a significant negative ATE on worthwhileness.

Among process, plant and machine operatives, most of these occupations are also associated with low worthwhileness, with the exception of construction operatives and some drivers. All occupations in the lowest skilled classification, elementary occupations, also have a low ATE for worthwhileness, with the exception of cleaning occupations, where there is a positive ATE when weighted by all pre-treatments.

This analysis also finds that the coefficients pertaining to log of wage (not shown in the tables) are consistently positive and significant with respect to worthwhileness and life satisfaction (although there is a more mixed picture in terms of the effects on happiness and anxiety), suggesting again that earnings, or other factors correlated with earnings, are a positive determinant on the extent to which people perceive their jobs, and the other activities in their lives, as being worthwhile.

4.6.3 Eudaimonic well-being and job quality

Neither the ATUS nor APS contain measures of job quality, beyond standard indicators such as wages and hours. Hence, we cannot explore directly from these datasets whether there is any correlation between the types of job that generate eudaimonic well-being and the particular qualities of these jobs. Measures of job quality are, however, included in the Skills and Employment Survey (SES). The SES is a nationally representative cross-sectional survey of people aged 20-60 in employment or self-employment. It is commissioned by researchers at Cardiff University and is designed to chart the changing pattern of job quality and skills in the UK over time. The most recent survey available for analysis (SES 2012) has a sample size of 3,200 individuals.

In this section, I use the SES to investigate the extent to which eudaimonic well-being is correlated with different indicators of job quality at an occupational level.

As the SES is a UK dataset and categorises jobs according to the SOC2010 classification, it is appropriate to use the APS measure of eudaimonic well-being for this correlation analysis to facilitate matching on occupation. For each occupation (three-digit level), I take the ATE on the worthwhile dependent variable weighted by all pre-treatments (i.e. the sixth column in Table 4.12) and match this to individuals in the SES 2012 (Felstead et al. 2014) based on their stated occupation. Following Gallie et al. (2017), I also compute three separate indicators of job quality: discretion, participation and commitment.

Discretion is a measure of the extent to which the jobholder feels that she has performance influence over her own work. As such, it is very similar to the quality of autonomy discussed in this chapter.[63] Participation describes the extent to which employees are involved in decisions affecting the organisation. This could be interpreted as another indicator of autonomy and may also reflect the degree of authenticity which people perceive in their work. The more one is consulted and involved in decision making, the greater the congruence is likely to be between one's own values and priorities and those of one's employer.[64] Commitment is a measure of how much identification and attachment the employee has to her organisation. Arguably this could reflect the extent to which workers value what the organisation does and how it does it beyond simply providing a job and income for the employees. It may also reflect whether one feels that the goods one is producing are worthwhile in themselves.[65]

I test the pairwise correlations between each of these job quality indicators and the indicator of eudaimonic well-being (the ATE coefficient estimated at the three-digit occupation level). The estimated correlation coefficients are 0.099 for discretion, 0.080 for participation and 0.067 for commitment. Although these correlation coefficients are small, which is unsurprising given the inevitable noise in the data, all three are significant at the 1% level. This does not tell us directly that

[63] This indicator is based on four questions in the SES: "How much influence do you personally have on … how hard you work; deciding what tasks you are to do; deciding how you are to do the task; deciding the quality standards to which you work?" The responses to all four questions are coded as follows: 0 for "none at all"; 1 for "not much"; 2 for "a fair amount"; and 3 for "a great deal (of influence)". An index for discretion is generated by calculating the average of these four measures.

[64] This is a binary indicator set to 1 if the respondent (a) answered "yes" to the question "At your workplace, does management hold meetings in which you can express your views about what is happening in the organisation?" AND (b) answered "yes" to one or more of the following supplementary questions: "At these meetings can you express your view about: the financial position of the organisation; the investment plans of the organisation; planned changes in products or services?" AND (c) answered "yes" to the question "Suppose there was going to be some decision made at your place of work that changed the way you do your job. Do you think that you personally would have any say in the decision about the change or not?"

[65] This is an index based on the extent to which respondents agree or disagree with the following seven statements, each of which is coded on a four point scale (where 0 is lowest commitment and 3 is highest commitment): "I am willing to work harder than I have to in order to help this organisation succeed"; "I feel little loyalty to this organisation" (scores reversed); "I find that my values and the organisation's values are very similar"; "This organisation really inspires the very best in me in the way of job performance"; "I am proud to be working for this organisation"; "I would take almost any job to keep working for this organisation"; and "I would turn down another job with more pay in order to stay with this organisation". The index is generated as an average of the seven responses.

these aspects of job quality predict eudaimonic well-being but it does tell us that the occupations in which workers feel they have high levels of discretion, participation and commitment are to some extent the same occupations where high levels of eudaimonic well-being are observed.

For comparison, I also test the correlations between each of these job quality indicators and the ATEs with respect to the three other SWB variables in the APS data. With respect to life satisfaction, the correlation coefficients are 0.059 for discretion, 0.036 for participation and 0.007 for commitment. With respect to happiness yesterday, the correlation coefficients are 0.018 for discretion, 0.023 for participation and 0.008 for commitment. With respect to anxiety yesterday, the correlation coefficients are -0.029 for discretion, -0.067 for participation and -0.022 for commitment. All coefficients are lower than those with respect to worthwhileness and only two correlations are significant at the 1% level (life satisfaction correlated with discretion and anxiety correlated with participation). This analysis suggests that these particular aspects of job quality are most strongly predictive of eudaimonic well-being relative to any other account of well-being. The correlation between eudaimonic well-being and commitment (arguably the job quality indicator that best represents the ethical nature of the job) is particularly strong relative to the comparable coefficients, which is unsurprising given the well-documented connection between ethical action and eudaimonia.

4.7 Discussion

The analysis presented in this chapter is based on two very different datasets from different countries, using substantially different methodologies. Nevertheless some similar findings seem to emerge.

Firstly, the results suggest that working does improve eudaimonic well-being. In the UK, people in work are significantly more likely to say that the things they do in life are worthwhile, while in the US, working is one of the more meaningful activities people do during the day (albeit associated with lower affective well-being). However, the results from ATUS suggest that working is less meaningful than some other activities people do during the day (including looking after children or household

members, participating in sport or exercise, participating in spiritual or religious activities and talking to friends and family over the telephone or internet).

Secondly, the extent to which one acquires eudaimonic well-being through work is highly dependent on the type of job one has. For a start, there is a clear vertical relationship between job role and eudaimonic well-being. In the UK, the majority of managerial occupations are associated with a positive treatment effect on overall sense of worthwhileness, while the effect is negative for the majority of medium to low skilled occupations (including all administrative and sales occupations and nearly all elementary occupations). A similar general pattern is found in the US data, insofar as people in higher ranked occupations are more likely to ascribe meaningfulness to their work relative to their other daily activities. In both analyses, self-employment is also associated with higher worthwhileness or meaningfulness. This supports the hypothesis that autonomy at work, which in turn gives the jobholder freedom to work authentically and with integrity, is an important determinant of eudaimonic well-being. This also may explain why salary has a small positive effect on the meaningfulness one attributes to one's work.

However, the horizontal relationship between job role and eudaimonic well-being is arguably even more important. This is demonstrated by the fact that, in both analyses, there are certain occupations that 'buck the trend' insofar as they are relatively low skilled jobs but are associated with relatively high eudaimonic well-being. For example, in the APS data, childcare workers, care workers and hairdressers have significantly higher eudaimonic well-being than engineers or IT professionals. Similarly, in the ATUS data, care workers find their work relatively more meaningful than business and financial professionals. This suggests that it is not just the level but also the nature of the work which makes it more meaningful. Specifically, jobs which have a direct social impact and can be described as helping or serving others seem to bestow more eudaimonic well-being on the jobholder. This supports the literature which finds a link between meaning at work and the extent to which the job allows one to fulfil altruistic preferences. It also possibly supports the hypothesis that activities that are an end in

themselves feel more worthwhile than activities which are means to an end, or where the final 'good' is not seen by the jobholder.

With this in mind, it is no surprise that in both datasets the jobs that are associated with the most eudaimonic well-being are those that combine both professional autonomy and direct social impact. These include health professionals, therapists, nurses, midwives, teachers, lecturers and social workers. In the US data, lawyers also experience high meaningfulness at work although that is not reflected in the UK data. Conversely, protective service occupations (e.g. police officers) are associated with high eudaimonic well-being in the UK but not in the US. Perhaps this reflects cultural or professional differences between the two countries in how certain occupations are perceived, and the extent to which they are deemed to have positive social impact.[66]

One surprising result which emerges from both analyses is that construction and agricultural workers tend to rank relatively high in terms of eudaimonic well-being. At first sight, this finding cannot be explained easily from the theory or background literature summarised above. However, evidence from the Skills and Employment Survey in the UK shows that workers in the construction industry (alongside those in health and education) report having among the highest levels of task discretion in their jobs (Inanc et al. 2013) and also have among the highest levels of semi-autonomous and self-managed teamworking (Gallie et al. 2012). Therefore, we might conclude that self-determination theory can explain why eudaimonic well-being is higher than average in the construction industry.

Before turning to the policy implications of this research, it is important to consider the following question: does eudaimonic well-being matter? If eudaimonic well-being, as measured by the two surveys analysed in this chapter, is a key indicator or component of eudaimonia itself (the good life or the flourishing life) then, within an Aristotelian framework at least, it is clearly of immense importance.

[66] Note, however, that this chapter is not designed to provide a comparative analysis between the two countries. The two analyses use very different datasets and empirical models so cannot be compared directly. Due to having a fixed effects specification which allows unobservable characteristics to be implicitly controlled for, the ATUS results should be deemed more robust than the cross-sectional APS analysis which may be confounded by unobservables. Nevertheless, the fact that both sets of results lead to broadly similar conclusions is reassuring.

In this case, my results imply that work in developed economies should be organised to deliver intrinsic benefits to workers. In particular, there is an implication that sectors where eudaimonic well-being is high among its workforce should receive a higher allocation of resources. This may have the benefit of not only increasing eudaimonia in the workforce but also improving social welfare more widely as workers with higher eudaimonia may produce better social outcomes.

The caveat to this conclusion is, of course, that it is impossible to capture a qualitative, normative and multi-faceted concept such as eudaimonia in a single subjective indicator. Therefore, the extent to which work is perceived as meaningful or worthwhile is at best indicative of the types of work that contribute most to eudaimonia.

Moreover, there are major philosophical objections to the Aristotelian idea of eudaimonia as the ultimate goal of all human activity. It is a highly normative concept with no consensual definition that ignores individual and political preferences for what is 'good'. A utilitarian framework, however, takes into account these preferences in constructing a goal of maximum welfare ('the greatest good for the greatest number'). As set out in the theory above, eudaimonic well-being can still be an important part of utilitarian (subjective) well-being but its importance depends exclusively on subjective preferences rather than normative prescription. The survey questions about meaningfulness and worthwhileness in the ATUS and APS respectively presuppose that the respondents prefer to engage in activities that they find meaningful and worthwhile. Of course, this may not always be the case and the extent to which eudaimonic well-being matters may vary considerably between people. A person experiencing low levels of meaningfulness from her job may be no worse off than a person experiencing high meaningfulness if eudaimonic well-being is not an important contributor to her overall utility. As discussed above, the literature sheds some light on this question. Evidence from Benjamin et al. (2014), Adler et al. (2017) and Dolan et al. (2017) suggests that eudaimonic well-being is valued by people but possibly to a lesser extent than hedonic well-being. In the notation of equation (17), we might suppose that for a typical individual θ is less than 0.5 but significantly greater than zero.

It follows, therefore, that if eudaimonic well-being is important for utility and it is being experienced in different jobs to different degrees, then it has important implications for labour supply. Eudaimonic well-being (or lack thereof) may act as a significant motivator (or de-motivator) for work effort and a significant influence on occupational choice, potentially driving down (or up) wages in occupations delivering high (or low) levels of eudaimonic well-being. In other words, the extent to which a given job offers the jobholder feelings of meaning and purpose is an important determinant of compensating wage differentials between occupations requiring similar skill levels.

4.8 Conclusion

The findings in this chapter suggest that the nature of one's work is an important determinant of one's level of eudaimonic well-being. In both the US and the UK, jobs that combine professional autonomy with having a direct social impact within the context of a trusting relationship are consistently found to be the most meaningful and worthwhile. This includes professionals working in health, social care and education. In the US, people in such jobs felt that their work time was particularly meaningful relative to their non-work activities, while in the UK, having this sort of job is a significant predictor of how worthwhile one's life is felt to be as a whole.

These findings have implications for how policymakers could raise levels of eudaimonic well-being in the population. As alluded to in the previous section, this could be achieved by devoting more national resources to sectors in which eudaimonic well-being is observed to be highest. In the UK in particular, these industries (including education, health and social care) are concentrated in the public sector so higher government spending on public services would facilitate growth in these types of job. In the US, we find that jobs in the private non-profit sector deliver the highest eudaimonic well-being so policies that increase funding to voluntary sector organisations (either directly from government or via tax breaks to encourage charitable giving) would have a similar effect. While such policies may take resources away from, and hence reduce job opportunities, in the private sector, the net effect on eudaimonic well-being would be positive if the jobs created were experienced as more meaningful

than those destroyed. Embracing technology that helps to replace low skilled employment with high skilled employment may also to some extent improve average eudaimonic well-being in the workforce.

A clear caveat to this policy recommendation is that my findings reveal some trade-offs between eudaimonic and affective well-being. Education is an example of a sector where workers experience relatively high eudaimonic well-being but also relatively high stress levels. If the goal is to improve overall well-being, not just eudaimonic well-being, one should be careful not to diminish jobs which are experienced as pleasurable even if they are not experienced as purposeful.

Improving the eudaimonic well-being of the workforce does not necessarily require a shift in the types of job in the economy but a change in the quality of existing jobs. While the data analysed in this chapter does not provide information on job quality, the research does seem to support existing evidence suggesting that qualities such as autonomy, relatedness, altruism and authenticity are good predictors of meaningfulness. For example, it is likely that many of the occupations found to have low levels of eudaimonic well-being (e.g. sales, administrative and elementary occupations) do not naturally provide these qualities. They may not offer much autonomy to the jobholder, workers may feel that they are not 'making a difference' through their job and, while many such jobs are customer-facing, the level of relationship with the client may be much more superficial than for example that of a teacher or a nurse. However, an understanding of the sorts of qualities which make work feel more purposeful, as provided by the literature, can guide employers and government to design work in a different way without necessarily changing the sectoral structure of the economy or the workforce.

Chapter 5: The cross-partner spill-over effects on well-being due to labour market shocks

5.1 Introduction

In the previous two chapters, I explore the effects of specific work outcomes on the well-being of the individuals directly experiencing those outcomes. I find that weekend working has a negative effect on well-being on some measures and job type is a significant predictor of how much eudaimonic well-being people derive from their work. Human beings, however, are relational and interdependent animals and it stands to reason that important work outcomes will affect the well-being not only of the individual themselves but also others with whom they have a relationship. This is the focus of the current chapter.

In this chapter, I investigate how the effects of unemployment 'spill over' to the spouse or partner of the individual experiencing the unemployment. There is a large literature providing evidence that unemployment is very bad for well-being irrespective of its impact on income (e.g. Clark and Oswald 1994; Lucas et al. 2004). It is not surprising, therefore, that a number of papers have already explored how unemployment also affects the well-being of other members of the household, in particular partners. In the UK, Clark (2003) finds that men experience a much lower well-being penalty from unemployment if their partner is also unemployed, while in Germany it is shown that there are cross-partner effects from unemployment both on mental health (Marcus 2013) and life satisfaction (Luhmann et al. 2014), although Knabe et al. (2016) only find an effect for men on cognitive well-being (life satisfaction).

This chapter contributes to the literature by exploiting a very long UK household panel combining the BHPS and UKHLS, referred to hereafter as the harmonised BHPS. To my knowledge, this is the first study to investigate this particular phenomenon in the UK since Clark (2003) when the available BHPS sample size was a lot smaller. Moreover, this is the first study to explore this question using a

seemingly unrelated regression (SUR) approach for unbalanced panels (Biorn 2004). This allows the equations predicting the well-being of male and female partners to be estimated jointly while controlling for unobserved time invariant effects. I also add to the literature by varying the definition of unemployment (e.g. by constructing an International Labour Organization (ILO) definition of unemployment which identifies the incidence of unemployment very differently to a self-reported measure) and using interaction analysis to explore potential explanations for the observed spillover effects.

I find that the life satisfaction of both women and men is affected by the partner's unemployment, although the effects on GHQ are much smaller for women and non-existent for men. However, men experience a positive impact on their GHQ due to their partner not being in work (i.e. economically inactive rather than unemployed).

5.2 Literature review

5.2.1 Unemployment and well-being

As summarised in Chapter 2, the literature consistently finds that unemployment has a strong and persistent negative effect on well-being, a finding which is distinctly contrary to the predictions of traditional economic theory where work is assumed to generate disutility (i.e. individuals are assumed to prefer to do less work for the same amount of income). Seminal papers include Clark and Oswald (1994) who find that the well-being penalty (in terms of GHQ scores) for being unemployed is worse than divorce or marital separation and Lucas et al. (2004) who find that unemployment in Germany causes life satisfaction to drop by half a point on average on a 0-10 scale.

Further evidence shows that people do not adapt well to unemployment. Clark et al. (2008a) consider six different life and labour market events, including unemployment, and estimate using GSOEP the extent to which any changes to well-being as a result of these events persist over time. They conclude that there is complete adaptation (well-being returns to pre-event levels) for five of the six events

with only unemployment found to have a persistently negative effect on well-being. Similarly to other life events, there are also anticipation effects where well-being falls in the years prior to unemployment. The effects of unemployment are particularly pronounced for men. Powdthavee (2012) also explores leads and lags in well-being with respect to unemployment, focusing on satisfaction with life domains as well as overall life satisfaction. He finds that satisfaction with finances and satisfaction with social life are particularly affected by unemployment. In the case of satisfaction with finances, the negative impact persists for at least five years after the unemployment shock, even though actual changes in income are controlled for in the analysis. This suggests that one of the reasons that unemployment is so bad for well-being is that unemployment causes people to worry about their future income regardless of their current actual income.

5.2.2 Economics of the household

The last forty years has seen the emergence of family economics as a discipline in its own right. Traditionally, households have been seen as unitary economic agents without consideration of the potentially competing interests of the individuals making up the household. Following the pioneering work of Gary Becker in the 1970s, we have begun to understand the importance of intra-household dynamics for predicting economic behaviour and outcomes. In his seminal paper on the marriage market, Becker (1973) develops a model to show how two self-interested individuals may choose to marry each other in order to achieve higher utility than if they had both stayed single (or chosen any other available marriage partner). However, Becker's work is based on the idea that the household maximises a joint utility function. His 'rotten kid theorem' (Becker 1981) shows that it is necessary for only one person in the household to be altruistic (assumed to be the husband/father who controls the most resources) for all household members to behave in the interests of the whole household.

He explicitly discusses intra-household division of labour in Becker (1985). In this theory, each person has a fixed supply of time and energy with which to devote to market work, household production and other activities. Becker shows that the ratio of the energy expended on any two activities is

dependent only on the relative effort intensities required for these two activities. As effort is related to productivity, hourly wages are higher for jobs where greater effort intensity is required and hence workers with more energy to devote to market work get higher wages. Becker identifies that some non-work activities (i.e. childcare and housework) have similar or higher levels of effort-intensity than work and therefore sap the energy that is available for market work. Other non-work activities (i.e. leisure and sleep) are energy saving or even energy producing so are conducive to higher work effort and therefore higher wages.

Becker's theory is gender neutral but he is very aware than women specialise in household production and men specialise in market work. He says this can be explained by some systematic difference between genders outside of the model which are then exacerbated by the model's predictions. For example, women may have an exogenous comparative advantage for household production (e.g. childbearing capacity) or may suffer discrimination in the labour market. This results in women doing less energy-intensive market work than men even if they do the same number of hours and have the same human capital. Therefore, they earn less than men and there is hence less incentive for the household to invest in women's human capital. This discourages women's labour force participation altogether and can lead to complete specialisation.

Manser and Brown (1980) move away from the assumption that households seek to maximise a joint utility function and introduce the notion of intra-household bargaining. In their model, married partners are assumed to be independent players seeking to maximise their own utility. The model shows that there exists a set of Pareto efficient utility allocations between two partners along the utility possibility frontier. This set is bounded at either end by the 'threat point' of each partner. This is the minimum utility that the partner will accept before leaving the marriage. This theory is gender neutral but the position of the two threat points are assumed to depend on the relative income of both partners (i.e. a low-earning wife with a high-earning husband will have more to lose from leaving the relationship than the husband). Moreover, Tauchen et al. (1991) assume that domestic violence is

an additional choice variable that the male has at his disposal. He can use this as a credible threat to extract a higher share of utility for himself and leads to an equilibrium where the male achieves a higher share of household utility.

Lundberg and Pollak (1993) show that a non-cooperation equilibrium can exist as an alternative to divorce threat point. In this model, the husband and wife each control the production of a public good. For example, the wife might control 'child services' (e.g. the health and quality of children) while the husband controls money income (e.g. the household goods and services that can be purchased). The two partners choose their production levels simultaneously in a Cournot equilibrium. The solution is where the two reaction functions intersect.

An alternative body of literature seeks to understand intra-household resource allocation through the lens of Marxian-feminist perspectives, where people are understood to operate in classes rather than as individuals with free choices. See for example Folbre (1986), McCrate (1987) and Hartmann (1981). The traditional Marxist view is that capitalism divides society between those who own the capital and those who own the labour. Workers are subservient to capital owners not out of choice but out of necessity, and hence there is a power imbalance. According to feminists, patriarchy is analogous to capitalism. People are divided into two classes (male and female) with the male class holding all the power. Evidence of this is that marriage law has historically been discriminatory against women (e.g. husbands having claim over jointly owned property), illustrating that male-dominated governance has been used to reinforce male dominance in the family.

McCrate (1987) points out that, over the twentieth century, women's economic independence has increased so their reliance on men has diminished. However, this has not resulted in men becoming more egalitarian but rather has resulted in a decline in marriage.

Sen (1990) also acknowledges the role of patriarchy in unequal outcomes but takes a slightly different perspective. He notes that in India, even though the lot of women tends to be considerably worse

objectively than that of men, the perception of women themselves is that the situation is fair and hence they are contented. He calls this false consciousness. This clearly leads to a cooperative solution that favours men in terms of objective well-being.

Another strand of literature explores how gender identity, or gender ideology, influences how men and women behave within marriages and how their well-being is affected. For example, a number of authors (Brines 1994; Greenstein 2000; Bittman et al 2003; Schneider 2011; Aasve et al. 2014) find evidence that housework share within couples can be explained by how men and women 'do gender' (or exhibit 'gender display' or 'gender performance'). This idea is formalised by Akerlof and Kranton (2000). In their model, the divergence between one's own actions and the prescribed 'ideal' actions of someone in the same social category (e.g. gender) is included in the utility function alongside the direct utility one gets from one's actions.

There have been a number of recent studies investigating empirically the effects of gender identity on labour outcomes for men and women. Bertrand et al. (2015) find that, within US couples, the distribution of the share of income earned by the female partner drops sharply to the right of 0.5 (i.e. there are significantly fewer couples where the female partner is the main earner than where the male partner is the main earner). This can be explained by an aversion by couples to violate the gender identity norm of men being the primary breadwinner. The authors show how the increase in women's income relative to men, making it more likely that couples will violate this social norm, has significantly contributed to the decreased marriage rate over the period 1980-2010. Moreover, when marriages do form, there is evidence that women reduce their labour supply to avoid earning more than their partner. They also show that marital dissatisfaction and dissolution are both more likely to occur in couples where the woman is the higher earner. This research has been replicated for Germany by Wieber and Holst (2015). They find a similar distribution of relative income and also find that gender identity affects women's labour supply, but only in the former West Germany. Hajdu and Hajdu (2017), using Hungarian data, also find that higher relative income for women is associated with lower life

satisfaction for both partners, but the effects are moderated by expressed gender attitudes. However, Lepinteur et al. (2016) argue that women's decision to leave the labour force at the point at which their income exceeds that of their husbands is less to do with gender identity norms and more to do with what women think is a fair distribution of working hours within the household.

5.2.3 Intra-household spill-over effects

We turn now to the literature specifically related to how men and women respond to their partner's employment status. This question is explored by Clark (2003) in the context of investigating how social norms affect the relationship between unemployment and well-being, based on the first seven waves of the BHPS. A pooled OLS analysis with GHQ caseness[67] as the dependent variable reveals that the extent to which one is affected by one's partner's employment status depends on one's own employment status. Employed people are negatively affected if their partner is unemployed or inactive but this is not the case for unemployed people. Unemployed people feel indifferent to their partner's unemployment and are positively affected if their partner is inactive. This finding is attributed to social norm effects, in the sense that the effects of one's own unemployment on well-being are lessened if one's peers (in this case one's partner) are also not working. Clark also estimates the model using a conditional logit approach (where the dependent variable denotes whether or not the individual is at the highest caseness level).[68] This reveals interesting differences between genders. While the interaction between own and partner's unemployment is positive and significant for men, there are no such social norm effects for women, although Clark notes that relevant cell sizes are small.

More recent evidence of the cross-partner effects of unemployment is available from German data. Marcus (2013) uses a difference-in-difference approach with matching based on entropy balancing to

[67] The GHQ caseness score is derived from the 12-question GHQ as described in Chapter 3 and Appendix A. However, in contrast to the full 0-36 index used for my analysis, the caseness score treats each of the 12 questions as binary (whether or not the respondent reports one of the two low well-being categories) thus generating a 0-12 index.

[68] In other words, the constructed dummy variable has a value of 1 if the individual did not report low well-being on any of the 12 GHQ questions and 0 if they reported low well-being on at least one question.

investigate how the 'treatment' of losing one's job due to plant closure affects own and partner's well-being, measured by the SF-12 questionnaire in the GSOEP. Results from the main specification show that the effect of spouse's unemployment on well-being is negative and significant for both men and women, but the effect is stronger when it is the husband who loses his job. Luhmann et al. (2014) also analyse the GSOEP but use life satisfaction as their dependent variable. They also find that unemployment is associated with negative well-being for both the person experiencing the unemployment and their partner. However, they find no difference in cross-partner effects between males and females, although males do react more strongly to their own unemployment. Using a Day Reconstruction Survey in Germany, Knabe et al. (2016) find that affective well-being is not affected by unemployment but there is a strong impact on life satisfaction (which they describe as indicative of cognitive well-being). Unemployed men experience lower life satisfaction when their partner is employed but there is no such well-being penalty for unemployed women. The authors attribute this to gender identity affects whereby men suffer from deviations from the traditional 'breadwinner' role but women are able to adapt to other normative roles (e.g. 'homemaker') to compensate them for unemployment.

5.2.4 Male and female unemployment in the UK

Similarly to most economies, men in the UK have a stronger attachment to the labour market than women, although this gap has been falling significantly over time. Figure 5.1 shows that employment rates among men are around ten percentage points higher than among women. However, in 1971 this gap was nearly 40 percentage points. The last half century has seen the proportion of working age women in paid employment rise from less than 55% to over 70% today, while there has been a concurrent fall in male employment. These trends can be explained by changes in economic activity rates, as shown by Figure 5.2. About a quarter of working age women in the UK today are economically inactive compared to close to half 50 years ago, while male inactivity rates have trebled from 5% in 1971 to over 15% today. As shown in Figure 5.3, female unemployment rates tend to be lower than male unemployment rates, particularly during periods of recession. For example, in the most recent

recession, male unemployment peaked at 9.1% in autumn 2011 while the peak unemployment rate for women was 7.7% in the same quarter. This is due to male employment falling more during a recession than female employment (see Figure 5.1) but perhaps also reflects the greater tendency for women to leave the labour force when they lose their job.

5.3 Theoretical framework

Recall from equation (1) in section 2.2 that individual i's utility in a given time period t is a function of whether or not the individual is working at time t and their consumption during that time period. Let us now suppose that there are two individuals that form a mixed-gender married or cohabiting couple. For simplicity, we also remove the time dimension and hence express each partner's utility at a static point in time as follows:

$$U_i = U_i(L_i, C_i) \text{ where } i \in \{f, m\} \tag{35}$$

Here, U_i denotes the utility of partner i while $L_i \in \{0,1\}$ denotes whether or not partner i is working and C_i denotes partner i's consumption. As these two individuals f (the wife or female partner) and m (the husband or male partner) are in a relationship, we might expect them to care for each other[69] and hence the utility functions could incorporate cross-partner effects such that:

$$U_i = U_i(L_i, C_i, L_{-i}, C_{-i}) \text{ where } i \in \{f, m\} \tag{36}$$

The achievable consumption of each partner is determined by a budget constraint, which we could express as follows:

$$C_f = Y_f + T \text{ and } C_m = Y_m - T \tag{37}$$

$$\text{where } Y_i = w_i L_i + B_i \text{ , } i \in \{f, m\}$$

[69] This assumption is likely to hold even if either or both partners are perfectly selfish. For example, bargaining theory predicts that one has a stake in one's partner's happiness as having a dissatisfied partner risks adverse outcomes in the future, such as relationship dissolution. Also, in line with social norms or identity theory, we might expect one's partner's status to influence how one is perceived by others.

Here, T is the amount transferred from the male partner to the female partner (a negative value implies that the female partner transfers to the male partner), w_i is the wage paid to partner i if they are in work and B_i is partner i's non-labour income. A special case of equation (37) is where household income is pooled and both partners enjoy the same level of consumption. This would imply that $T = \frac{Y_m - Y_f}{2}$ and hence:

$$C_f = C_m = \frac{Y_f + Y_m}{2} \equiv \frac{Y_h}{2} \tag{38}$$

Here, Y_h is household income. With both partners' consumption being constrained to be equal to each other, then each partner need only be concerned about household income. In other words, the utility function in equation (36) can be rewritten as:

$$U_i = U_i(L_i, L_{-i}, Y_h) \text{ where } i \in \{f, m\} \tag{39}$$

The goal of the empirical analysis is to assess whether and by how much the employment status of one's partner L_{-i} impacts on one's own utility U_i over and above the effects that one's partner's employment status has on household income and hence consumption.

5.4 Data

The data for this chapter comes from the harmonised BHPS (University of Essex 2018). The dataset combines all 18 waves of the BHPS with the first seven waves of UKHLS. Therefore, I am effectively using a panel consisting of 25 time periods. As explained in Chapter 3, surviving households from the BHPS panel continued into the UKHLS panel alongside a larger number of households recruited at the start of UKHLS.[70]

[70] The BHPS households did not enter the UKHLS panel until wave 2. Therefore, effectively the maximum number of times that a given household can appear in the harmonised BHPS to date is 24.

The unit of analysis used for this chapter is that of the mixed-gender couple. My dataset excludes all observations where the survey respondent is not living with a partner of the opposite gender. The marital status of all retained individuals is clearly either married or living together as a couple. Each man is then matched with the woman who was his partner in the wave in question, and a new observation is created which includes the characteristics and responses of both partners alongside household-level characteristics. A couple is identified from the combined identities of the two partners. Therefore, if the same two people are observed as living together in two or more waves then all those observations are grouped together as pertaining to the same couple for the purposes of creating the panel. If the same individual appears in two or more waves but is observed to be with a different partner, then these two observations are identified as being different couples and are not grouped together. In other words, any given man or woman may appear in more than one couple in different time periods of the panel.

In total, the cleaned dataset consists of 25,593 unique couples and 128,873 observations (i.e. on average, each couple appears in the panel 5.0 times), where both partners are aged between 18 and 64. More than half (56%) of these observations are found in the last seven waves of the panel (i.e. the Understanding Society waves) due to the much larger sample size of the UKHLS compared to the BHPS.

5.4.1 Explanatory variables of interest

The two main explanatory variables of interest in this analysis are the employment status of the male partner and the employment status of the female partner. These are both dummy variables that have been defined in different ways across the analyses, reflecting the difficulty in defining unemployment as a specific labour market status.

The first definition of unemployment is derived from the self-reported employment status of the respondent. In the latest wave of UKHLS, the relevant question is phrased as follows: “Which of these best describes your current employment status?” The respondent is then asked to select one response from the following options: “Self employed”; “Paid employment(ft/pt)”; “Unemployed”; “Retired”;

"On maternity leave"; "Family care or home"; "Full-time student"; "LT sick or disabled"; "Govt training scheme"; "Unpaid, family business"; "On apprenticeship"; or "Doing something else". In this case, the male partner is coded as being unemployed if he identifies himself as being "unemployed", and similarly for the female partner.

The second definition is designed to be the closest approximation of the ILO definition of unemployment.[71] To be classified as ILO unemployed, an individual must not be working but be actively seeking work and available to start working. From wave 6 onwards of the harmonised BHPS, survey respondents not in employment or self-employment were asked to state whether or not they had actively sought work in the past 4 weeks and whether or not they were available to start work in the next two weeks. Individuals responding affirmatively to both questions are coded as unemployed according to this second definition. The ILO definition of unemployment can be considered a narrower definition than the self-reported definition, as a large number of men and women self-identifying as unemployed were either not seeking work or not available to start work.

The third definition incorporates all individuals who are not currently in work (either in paid employment or self-employment). This definition is also derived from the current employment status question as detailed above. However, in this case, all responses except "self employed" and "paid employment" are deemed as not working. This is clearly a much broader definition as only a relatively small fraction of people not in work either identify themselves as unemployed or fulfil the criteria for ILO unemployment.

For each couple in the dataset, six dummy variables are created to describe the employment statuses of the two partners: whether or not the male partner self-reports as unemployed; whether or not the female partner self-reports as unemployed; whether or not the male partner is ILO unemployed; whether or not the female partner is ILO unemployed; whether or not the male partner is not working;

[71] Source: http://www.ilo.org/ilostat-files/Documents/description_UR_EN.pdf. Accessed August 2018.

and whether or not the female partner is not working. Each of these dummy variables has a value of 1 if the partner in question is unemployed (or not working) according to the relevant definition, and 0 if the partner in question is employed or self-employed. Therefore, the number of male partners with a value of 0 is the same for all three dummy variables, and similarly for female partners. Where the partner in question is neither employed or unemployed (according to the relevant definition), the dummy variable in question is coded as missing for that couple, and that couple is removed from any analysis that includes that variable. Thus different sample sizes are used for analyses pertaining to the different definitions of unemployment.

5.4.2 Dependent variables

Similarly to the previous two chapters, the dependent variables of interest are different definitions of SWB as reported by the respondents. In this chapter, however, two dependent variables are estimated simultaneously, namely the well-being of the male partner and the well-being of the female partner.

The GHQ is described in section 3.4.1.2. I use the exact same definition here, where the GHQ variable is defined as the combined score from the 12-question questionnaire where the scale is reversed such that higher scores denote better well-being. This variable can take the value of any integer between 0 and 36. The GHQ has been asked in every wave of the BHPS and UKHLS. The full set of questions that make up the GHQ is included in Appendix A.

The life satisfaction question (the extent to which one is satisfied with one's life as a whole), as elicited from UKHLS, is also described in detail in section 3.4.1.2. The same question is included in BHPS from wave 6 onwards. Therefore, 20 waves of the panel are available for the analyses using life satisfaction as the dependent variable. Life satisfaction can take any integer value between 1 and 7.

5.4.3 Other explanatory variables

Some of the regressions reported in this chapter also control for a number of other explanatory variables that may change over time.[72] These include both household-level and individual-level covariates.

One of the most important household-level variables is household income. Clearly, the employment status of both the male and female partner is a significant determinant of household income, which in turn would be expected to influence the well-being of both partners. Net household income is a derived variable in both BHPS and UKHLS. As this is a relatively long time series, household income is converted into real terms (2017 prices) using the GDP deflator,[73] and is specified in logarithmic terms in the relevant regressions.

The extent to which household income affects consumption and hence well-being also depends on the size and composition of the household. Therefore, I also derive household-level dummy variables to denote whether or not dependent children are present in the household[74] and whether or not there are other adults residing in the household.[75]

There are also some individual level characteristics that are time invariant and may affect well-being. These include age, which is specified in the regressions in quadratic terms (i.e. age and age-squared), recalling that all observations where at least one partner is aged less than 18 or more than 65 have been removed from the sample.

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[72] Bear in mind that this is a much longer panel than that used in Chapter 3, so it is more important to control for household or personal characteristics that may change over the longer term, such as education level and region of residence.

[73] Source: GOV.UK https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-march-2018-quarterly-national-accounts. Accessed May 2018.

[74] The couple is coded as having children in the wave in question if either partner reports that one or more of their own children are resident in the household. If both partners state that they have no children of their own resident in the household, this dummy variable takes the value of 0.

[75] This variable is derived differently for observations in waves 1-18 (BHPS) and waves 19-25 (UKHLS). In waves 1-18, a couple is coded as living with other adults if total household size is greater than the number of children resident in the household (the maximum of the number of children reported by the male partner and the number of children reported by the female partner) + 2. In waves 19-25, a couple is coded as living with other adults if the household type is specified as including 3 or more adults (regardless of the number of children).

Education level is specified as a set of dummy variables derived from the individual's highest qualification at the time of the survey. The six levels are: degree; other higher degree; A-level or equivalent; GCSE or equivalent; other qualification; and no qualification. In the regressions, no qualification is specified as the omitted category.

Similarly to previous chapters, I control for health using the self-assessed general health question available in all waves. Respondents are asked to state whether their health is excellent, very good, good, fair or poor. This is coded as an ordinal scale and interpreted as a cardinal scale (ranging from 1 to 5) in my analysis, where 1 denotes poor health and 5 denotes excellent health.

As a robustness check, region of residence has also been included as a household-level control variable. However, the inclusion of regional dummies makes little difference to the results so they have been excluded in the main analysis presented here.

5.5 Methodology / Specification

We start by specifying two equations to be estimated jointly:

$$S_{mht} = \beta_0^M + \beta_1^M U_{mht} + \beta_2^M U_{fht} + \beta_3^M \mathbf{X}_{mht} + \beta_4^M \mathbf{Z}_{ht} + \nu_{mh} + \mu_h + \varepsilon_{mht} + \eta_{ht} \quad (40)$$

$$S_{fht} = \beta_0^F + \beta_1^F U_{fht} + \beta_2^F U_{mht} + \beta_3^F \mathbf{X}_{fht} + \beta_4^F \mathbf{Z}_{ht} + \nu_{fh} + \mu_h + \varepsilon_{fht} + \eta_{ht} \quad (41)$$

Here, the two dependent variables of interest, S_{mht} and S_{fht}, are the well-being outcomes of the male and female partners respectively of couple h at time t. The variables U_{mht} and U_{fht} denote the unemployment status of the male and female partners respectively which can take the value of 0 or 1. A value of zero implies that the respective partner is employed. If either partner from couple h is outside the labour force at time t, then this observation is removed from the analysis. As such, this

specification identifies well-being effects only during time periods where couples are dual earners, or aspiring dual earners.[76]

The other individual level covariates for the male and female partners are contained in the vectors $\mathbf{X}_{mht}$ and $\mathbf{X}_{fht}$ respectively, while the household level covariates are contained in vector $\mathbf{Z}_{ht}$. The residuals in each equation are composed of four parts. The time invariant residuals pertaining to the individual are denoted as ν_{mh} and ν_{fh} for the male and female partner respectively while the time varying residuals pertaining to the individual are denoted by ε_{mht} and ε_{fht}. The parameters μ_h and η_{ht} refer to the household level time invariant and time varying residuals respectively.

A possible approach to estimating these equations would be to estimate the two equations separately using the fixed effects OLS method. This would involve expressing equations (40) and (41) in demeaned terms thus removing the time invariant composite residuals $\nu_{mh} + \mu_h$ and $\nu_{fh} + \mu_h$. This method would produce unbiased 'within' estimates but would not be efficient under the assumption that the errors in (40) and (41) are correlated. This assumption seems reasonable as we would expect the well-being of the male and female partners within a given couple to be related in unobserved ways. Nevertheless, as a robustness check I do estimate equations (40) and (41) separately in this way, and the results are tabulated in Appendix G.

In order to take into account the interdependence of well-being between male and female partners, I utilise an approach developed by Biorn (2004)[77] for estimating SUR in unbalanced panel data. The disadvantage of this method is that, while a panel SUR estimation is more efficient than the equation-by-equation approach, the estimates would be biased. This is due to the fact that a panel SUR utilises

[76] However, in the regressions where U_{mht} and U_{fht} refer to whether or not the male and female partners respectively are not working (i.e. the broadest definition of 'unemployment') all couple observations are effectively retained as each partner must be either working or not working in any given time period.
[77] See also Nguyen and Nguyen (2009).

a random effects estimation whereby it is assumed that both the time varying and time invariant error terms are uncorrelated with the observed covariates.

As it is highly likely that the 'between' couple errors are in fact non-random, it is necessary to adjust the equations according to an approach proposed by Mundlak (1978).[78] Let us first assume that the composite time invariant error terms specific to the couple (and the two partners making up the couple) are linearly related to the within-couple means of all the covariates specified in equations (40) and (41). Hence:

$$\nu_{mh} + \mu_h = \psi_0^M + \psi_1^M \overline{U}_{mh} + \psi_2^M \overline{U}_{fh} + \psi_3^M \overline{\mathbf{X}}_{mh} + \psi_4^M \overline{\mathbf{Z}}_h + a_{mh} \tag{42}$$

$$\upsilon_{fh} + \mu_h = \psi_0^F + \psi_1^F \overline{U}_{fh} + \psi_2^F \overline{U}_{mh} + \psi_3^F \overline{\mathbf{X}}_{fh} + \psi_4^F \overline{\mathbf{Z}}_h + a_{fh} \tag{43}$$

Here, $\overline{U}_{ih} = \frac{1}{T}\sum_{t=1}^{T} U_{iht}$ where $i \in \{m, f\}$ and T is the number of periods in the panel in which couple h is observed, and similarly for $\overline{\mathbf{X}}_{ih}$ and $\overline{\mathbf{Z}}_h$. The new error term a_{ih} can be assumed to be uncorrelated with the covariates. Bringing together equations (40) and (42) and equations (41) and (43) yields the following equations suitable for panel SUR estimation:

$$\begin{aligned} S_{mht} = \vartheta_0^M + \beta_1^M U_{mht} + \psi_1^M \overline{U}_{mh} + \beta_2^M U_{fht} + \psi_2^M \overline{U}_{fh} + \beta_3^M \mathbf{X}_{mht} + \psi_3^M \overline{\mathbf{X}}_{mh} \\ + \beta_4^M \mathbf{Z}_{ht} + \psi_4^M \overline{\mathbf{Z}}_h + u_{mht} + a_{mh} \end{aligned} \tag{44}$$

$$\begin{aligned} S_{fht} = \vartheta_0^F + \beta_1^F U_{fht} + \psi_1^F \overline{U}_{fh} + \beta_2^F U_{mht} + \psi_2^F \overline{U}_{mh} + \beta_3^F \mathbf{X}_{fht} + \psi_3^F \overline{\mathbf{X}}_{fh} \\ + \beta_4^F \mathbf{Z}_{ht} + \psi_4^F \overline{\mathbf{Z}}_h + u_{fht} + a_{fh} \end{aligned} \tag{45}$$

Here, $\vartheta_0^M \equiv \beta_o^M + \psi_o^M$, $\vartheta_0^F \equiv \beta_o^F + \psi_o^F$ and $u_{iht} \equiv \varepsilon_{iht} + \eta_{ht}$. As this is an unbalanced panel, Biorn (2004) proposes dividing the sample into P groups where P is the maximum number of panels in which

[78] See also Wooldridge (2010).

any couple appears. In the case where S is GHQ, $P = 24$.[79] This effectively creates P balanced panels (or more specifically one cross-section and $P - 1$ balanced panels) where every couple in group p is observed in exactly p time periods where $p \in \{1, \dots, P\}$. Note that, with the exception of couples where $p = P$, couples in a given group p will not be observed in exactly the same time periods t and observations do not necessarily occur in consecutive time periods.

A SUR based on equations (44) and (45) is estimated separately for each group p, where $t = \{1, \dots, p\}$. In other words, t no longer denotes the actual time period (i.e. year or wave of the survey between 1 and 25) of the observation but the position in the sequence of all observations involving couple h. In the special case where $p = 1$, the subscript t is essentially redundant as a cross-sectional SUR is being estimated. Moreover, note that $U_{iht} = \bar{U}_{ih}$ and similarly for all other right hand side variables where $p = 1$. For all other groups (i.e. where $2 \leq p \leq P$), the SUR is estimated on a balanced panel where $T = p$.

As shown by Biorn (2004), each of the P sets of simultaneous equations can be estimated efficiently using Generalised Least Squares (GLS). This produces the same estimated coefficients as the maximum likelihood estimation with respect to the beta coefficients given the covariance of the disturbances $\text{cov}(a_{mh}, a_{fh})$ and $\text{cov}(u_{mht}, u_{fht})$. An overall GLS estimator is calculated from the matrix weighted average of the group specific estimators. The estimation procedure also involves a further maximum likelihood sub-problem where the likelihood function is maximised with respect to $\text{cov}(a_{mh}, a_{fh})$ and $\text{cov}(u_{mht}, u_{fht})$ given the beta coefficients. A solution is found by iterating between the two maximum likelihood sub-problems until a convergence threshold is reached.[80]

[79] Where S is life satisfaction, $P = 18$.
[80] In Stata, the command is **xtsur**. See Nguyen and Nguyen (2009) for further details.

5.6 Results

6.2.1 Descriptive statistics

As discussed in section 5.5 above, the 25,593 couples in the panel form an unbalanced panel. Due to the structure of the BHPS and UKHLS surveys, it is impossible for any couple to be observed in all 25 waves of the harmonised BHPS. Table 5.1 shows that only 183 couples are observed in the maximum possible 24 waves. These are couples who entered the BHPS in the first wave and were subsequently interviewed in all 18 waves before joining the Understanding Society panel in wave 2 of UKHLS (wave 20 of the harmonised BHPS) and continuing to be interviewed in all UKHLS waves to date, continuing to remain as a couple for the entire period. More than a fifth of all couples in the panel (5,693) are observed in just one time period, while 3,542 couples are observed in exactly seven waves. The majority of this group entered the panel at the start of UKHLS (wave 19 of the harmonised BHPS) and were observed as a couple in each wave thereafter.

Table 5.2 shows the frequency of male and female unemployment, according to the three definitions described in section 5.4.1 above, in each year of the panel. In 15.5% of observations, the male partner is observed not to be in work, while in 31.2% of observations, the female partner is observed not to be in work. Clearly the unemployment rates are lower than the non-working rates: according to the self-reported definition, 5.6% of male partners and 4.0% of female partners were unemployed (as a percentage of all male and female partners respectively either employed or unemployed), while according to the tighter ILO definition, 2.8% of male partners and 2.3% of female partners were unemployed. Table 5.2 also shows that unemployment rates and non-working rates follow the business cycle. Unemployment for both genders is relatively high during the recession of the early 1990s and then peaks again in 2009 following the global financial crisis.

It is also interesting to explore the extent of overlap between male and female unemployment, and between the different definitions of unemployment. This is described in Table 5.3. The table shows that there is a high degree of overlap in the employment status of partners. In 74% of observations in

which the male partner is employed, the female partner is also employed while only 2% (1% according to the ILO definition) of employed men have an unemployed partner. If the male partner is unemployed then there is a 15% (9%) probability that the female partner is also unemployed at the same time. In 62% of cases where the male partner is not working, the female partner is also not working. Over nine in ten (91%) employed women has a partner who is also employed compared to just 69% of non-working women. In almost a quarter (24%) of observations where the female partner reports herself to be unemployed, her partner also reports himself to be unemployed.

With regard to overlap between the different definitions of unemployment, only 39% of men and 27% of women self-reporting as unemployed are actually ILO unemployed. Conversely, the majority (89%) of men classified as ILO unemployed also self-report as unemployed although this figure is much lower (51%) for women. This suggests that many women may not self-identify as unemployed but are nevertheless available to work and are actively seeking work.

Figure 5.4 through to Figure 5.7 show the distribution of the dependent variables in the SUR models. These charts show that male partners (with a modal score of 30) on average have somewhat better mental health than female partners (with a modal score of 24) according to the GHQ measure. This is consistent with findings from previous literature also analysing the GHQ (e.g. Clark and Oswald 1994). Reports of life satisfaction, however, are similarly distributed across genders with over half of both male and female partners reporting a life satisfaction score of 6 or 7 (where 7 is completely satisfied).

Table 5.4 shows the mean well-being scores depending on the employment status of oneself and one's partner. In terms of both life satisfaction and GHQ, both men and women are significantly happier when they are employed relative to any of the non-employment definitions. Both men and women are also happier when their partner is employed compared to non-employment. This is unsurprising as there are strong associations between having an employed partner and other household and individual characteristics (e.g. income and health) that are known to affect well-being. Mean well-being is slightly higher for those who are not working (or whose partner is not working) than those

who are unemployed (or whose partner is unemployed). This may reflect the fact that the non-working group includes those voluntarily opting out of the labour force while the unemployed group are more likely to be involuntarily out of work. Nevertheless, not working (or having a non-working partner) is associated with significantly lower well-being than employment (or having an employed partner).

6.2.2 Regression analysis

As set out in the methodology section 5.5 above, the core model used in this chapter is the random effects SUR with Mundlak adjustment. This method allows us to model the well-being of the male and female partners simultaneously while controlling for couple and individual fixed effects. The means of the dependent and explanatory variables included in the regressions are tabulated in Table 5.5.

The results of the core random effects SUR models with Mundlak adjustments are shown in Table 5.6 and Table 5.7. These tables show the results for the three definitions of unemployment and for the specifications (1) controlling for just household income and (2) controlling for all time variant individual-level and household-level characteristics.

Table 5.6 displays the results for the SUR models where male partner's GHQ and female partner's GHQ are the two dependent variables of interest. For all three definitions of unemployment, the coefficient pertaining to the individual's own unemployment status is consistently negative and significant. This is the case for both the male and female partners. This confirms previous research that unemployment is bad for psychological well-being regardless of gender. Nevertheless, in all specifications the response of the male partner to his own unemployment is much more negative than that of the female partner to her own unemployment, suggesting that worklessness is much more costly for partnered men than for partnered women.

The cross-partner effects, as shown in Table 5.6, are more interesting. In all specifications, both men and women react less strongly to their partner's unemployment status than to their own. However, it is clear than women prefer their partners to be employed, as the cross-partner coefficient for female GHQ is negative in all specifications although is not significant for the self-reported definition of

unemployment. Men, on the other hand, appear to be at best indifferent to their partners' employment status and, in the case of the much broader 'not working' definition, actually prefer their partners not to be in employment (the reverse of what is found when looking at the descriptive statistics). This may in part reflect the fact that non-working women are more likely to be voluntarily non-participants in the labour force than non-working men, and therefore the well-being cost of non-employment should be lower on average. However, this does not explain why, within the same sample of couples, female partners experience a significantly negative effect on GHQ due to not working while their male partners experience a significantly positive effect due to the female not working.

When well-being is expressed in terms of life satisfaction, some of the results are quite different, as shown in Table 5.7. Similarly to GHQ, men's life satisfaction is significantly reduced by all forms of unemployment or worklessness. Women also experience a life satisfaction penalty due to their own self-reported or ILO unemployment, but the size of the effect is less than half of that experienced by men. However, unlike the effects on GHQ, in terms of life satisfaction women seem to prefer not to work, which again perhaps reflects the fact that much of the non-employment experienced by women is voluntary.

Turning now to cross-partner effects, women again experience a life satisfaction penalty due to their partner's unemployment under all definitions. However, unlike the effect on GHQ, the effect of their partner's unemployment on female life satisfaction is larger than the effect of their own unemployment. As life satisfaction questions tend to elicit a more cognitive evaluation of well-being than GHQ questions (see Knabe et al. 2016), this suggests that women cognitively assess their partner's employment status as being more important than their own but actually feel their own non-employment more acutely than that of their partner.

Table 5.7 also shows that, in terms of life satisfaction, men are sensitive to their partner's unemployment status. In fact, in both the self-reported and ILO specifications the female partner's unemployment has a more strongly negative effect on the male partner's life satisfaction than that of

the female partner. Again, this result stands in stark contrast to the GHQ effects and suggests that men cognitively assess their partner's unemployment to be unsatisfactory but this does not affect how they actually feel in terms of their affective well-being. Having a non-working partner has a slightly positive effect on men's life satisfaction but this is much lower than the effect of not working on women's own life satisfaction. Once again, there is a notable contrast with the GHQ results where the female partner not working has a significantly negative effect on the woman but a significantly positive effect on her male partner.

We can attempt to explain these phenomena by exploring any evidence of heterogeneity in how unemployment affects the well-being of partners. I do this by introducing interaction terms into the SUR models. Firstly, I explore whether income is an important mediating factor. Even though I control for household income in all the regressions, it is possible that low income households experience unemployment differently to those with medium to high incomes. I create a 'low income' dummy variable that is equal to 1 if the household is in the bottom quartile of household income in the wave in question, and 0 if it is in the top three quartiles.[81] This dummy variable is then added to the male and female SUR equations and interacted with both male unemployment and female unemployment. Mundlak terms are also included for each new variable added.

We might expect low income to exacerbate the effects of both one's own and one's partner's unemployment. While higher income couples might be able to afford for one or both partners to be out of work, this is less likely to be true for low income couples. The results, for GHQ and life satisfaction respectively, are shown in Table 5.8 and Table 5.9. It is clear that the well-being effects of unemployment itself (either self-reported or ILO definition) are not exacerbated by low income, but there is a significant interaction with not working. Men experience a significantly higher GHQ penalty from not working if they are in the lowest income quartile, while women in low income households

[81] The lower quartile was chosen as the cut-off, rather than the median for example, due to the fact that unemployment is much more concentrated within lower income households.

experience a life satisfaction penalty from not working, although this is not significant in the specification including all controls. However, there are no cross-partner effects. This might reflect the fact that labour income is often not shared perfectly within the household (i.e. $T \neq \frac{Y_m - Y_f}{2}$ in the notation of section 5.3 above) and therefore one's own employment status is expected to have a larger impact on one's own consumption and financial security than the employment status of one's partner.

An alternative indicator of the relative financial hardship faced by the household is provided by a subjective question included in every wave of both the BHPS and UKHLS. In the survey, both partners are asked: "How well would you say you yourself are managing financially these days?" The possible responses are: "Living comfortably; doing alright; just about getting by; finding it quite difficult; or finding it very difficult." I convert these responses into a single dummy variable equal to 1 if the individual was finding their financial situation quite difficult or very difficult, and 0 otherwise. Again, this is interacted in the SUR equations with the unemployment of both the male and female partners. Unlike low income, which is a household level variable, perceptions of financial difficulty may differ between the male and female partners so the male partner's assessment of financial difficulty is used in the male equation and the female partner's assessment of financial difficulty is used in the female equation.

The results, shown in Table 5.10 and Table 5.11, suggest that perceived financial difficulty has a stronger interaction with unemployment than low income. As before, both men and women experiencing financial difficulty suffer more from not working than those who are not in financial difficulty (this affects both GHQ and life satisfaction for men, but only life satisfaction for women). However, unlike low income, subjective financial difficulty also accounts for a more negative effect on men's GHQ due to their own unemployment. There are no such effects for women, except that financial difficulty appears to slightly reduce the life satisfaction impact of ILO unemployment.

The financial difficulty interaction also reveals some cross-partner effects. In terms of GHQ, men experiencing financial difficulty are even more likely to prefer their partners not to work than those not experiencing financial difficulty. Perhaps this reflects a stigma among men about relying on one's partner to work for one's own financial security. Men who are financially secure may have less to lose, in terms of their male identity, from their partner being employed. However, financial difficulty does not mediate the effects of male worklessness on female well-being suggesting that women's preferences for their partners to be in work are not primarily motivated by finances.

It is possible that it is not just the financial situation of the household that determines the well-being effects of unemployment but also the relative earning potential of the two partners. Regardless of gender, we would expect the unemployment of the partner with the higher earning potential to be experienced more negatively by both partners than the unemployment of the partner with the lower earning potential. Education level should be a good predictor of earning potential, although current and historical labour market discrimination against women means that earning potential is not completely gender neutral.[82]

The next set of interactions involves two dummy variables: whether the male partner has a higher qualification (in terms of the broadest NVQ definition) than the female partner; and whether the female partner has a higher qualification than the male partner. If both dummies are zero, this implies that the two partners have the same level of education. The results are shown in Table 5.12 and Table 5.13. The coefficients with the most significance pertain to the interaction between the male partner not working and the female partner having the higher qualification. While we might expect men with a lower earning potential than their partner to be less affected by their own worklessness, we see that

[82] Experience, which is not observed in the data, is another important determinant of earnings potential. Therefore, if female partners are on average younger than male partners and/or have spent less time in paid employment, their earning potential will be lower than their partner even where education levels are the same and there is no discrimination. There is also an alternative hypothesis that suggests that education level and earnings potential may be inversely related to the well-being effects of unemployment as highly qualified people may find it easier to move into employment. Therefore, any spell of unemployment may be assumed to be short term and the well-being cost of unemployment, both for oneself and one's partner, may be lower.

the reverse is true for GHQ. Not working is significantly worse for men with a more qualified partner than for men who have the same highest qualification as their partner. This may indicate that threats to masculine identity are more important determinants of male well-being than any desires to maximise returns to human capital at the household level. However, men who have a higher qualification than their partner also experience a worse GHQ from not working than men with the same level of qualification as their partner.

There is only one cross-partner effect impacted by relative qualifications. Table 5.13 shows that having a higher qualification than her partner mitigates the effect of male worklessness of female life satisfaction. In other words, only women with an education level equal to or lower than that of their partner suffer a life satisfaction penalty from the male partner not working, although this does not account for the cross-partner effects of the male partner being unemployed.

If earning potential or financial situation do not fully explain the cross-partner effects of unemployment on well-being, then gender identity effects may provide an alternative explanation. To explore this, I exploit the set of questions asked to all respondents to elicit attitudes to women working. These five questions were asked in all waves of the BHPS and UKHLS and are set out in full in Appendix B. I follow a similar method to Longhi et al. (2018), undertaking factor analysis to reduce these questions to their latent factors. I adopt a one factor solution that loads most heavily on questions 1, 2 and 4, where a high value indicates egalitarian views.[83]

The resulting factor (interpreted as an 'egalitarian' index) is interacted with male and female unemployment variables to assess whether gender attitudes mediate the well-being effects. Similarly to the financial difficulty variable, this attitudinal variable is particular to the individual and therefore

[83] The factor analysis generates a second factor with an eigenvalue above but close to zero (0.21 for men and 0.17 for women). This factor loads most heavily on questions 3 and 5 (where a high value indicates more traditional attitudes) but also has a positive, albeit small, loading on questions 1 and 2. This seems counter-intuitive and, in fact, interacting the unemployment dummies with this second factor in the SUR models produces some counter-intuitive results that conflict with the results from the first factor. For this reason, coupled with the low eigenvalues, I elect to use a one factor solution. This is the same approach taken by Longhi et al. (2018).

the male partners' gender attitudes are included in the male equation and the female partners' gender attitudes are used for the female equation.

The results are shown in Table 5.14 and Table 5.15. The impact of the male partner not working does appear to be affected by both male and female gender attitudes. While not working is associated with reduced GHQ and life satisfaction for men overall, the results suggest that having egalitarian attitudes (i.e. being generally in favour of women doing paid work) reduces this negative impact by some extent. Nevertheless, the magnitude of this mediating effect is small compared to the overall effect and is only just about significant for life satisfaction. Gender attitude also has a mediating effect on the male partner's life satisfaction due to being ILO unemployed, although this is only significant in the specification without full controls.

The gender attitudes of the female partners also affect how they respond to their male partners' unemployment or worklessness. In terms of GHQ, having egalitarian views significantly mediates the negative effect of having a non-working partner although it has no effect on life satisfaction. Egalitarian women are also less likely to be negatively impacted by their partners' ILO unemployment, in terms of GHQ, although this result is only significant at the 10% level in the specification without full controls. Surprisingly, having egalitarian attitudes appears to worsen the life satisfaction impact of having an unemployed partner under the self-reported definition, although again this is significant only at the 10% level.

Gender attitudes seem to play a lesser role in explaining the effects of the female partner's employment status. Women with egalitarian attitudes experience significantly worse life satisfaction due to their own ILO unemployment, but there are no such effects on GHQ or due to self-reported unemployment or not working. For men, having egalitarian attitudes reduces the otherwise positive effect on GHQ of having a non-working partner.

6.2.3 Robustness checks

The harmonised BHPS dataset used for this chapter is composed of a number of different household samples brought together into the same panel over time. This includes the UKHLS Ethnic Minority Boost (described in Chapter 3), boosts to BHPS to increase the sample of households in Scotland, Wales and Northern Ireland and of course the large UKHLS Great Britain sample entering the panel for the first wave of UKHLS (wave 19 of the harmonised BHPS). As a robustness check, I strip out all of these added samples and repeat my analysis using only the original BHPS Great Britain (GB) sample established in 1991. This includes all couples where at least one partner was a member of a BHPS household in 1991, or was born into an original BHPS household at a later date.

This sample contains 5,897 unique mixed gender couples (recalling that, as before, a given individual may appear in more than one couple in different years). This represents less than a quarter (23%) of the 25,593 couples in the complete dataset. The sample retains the 183 couples appearing in the maximum 24 waves (all waves of the panel except wave 19 where all BHPS households were excluded) while 1,016 couples (17%) appear in just one wave. The remaining couples appear in between two and 23 waves, with the mean couple appearing in eight waves. The total number of observations is 49,078.

Both men and women in the BHPS GB sample are less likely to be unemployed or not working than those in the harmonised BHPS sample, perhaps due to a lower concentration of observations during the period following the global financial crisis. On average, this reduced sample is broadly the same age (but, if anything, slightly younger) than the whole sample and broadly similar on other household and individual characteristics, including well-being levels.

Table H.1 in Appendix H presents the results from the main fixed effects OLS and random effects SUR models, showing the estimated coefficients based on both the full sample and the reduced BHPS only sample. The main differences between the two samples occur mainly in relation to the life satisfaction SUR estimates. In the reduced sample, there are no longer significant spillover effects due to self-reported and ILO unemployment, with the exception of male ILO unemployment which continues to

have a negative impact on female life satisfaction. In the model with full controls, the positive effect on life satisfaction due to the female partner not working becomes significant for men but is no longer significant for women.

Due to the reduced sample size, the SUR models with full controls and GHQ as the dependent variable did not converge and so results are unavailable. However, the models with the household income control only generate very similar estimates in the BHPS sample compared to the whole sample.

5.7 Discussion

The analysis is this chapter shows that people living in mixed-gender partnerships are affected not only by their own unemployment but also by the unemployment of their partner. Furthermore, gender seems to matter in the sense that there are substantial differences between how men and women experience these cross-partner effects.

In terms of GHQ, arguably a measure of affective well-being, women experience a negative impact due to their partner being unemployed or not in work while men are indifferent to their partner's unemployment and experience better psychological well-being if the partner is not working. Perhaps this is due to women having greater levels of empathy than men or due to people modifying their behaviour in response to unemployment in a way that affects the partner's well-being. These possible explanations cannot be tested using this data.

The spillover effects appear to be much stronger in terms of life satisfaction, an evaluative measure of well-being. On this measure, women care more about their partner's unemployment than their own. Men also care as much about their partner's unemployment as the female partners do themselves. According to Knabe et al. (2016), life satisfaction is an indicator of cognitive well-being and is most susceptible to gender identity concerns. Wanting to conform to the social norm of a male breadwinner might explain why both men and women express higher dissatisfaction with the male partner's unemployment than that of the female partner. It also explains why women have a

preference for not working in terms of life satisfaction, even though this has a negative effect on their affective well-being. The gender identity argument does not so readily explain why men express dissatisfaction with their partner's unemployment. However, given that the majority of men in the sample are employed, it is perhaps not surprising that most men are happy for their partners also to be employed. This does not conflict with other literature which suggests that female employment negatively affects male partners only if the female partner is earning more (Bertrand et al. 2015) or the male partner is himself unemployed (Knabe et al. 2016).

Concerns about personal finances unsurprisingly affect how both men and women feel about their own unemployment but only appear to affect the cross-partner effects in one direction. Men experiencing financial difficulties report improved psychological well-being if their partner is not working, suggesting that gender identity effects for men are accentuated when under perceived financial stress. However, financial concerns do not explain the well-being effects of male unemployment on women.

Expressing egalitarian attitudes also mitigates the effects of gender identity on well-being spillovers. Women with egalitarian views are less negatively affected (in terms of GHQ) by their partner not working than those with more traditional views. Similarly, men with egalitarian views are less positively affected by their partner not working than men with traditional attitudes. However, gender attitudes tend not to influence spillover effects on life satisfaction. It is possible that expressed attitudes capture only a fraction of the identity preferences of the individuals in the sample, and there are residual gender identity factors that are determining well-being outcomes.

5.8 Conclusion

The results from this chapter confirm findings from previous literature that one's well-being is significantly impacted by the employment status of one's partner, over and above the effect that this has on household income and consumption. These spill-over effects are clearly asymmetric in the sense that the gender of the partner matters. The life satisfaction of both men and women is affected

more by the unemployment of the male partner than that of the female partner. Moreover, in terms of life satisfaction, both men and women prefer the male partner to be in employment and the female partner not to work. In terms of psychological well-being, however, women are happier if both they and their partner are in work while men are indifferent to their partner's unemployment and are happier if their partner is not in work.

These findings seem to be consistent with a gender identity interpretation, whereby deviations from gender norms are costly for the well-being of both partners. In particular, violations of the 'male breadwinner' norm could explain why male unemployment and economic inactivity have a negative impact on female partners, but the effects are much less pronounced (and in some cases reversed) in the opposite direction. This may occur directly due to women themselves preferring to adhere to the male breadwinner model, or indirectly due to women having empathy for the effect that unemployment is having on their partner. Furthermore, threats to male identity may affect the behaviour of male partners in response to unemployment in a way that impacts negatively on the female partner's well-being. For example, there is a large literature (e.g. Brines 1994) showing that unemployment reduces men's contribution to housework, as a way of compensating for their loss of male identity, but does not have the same behavioural effect for women.

The policy implications of this research are potentially complex. On the one hand, these findings provide clear evidence in support of the notion that unemployment is bad for everyone's well-being. Both men and women experience a significant evaluative and affective well-being penalty from being unemployed, for which replacement income (e.g. through welfare payments) cannot fully compensate. The effects of both male and female unemployment are felt not only by the affected individual themselves but also by their partner, suggesting the existence of significant externalities. It is clear, however, that the impact of male unemployment on aggregate well-being (both direct and spill-over) is higher than the impact of female unemployment. This implies that actions to reduce male unemployment will have a greater impact on overall national happiness than actions to reduce female

unemployment by the same amount. Furthermore, due to the fact that partnered women have a higher life satisfaction stake in their partners' employment than their own, any policy action that replaces partnered female workers with partnered male workers will have a net positive impact on the life satisfaction of both men and women across the economy as a whole.

This assertion should be caveated firstly by the fact that not all women are in partnerships and that clearly single women have little or no well-being stake in the reduction of male unemployment. The benefits to women of having an employed partner exist only while the partnership continues so a policy of favouring male employment over female employment would leave women vulnerable to a substantial reduction in well-being in the case of future separation. Secondly, even among couples that do not separate, the effects of male and female unemployment on psychological well-being (the GHQ measure) are less clear cut. While male unemployment has a larger overall effect on psychological well-being, any policy that favours male employment over female employment will have important equity implications as partnered women suffer from their own unemployment more acutely than that of their partners, so this would widen the mental health gap between women and men.

While overall well-being will be improved unequivocally by reducing the unemployment of both men and women, the policy implications with regards to economic activity are more nuanced. In terms of both life satisfaction and GHQ, a reduction in male worklessness (whether that be through unemployment or economic inactivity) should improve the well-being of both men and their female partners. However, the life satisfaction of both men and women would be at best improved and at worst not affected by partnered women being voluntarily not employed. This implies that, while having clear productivity and hence welfare benefits, drives to increase women's labour force participation may also have direct negative effects on the well-being of partnered men and women, notwithstanding other possible well-being spill-overs to children and other family members, the identification of which is beyond the scope of this chapter.

However, a concern for mental health as opposed to life satisfaction would yield different conclusions. My results suggest that non-participation in the labour force is bad for women's psychological well-being but good for that of their partners. Hence there is a clear trade-off although, again, equity concerns may prioritise the mental health of women above that of men. Moreover, changing attitudes may also have a part to play. Although the results are not conclusive, much of the spill-over effect of female non-participation on male GHQ can be explained by men having more traditional attitudes towards the role of women in the workplace and family. This implies that actions to help men acquire more egalitarian attitudes may reduce the negative psychological impact of having a working partner and hence eliminate this apparent trade-off.

Chapter 6: Conclusions

6.1 Summary of main findings

At the very start of Chapter 1, I provide a quote from Ben Bernanke suggesting that the role of the economics discipline is "to understand and promote the enhancement of well-being". To this end, the research presented in this thesis provides some helpful new insights into how different aspects of our working lives can improve or erode human well-being.

In general, my research confirms findings from previous literature that work is good for our well-being. It is not solely an instrumental activity undertaken for the purposes of facilitating consumption but is an activity that can provide satisfaction in and of itself. However, this general statement masks a much more nuanced and complex relationship between work and well-being. Our conclusions rely heavily on how we define well-being.

Many economists feel that life satisfaction is the most reliable account of well-being (e.g. Clark et al. 2018) as it is democratic and allows people to decide for themselves how to evaluate their own well-being. On this basis, this thesis reveals that working is good for well-being (Chapter 4) and unemployment unequivocally bad, although non-participation in the labour force can be good for the life satisfaction of partnered women (Chapter 5). Moreover, being employed and avoiding unemployment have significant spill-over effects in the sense of improving the life satisfaction of one's partner (Chapter 5). The day of the week on which work is performed has no impact on overall life satisfaction but does affect how people evaluate their leisure time, where the avoidance of weekend working is associated with improved satisfaction with the amount of leisure time one has (Chapter 3).

A very different picture emerges if well-being is defined in terms of how people feel. People feel less happy and more stressed while at work compared to most other activities they undertake in a typical day (Chapter 4), so in that sense work is not conducive to well-being and has instrumental value only.

Moreover, the timing of work matters for how people feel, with survey respondents reporting lower levels of happiness if they had recently worked at the weekend (Chapter 3).

Objective measures focused on symptoms of mental health can also be used to assess people's affective well-being and, to this end, my thesis makes use of the GHQ as an established and validated indicator of psychological well-being. Weekend working (Chapter 3) and unemployment (Chapter 5) are both found to be associated with symptoms of lower psychological well-being. To some extent, one's partner's employment status also affects psychological well-being but these spill-over effects are much less pronounced than for life satisfaction. The GHQ measure provides some interesting results with respect to the effects of economic inactivity on the well-being of married and cohabiting couples. While both men and women experience worse psychological well-being when the male partner is not working, there is an apparent conflict with respect to the employment status of the female partner. Being in work improves the mental health of women but diminishes that of their male partners, particularly where the man holds traditional values (Chapter 5).

Despite having a long history dating back to the Ancient Greeks, the concept of eudaimonia as an account of well-being has received limited attention in the modern economics literature. Various studies show that qualities such as purpose and virtue make an important contribution to overall well-being. Based on this definition, being in a job is associated with feeling that the things one does in life are worthwhile although the actual activity of working is only moderately meaningful compared to other things one might do during the day (Chapter 4). The type of work also matters, with people in professions that deliver social impact in the context of a trusting relationship reporting the highest levels of eudaimonic well-being in work (Chapter 4).

6.2 Economic implications and further research

The multitude of SWB outcomes explored in this thesis gives rise to the question: what accounts of SWB actually matter to people? This is a pertinent question in the sense that all three substantive chapters highlight apparent trade-offs between different aspects of SWB in relation to job outcomes.

For example, Chapter 3 shows that people who work at the weekend sacrifice their satisfaction with leisure time but do not reduce their job satisfaction, and if anything experience slightly improved job satisfaction. Chapter 4 finds that working in certain occupations and sectors is associated with relatively positive experiences of eudaimonic well-being but in many cases this is at the expense of lower hedonic well-being, such as stress or unhappiness. In Chapter 5, we see that partnered women improve their life satisfaction by opting out of the labour market but this has a negative impact on their mental health.

To what extent do these findings show that people are behaving rationally with respect to their labour market decisions, insofar as they are choosing states that meet their own particular preferences for SWB? Or to what extent do the results reveal that certain individuals are constrained in how far they can satisfy their own preferences through their labour market outcomes? And what further research can be proposed in order to probe some of these questions? To explore these questions more fully, let us address each chapter in turn.

6.2.1 Chapter 3 – Weekend working

In Chapter 3, I investigate the effects of weekend working on well-being in the UK. The first thing to note is that weekend workers have lower life satisfaction than those who do not work at the weekend. This is shown in the pooled OLS results in Table 3.15 and Table 3.16. One interpretation of this result is that weekend workers are on average unequivocally worse off than non-weekend workers. This is based on the assumption that, compared to any other SWB measure, life satisfaction most accurately reflects the true welfare of individuals (Layard 2016).[84] Therefore, what can weekend workers do to close that life satisfaction gap and why are they not doing it? The answer, evidently, is not to cease working at weekends. This is shown by the fixed effects results in Table 3.17 and Table 3.18. Those individuals with a 'within' variation, who transitioned between weekend working and non-weekend

[84] This interpretation also relies on the assumption that self-reported levels of SWB are comparable between individuals. However, there is no reason to believe that there is a systematic bias in how people interpret the life satisfaction scale based on weekend working status.

working, did not experience any significant change in life satisfaction. Rather, it is unobserved heterogeneity between weekend and non-weekend workers captured in the fixed effect which explains why weekend workers have lower life satisfaction.

An explanation as to why this gap persists might be found by focusing on the demand side of the labour market. Table 3.4 and Table 3.5 show that there are large differences in the incidence of weekend working by occupation and industry respectively. This reflects major differences in the demand for weekend working across the economy, with low skilled jobs disproportionately involving weekend working. Human capital endowments, that are relatively fixed in the short term, can restrict individuals to limited occupations and sectors and therefore the population is heterogeneously exposed to demand for weekend working. It is likely that unobserved personal and job characteristics correlated with weekend working (for example skill levels or job quality, but not observed variables like highest qualification and income) explain differences in life satisfaction between people.

We can also assume that job satisfaction and leisure satisfaction are determinants of life satisfaction (alongside satisfaction with many other domains of life).[85]

$$LifeSat_{it} = f(JobSat_{it}, LeisureSat_{it}) \quad (46)$$

In this sense, life satisfaction is analogous to utility and job satisfaction and leisure satisfaction are analogous to goods, such that both partial derivatives of equation (46) are positive. The findings from Chapter 3 also infer that job satisfaction and leisure satisfaction may be substitutes where changes in weekend working status effectively involve a substitution between these two goods. Moving away from weekend working allows a typical individual to improve her satisfaction with leisure time at the expense of job satisfaction. In so doing, however, the individual stays on the same or similar indifference curve. The only way she can achieve higher utility (life satisfaction) is to make a significant upward career change (which will by default involve less demand for weekend working). This is likely

[85] See Powdthavee (2012), equation (2)

to be beyond her skill set in the short term and may also be an irrational aim in the long term due to the cost of investing in human capital given innate ability. Given that equation (46) holds, this interpretation is consistent with my findings in Chapter 3.

Another possible explanation for why satisfaction with leisure time might be negatively associated with weekend working is that people are substituting quality leisure time for income and hence consumption. This can be illustrated by the familiar labour supply indifference curve diagram whereby individuals choose their optimal labour supply based on their marginal rate of substitution between income and leisure, although in this case the leisure axis refers to the quality of leisure time (which is dependent on the timing of work) not the total number of hours. It would be rational for an individual to accept weekend working, despite this reducing their well-being, if this could be fully compensated by income.

However, this explanation can be ruled out from my results. This is not shown in the tables, but the weekend working coefficients with respect to all well-being outcomes are not sensitive to the inclusion of wages in the regression. If weekend workers were receiving compensation then we would expect the weekend working coefficient to increase significantly with the inclusion of the income control, which is not the case. This is consistent with the findings from Presser (2003) suggesting that there is limited evidence of a wage premium for weekend working or that this is a primary motivation for weekend working.

Of course, it is not only wages that can provide compensation for weekend working but also other aspects of a job. This can also be ruled out, at least in relation to observable job characteristics. In all regressions, the weekend working coefficient is insensitive to the inclusion of job characteristics when, once again, we would expect to see an increase if compensatory effects were evident. Conversely, the coefficient with respect to satisfaction with leisure time actually falls when other job characteristics are included. This is due to weekend working being associated with other undesirable job characteristics such as long hours and non-daytime working. In other words, the effects of weekend

working on well-being tend to be exacerbated rather than compensated by accompanying job characteristics.

We may, however, question the assumption that life satisfaction is a good approximation for utility and instead seek to infer how weekend working affects utility through revealed preference. This would involve further research, ideally using a longer panel, where future job outcomes are regressed against lagged well-being indicators. We know from my research that weekend working predicts 'within' variation in satisfaction with leisure time, happiness yesterday and GHQ. But to what extent do these adverse outcomes actually matter to the individuals experiencing them? The answer may be found in what happens afterwards. If an individual reports a fall in some well-being outcome after moving into weekend working and then is subsequently observed to exit weekend working and hence increase their well-being, then this could indicate that the particular well-being outcome is an important motivator for that person. However, the subsequent job change would have to be the result of some active choice on the part of the individual, such as quitting a job to find another more preferred one. The results of a conditional logit or probit estimation would enable the researcher to assess which aspects of well-being are important components of utility in relation to weekend working insofar as they motivate subsequent action.

Such a result would effectively imply that people are prepared to tolerate the adverse effects of weekend working only in the short term, or specifically the time it takes to learn about their own preferences and make a change accordingly. Also, some individuals may also quite rationally be prepared to tolerate weekend working perhaps for a longer period of time, despite that not being their preference, in order to invest in career capital that is expected to yield a return in the future. These returns may be with the same employer (e.g. being prepared to do weekend working may improve one's chances for future contract extensions, pay rises or promotions) or with a different employer (e.g. investment in skills and experience that may improve one's future job prospects). These effects could also be picked up by estimating how weekend working affects future job and wage

outcomes over a longer panel. The results in Table 3.22 suggest that weekend working is more costly for the life satisfaction of younger workers, providing some evidence that people may be strategically selecting into weekend working in their early career despite this not being their short term preference.

This proposed research may find that many individuals remain in job states that lower a certain aspect of their well-being over the long run. This could be interpreted as indicating that this aspect of well-being is not a strong motivator for people to move jobs or adjust their working schedules (i.e. it does not have a large weighting in the utility function and/or is compensated by other benefits). However, it is also possible that such individuals are simply trapped in working conditions (including weekend working) that do not meet their preferences and their well-being is suffering as a result. Much of the working hours literature (e.g. Wooden et al. 2009) finds that there is often a mismatch between desired and actual labour supply, and it is likely that the same is true with respect to the timing of work. In which case, the policy recommendations set out in section 3.8 will help to combat this market failure by forcing employers to reduce reliance on weekend working or provide higher levels of compensation.

Even if individuals are not constrained and are freely choosing to work at the weekend, I would still argue that there is a rationale for intervention on the basis of the observed association with happiness and mental health. Working time regulation exists to limit how much time people spend working even in cases where individuals would prefer to supply more hours, due to the health implications and concerns about exploitation. The same logic could be applied to weekend working. For example, stricter legislation limiting weekend working would reduce the incentive for workers to agree to weekend working as an investment decision despite it having adverse effects on their well-being. It is reasonable to argue that any career capital gained from working extra hours or unsocial hours is simply being redistributed between workers rather than being generated as new capital. An example of this phenomenon is given by Landers et al. (1996) who find that associates in law firms have an incentive to work inefficiently long hours in a ‘rat race’ to gain promotion to partner. Therefore, as long as all

workers in a given sector were equally restricted in the amount of weekend work they could supply, such restrictions would not disadvantage the career prospects of anyone.

Moreover, similarly to long working hours, weekend working could potentially involve significant externalities. These may include the social costs associated with reduced mental health. They may also include indirect effects on family members whereby an individual's preference for weekend working may not match up to the needs and preferences of the partner or children. The design of both the LFS and UKHLS are such that it is possible to explore cross-partner and (in the case of UKHLS) intergenerational effects on well-being. This is another idea for further research.

6.2.2 Chapter 4 – Eudaimonic well-being

In Chapter 4, I find some significant patterns in the types of job that deliver eudaimonic well-being for the jobholder. These findings are consistent with the literature in terms of the qualities that are most predictive of eudaimonia, and a supplementary analysis using the SES finds a correlation between the occupations deemed to have high eudaimonic well-being and those that are found to be high on discretion, participation and commitment.

Given the evident variation in the eudaimonic returns to different careers even at a similar skill level, can we shed any light on why people continue to select into jobs that they do not find to be meaningful or worthwhile? One simple answer is that there is a significant heterogeneity in individuals' preferences for eudaimonic well-being relative to hedonic well-being. This relative preference is captured in the parameter θ in equation (17). Beyond the stated preference literature (e.g. Benjamin et al. 2014 and Adler et al. 2017) and correlations with life satisfaction (Dolan et al. 2017), there is little in the literature that measures revealed preferences for eudaimonic well-being. This provides potential for further research. Due to problems of endogeneity, the cross-sectional datasets used in my research (ATUS and APS) are probably insufficient to explore this question. Even though an individual may report high levels of eudaimonic well-being, this does not imply that this is something she values. We do not know whether eudaimonic well-being is merely an outcome of her life

circumstances or time use choices or the motivation for making those choices (including career choices) in the first place.

However, a question on eudaimonic well-being has recently been introduced to the GSOEP survey, and this panel dataset may provide the best potential for assessing revealed preference for eudaimonic well-being in the future. It would be interesting to see the extent to which eudaimonic well-being, relative to life satisfaction or hedonic measures, predicts active career choices or other major lifestyle choices such as marriage or fertility. For example, is there any evidence that people sacrifice life satisfaction in order to achieve meaningfulness and how does that substitution vary across different demographic and socioeconomic groups? This evidence could therefore explain why people select into different job types and the extent to which a heterogeneous desire for meaningfulness is driving this selection process.

Heterogeneity in preferences for eudaimonic well-being is not the only possible explanation for the fact that some people choose meaningful careers and others do not. Even if all individuals have the same preference for eudaimonia (not an unreasonable assumption from an Aristotelian point of view), different individuals may choose to fulfil those preferences in different ways. In other words, a flourishing life might look different for different people. Some people meet their need for purpose through work while others meet the same need through their non-work life. Those in the latter group might be expected to choose jobs that facilitate purposeful activities outside of work. This may include selecting into high paid jobs that allow the jobholder to donate money to charity or devote her resources to meaningful or altruistic activities. Other individuals may select into easy or low-stress jobs in order to conserve emotional energy that can be devoted to purposeful activities outside of work (e.g. volunteering or caring for children or relatives). For others, their job choice is motivated by the need to build up career capital to allow them to flourish in the future.

This substitution between finding meaning in work and finding meaning outside of work is to some extent borne out in my ATUS results. In the theory motivating Chapter 4 (section 4.3), I make the

assumption that the choice of activities undertaken outside of work, and the extent to which such activities are found to be meaningful, is independent of job selection. This allows me to interpret the results (based on the relative meaningfulness within activities) as evidence that some types of work are experienced as more meaningful than others. Of course, the results could just as correctly be interpreted as evidence that people employed in those same types of work are experiencing less meaningfulness in their non-work life.

Although they do not observe well-being directly, Dur and Van Lent (2018) provide empirical evidence of this substitution. Using German data, they find that, given a certain level of altruism, people working in the public sector donate less to charity than private sector workers. They also find that Dutch public sector workers spend less time volunteering than their private sector counterparts. These observations are attributed to the notion that people fulfilling their altruistic preferences through their work find less need to act altruistically outside of work.

There is scope for further research into whether this phenomenon exists with respect to eudaimonic well-being and work. Currently it is difficult to tell from the available data whether people who select into meaningful jobs do so because eudaimonic well-being has a higher weighting in their utility function or because they feel the need to make up for lower experiences of eudaimonic well-being in other aspects of life. It would be interesting to unpack this further.

Finally, one should ask the question whether labour markets completely 'clear' insofar as everyone selects into jobs most suited to their own preferences accepting the inherent trade-offs between intrinsic and extrinsic benefits. Wages and other job benefits will be offered as a premium to induce people to accept work with low contribution to eudaimonic well-being. Any residual demand for eudaimonic well-being would be met by people using some of their non-work time and resources to pursue eudaimonic rather than hedonic goals. Ignoring the normative assertion that people 'should' value eudaimonic well-being more highly than they actually do, I would suggest that my research does not throw up any evidence of market failure regarding how workers are matched to jobs or individuals

are able to meet their preferences for meaningfulness. If these preferences were to change (e.g. increased demand for eudaimonic well-being relative to hedonic well-being), this would itself induce the market to devote more resources to meaningful work and/or raise the wage premium for less meaningful work without requiring policy change.

6.2.3 Chapter 5 – Well-being spill-overs

Chapter 5 finds that unemployment is associated with lower well-being not only for the unemployed person but also for his or her partner, with the strength of these spill-over effects strongly sensitive both to gender and the measure of well-being used. However, when the definition of 'unemployment' is expanded to include those not participating in the labour market, the effect of not working on women and their male partners is more ambiguous.

With respect to unemployment itself, the results seem to confirm the notion that unemployment is involuntary, as originally asserted by Clark and Oswald (1994). The well-being of both men and women is negatively affected by unemployment and, while men are to some extent indifferent about their partners' unemployment, there is no evidence to suggest that either gender prefers their partner to be unemployed. The slight issue with this result is that it does not rule out the possibility of reverse causality. Some unrelated drop in well-being may itself increase the probability not only of oneself becoming unemployed but also one's partner. This could be investigated by studying the lags and leads of SWB with respect to employment shocks that affect one's partner. This is similar to the approach taken by Clark et al. (2008) except that the focus would be on intra-household spill-overs rather than individual effects. To what extent, if at all, does a person's well-being predict the likelihood of his or her partner becoming unemployed and does the well-being effect of this shock persist even after the partner becomes re-employed? The Harmonised BHPS data could be used to explore these questions.

An even more interesting extension to Chapter 5 would be to focus further on how intra-household well-being affects the choice of men and, in particular, women to supply labour at the extensive

margin. The choice of whether or not to participate in the labour market at any particular point in time is a decision taken either by an individual or at the household level. As such, these labour supply decisions may depend not only on one's own preferences but also the preferences of one's partner and hence intra-household bargaining may come into play.

Table 5.3 shows that only 9% of non-working women in the panel self-reported as being unemployed. The Harmonised BHPS data also shows that 56% of non-working partnered women are looking after the family or home, so this is clearly the main reason for non-participation in the labour force. My results suggest that the mental health of women is negatively impacted by staying at home relative to being employed while their male partners experience a positive impact. This indicates a potential conflict that could be investigated further by exploiting the panel nature of the data. To what extent does the lagged GHQ of the male and female partners predict transitions in women's labour force participation? If it is observed that women tend to leave employment or persist in economic inactivity despite this being bad for their well-being, that could be an indication that male preferences have a strong influence on female labour force participation. As highlighted in the intra-household bargaining literature, this could constitute an equilibrium if the male partner were able to exert some credible threat of marital dissolution, behaviour change or even violence. In other words, while a woman's decision to leave the labour force may reduce her well-being, she may be even worse off by returning to work if this triggers some unobservable time variant change in behaviour due to the effect of her employment status on her partner's well-being. Alternatively, the observation that women move into or stay in employment in spite of this damaging their partners' well-being indicates that such threats are weak and women feel free to respond to their own preferences.

As it stands, the panel constructed for Chapter 5 contains only waves in which both partners are married or co-habiting. Expanding the panel such that we observe employment status and well-being of individuals before and after partnership would provide further insights into intra-household effects. For example, what effect does entering marriage have on women's labour force participation

(conditional on factors such as the presence and age of children and local and national labour market conditions), and how does this affect her well-being? If the interaction between entering marriage and remaining in employment impacts negatively on female well-being, then this could be an indicator that women are making some unobserved sacrifice in return for remaining in work within a bargaining framework, particularly if this is correlated with the male partner's well-being with respect to her employment status.

This expanded panel could also be used to explore the extent to which marital dissolution is impacted by these cross-partner spill-overs. Are partnerships where there is evidence of conflict regarding the female partner's employment status (i.e. where she works despite this being bad for her partner's well-being, or where she does not work despite this being bad for her own well-being) more likely to end in separation? Moreover, what impact does the separation have on the subsequent well-being of the two partners? And what role does the relative income or the relative human capital of the two partners play in determining the probability of separation? Caution needs to be taken as we do not observe in the data which partner invoked the separation. However, this analysis has the potential to shed light on whether the credible threat of marital dissolution from men places a constraint on female labour force participation and whether the credible threat of marital dissolution from women allows them to work even if that is contrary to the preferences of their partners.

Finally, the results in Table 5.7 show that there appears not to be any intra-household conflicts due to women working if well-being is defined in terms of life satisfaction. On average, both men and women are at least indifferent and if not favourably disposed to the female partner not working. If this is the aspect of well-being that most closely predicts behaviour, then we would not expect either partner to have to make concessions to compensate the other partner based on the woman's decision whether or not to participate, and hence we would observe more stable partnerships. Similarly to the recommendations made in sections 6.2.1 and 6.2.2, an analysis that focuses on how lagged well-being

impacts on future behaviour will help to identify the relative importance of GHQ and life satisfaction in the utility function.

As discussed in section 5.8, the policy implications with regard to female labour force participation are potentially complex. Expanding the workforce will unequivocally increase GDP per capita and hence average levels of well-being in the economy, and increase the disposable income of women and their families. Nevertheless, there will be women and men who choose to substitute paid employment and hence consumption for increased time in household production or childcare, and for such individuals this is optimal and welfare enhancing.[86] Market failure arises, however, when women would prefer to work but are constrained by their partner from doing so. My findings, subject to the further research proposed, suggests that this may be a common problem. Policy responses may include promoting egalitarian values among men thus aligning men's preferences to those of their partners and reducing conflict. Where conflict does exist, policy levers should be directed at limiting the male partner's power in intra-household bargaining to ensure that women can make optimal decisions regarding labour force participation without fear of reprisals. This could be achieved through better detection and tougher penalties for domestic violence and reform of divorce laws such that marital dissolution is made more costly for men and less costly for women.

6.3 Final reflections

In 1930, the renowned economist John Maynard Keynes wrote an essay entitled *Economic Possibilities for our Grandchildren* (Keynes 1963). He predicted that the pace of technological change over the following two generations would be such that the majority of the population would be freed from the necessity of hard work and long hours to achieve economic well-being. He added, however, that humankind's innate appetite for productive activity would compel us to continue working nevertheless, although most would be satisfied with a 15 hour working week. Almost 90 years later,

[86] Similarly, the decision to retire early (the second most common reason for economic inactivity among working age people) can be assumed to be due to an optimising substitution between consumption and leisure thus raising well-being albeit at the expense of national productivity.

technological change has indeed made much human work redundant but the 15 hour working week has not become the new social norm. As my research shows, the activity of work can and does have negative implications for well-being, and freeing up more time to spend on other activities could improve happiness levels. Focusing on the timing and quality of work can also help to reduce its unpleasantness. On the other hand, however, work makes such a profound contribution to our sense of purpose and identity that to abandon it altogether would surely be of immense detriment to human well-being.

It is possible that my own grandchildren will grow up in a world where almost all necessary work can be performed by robots. This should not be viewed as a threat to our well-being but rather an opportunity to shape human work in a way that eliminates its negative impacts but retains its intrinsic value as a fundamental component of a good, purposeful and happy life.

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Figures

Figure 3.1 - Employed persons working on Saturdays as a percentage of the total employment, 2014. Source: Eurostat (2016).

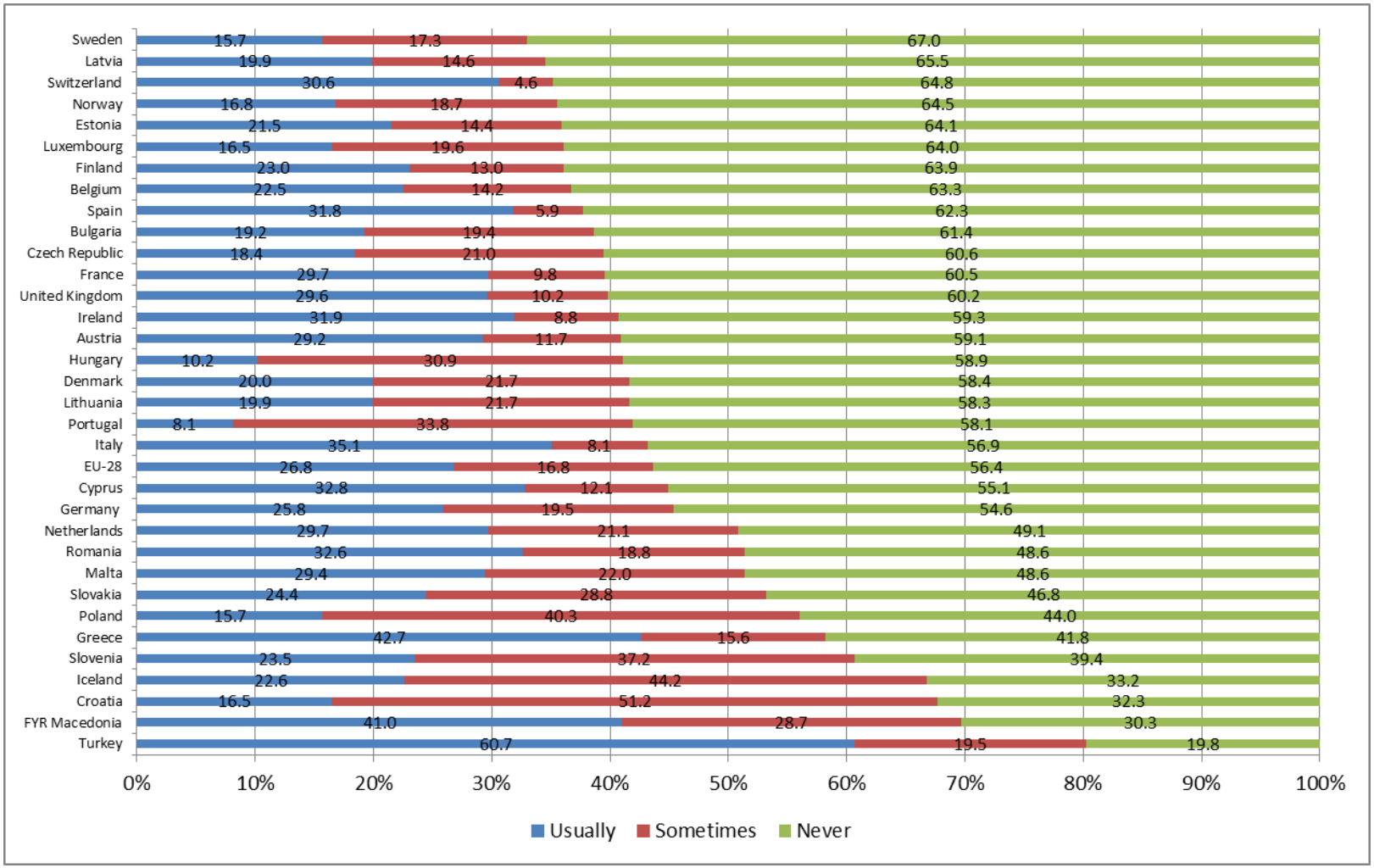


Figure 3.2 - Employed persons working on Sundays as a percentage of the total employment, 2014. Source: Eurostat (2016).

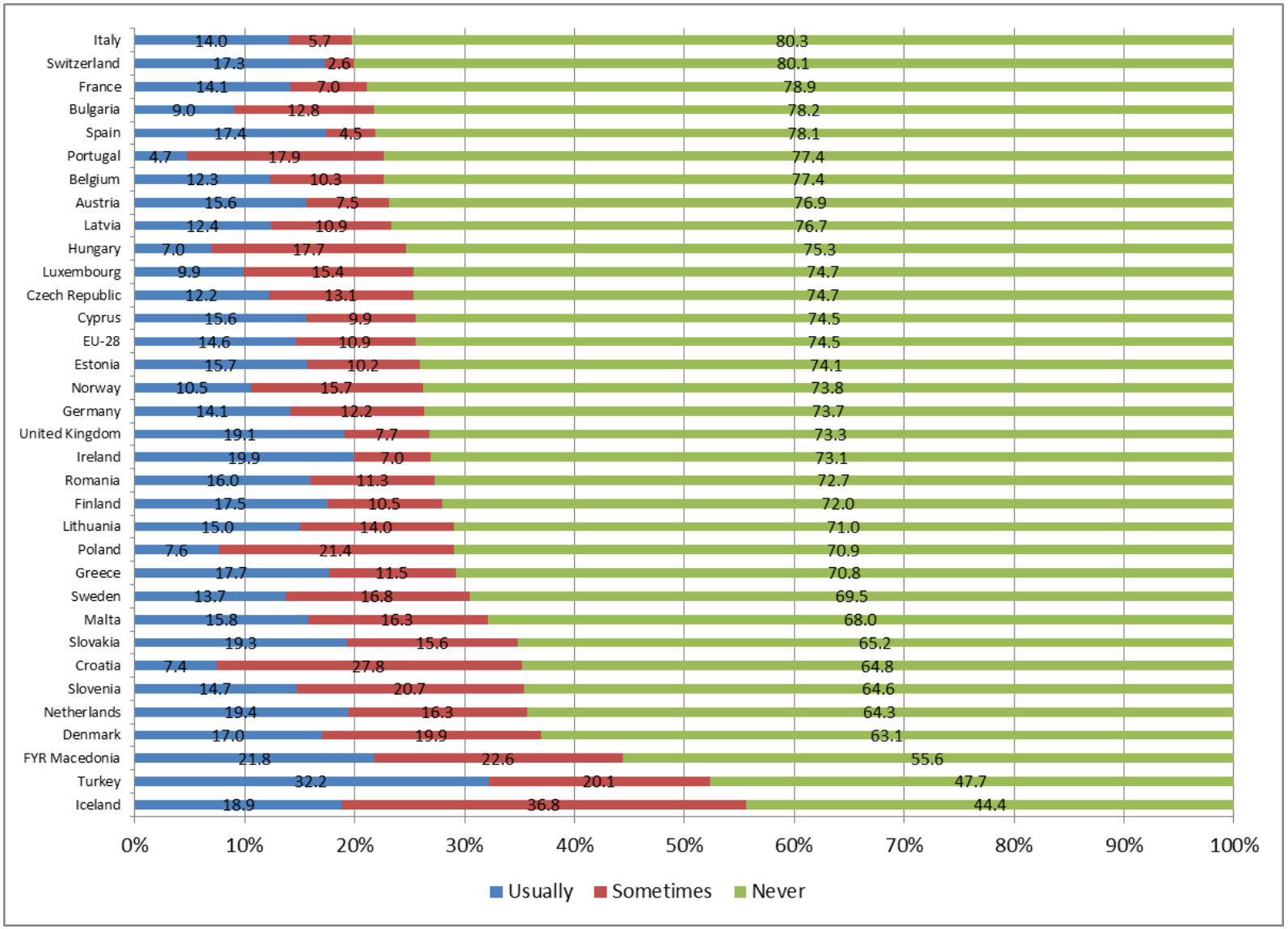


Figure 3.3 – Histogram of life satisfaction (11-point scale), n=47,110, includes all individuals scheduled to work in reference week in waves 1 and 5, observations pooled across both waves. Source: LFS (Office for National Statistics 2016a).

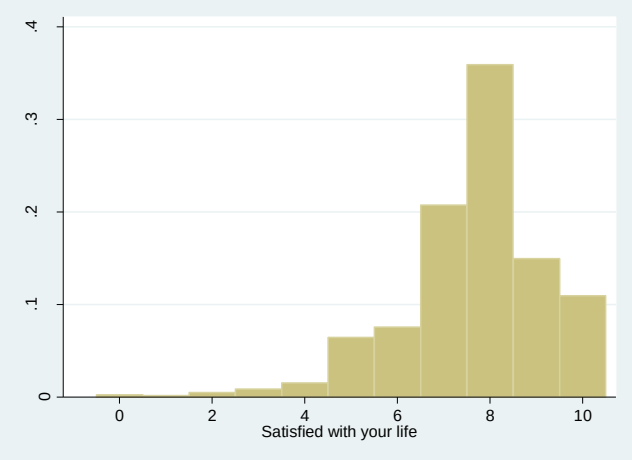


Figure 3.4 - Histogram of worthwhileness (11-point scale), n=47,054, includes all individuals scheduled to work in reference week in waves 1 and 5, observations pooled across both waves. Source: LFS (Office for National Statistics 2016a).

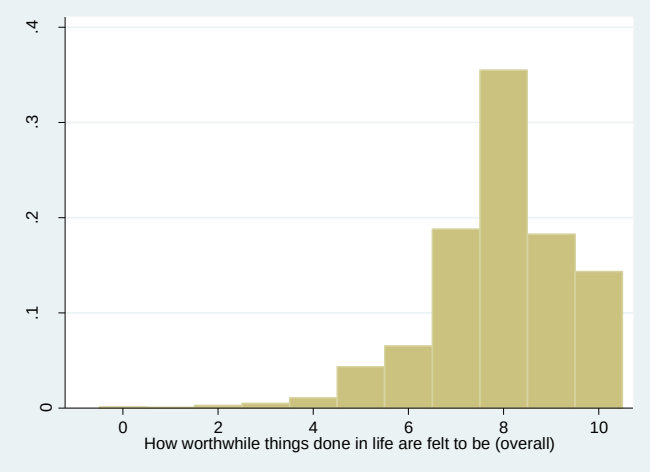


Figure 3.5 - Histogram of happiness (11-point scale), n=47,111, includes all individuals scheduled to work in reference week in waves 1 and 5, observations pooled across both waves. Source: LFS (Office for National Statistics 2016a).

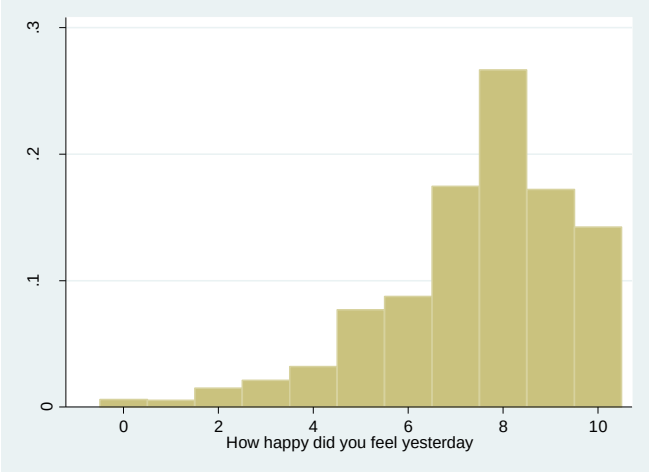


Figure 3.6 - Histogram of anxiety (11-point scale), n=43,371, includes all individuals scheduled to work in reference week in waves 1 and 5, observations pooled across both waves. Source: LFS (Office for National Statistics 2016a).

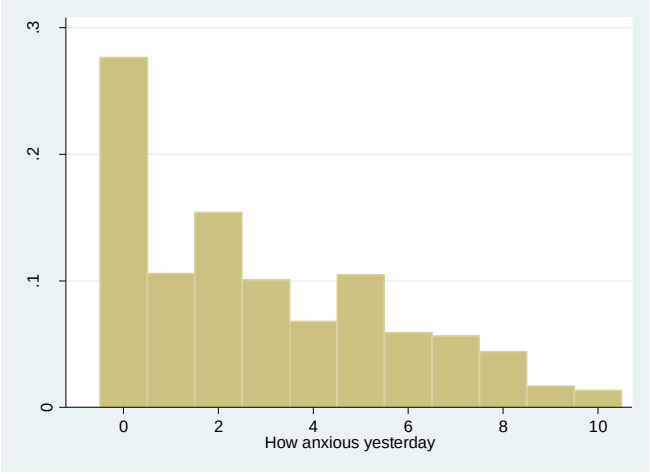


Figure 3.7 - Histogram of job satisfaction (7-point scale), no weights applied, n=41,850, includes all individuals answering the weekend working question in waves 2, 4 and 6, observations pooled across all three waves. Source: UKHLS (University of Essex 2016).

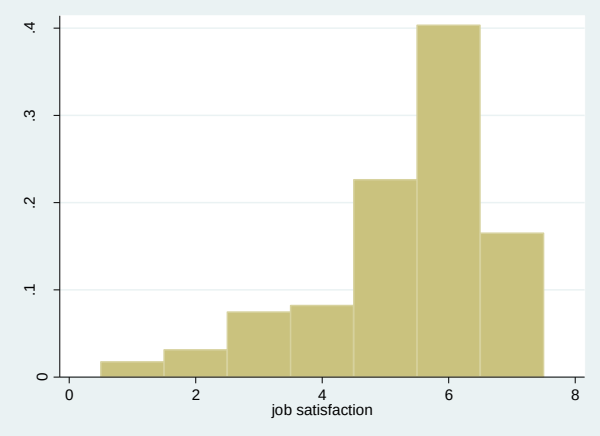


Figure 3.8 - Histogram of satisfaction with leisure time (7-point scale), no weights applied, n=39,479, includes all individuals answering the weekend working question in waves 2, 4 and 6, observations pooled across all three waves. Source: UKHLS (University of Essex 2016).

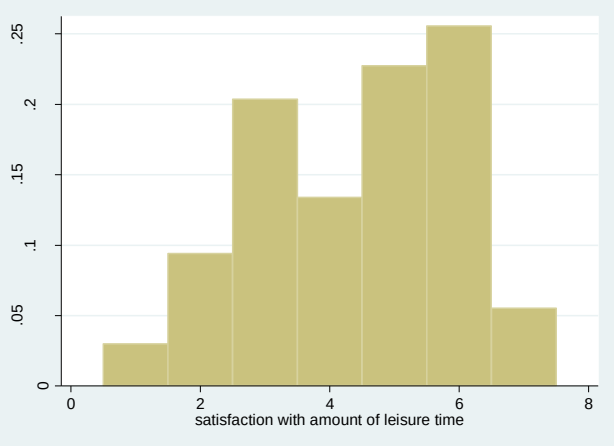


Figure 3.9 - Histogram of life satisfaction (7-point scale), no weights applied, n=39,468, includes all individuals answering the weekend working question in waves 2, 4 and 6, observations pooled across all three waves. Source: UKHLS (University of Essex 2016).

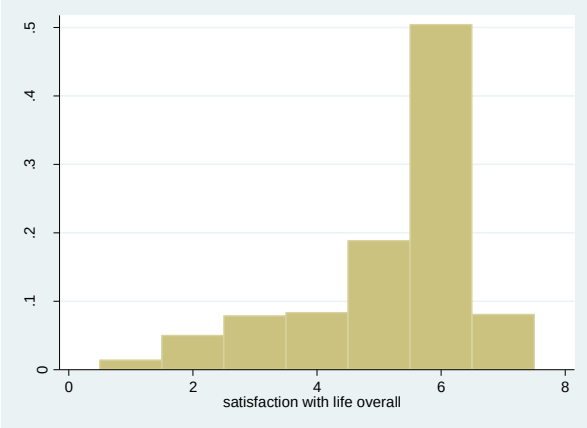


Figure 3.10 - Histogram of GHQ combined score reversed (where a higher score indicates better well-being), no weights applied, n=39,387, includes all individuals answering the weekend working question in waves 2, 4 and 6, observations pooled across all three waves. Source: UKHLS (University of Essex 2016).

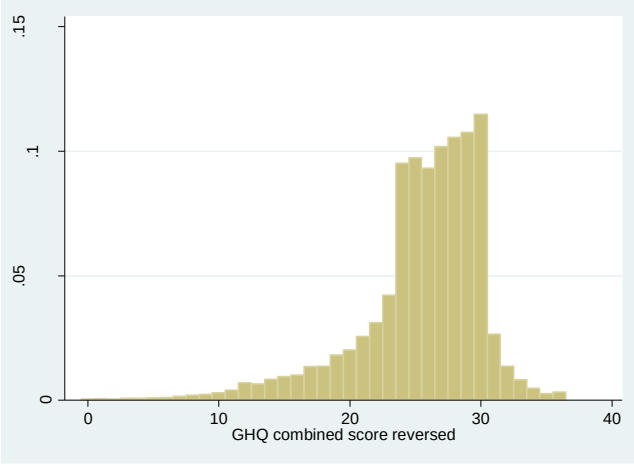


Figure 4.1 – Histogram of meaningfulness of activity, where 0 is not meaningful at all and 6 is very meaningful. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

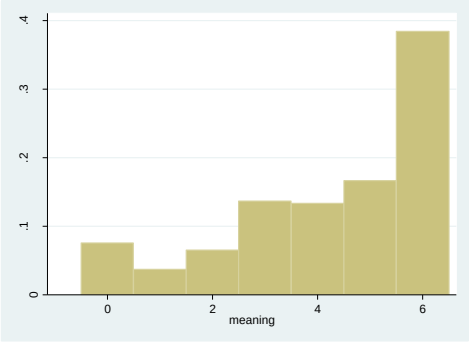


Figure 4.2 – Histogram of happiness felt during activity, where 0 is not happy at all and 6 is very happy. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

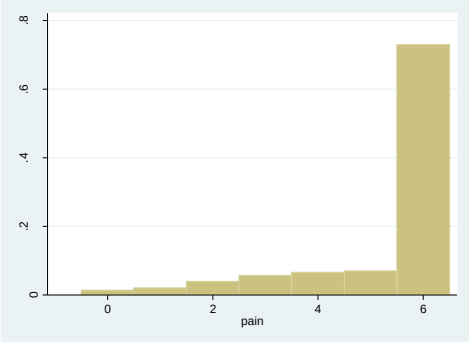


Figure 4.3 – Histogram of pain felt during activity, where 0 is very painful and 0 is no pain at all. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

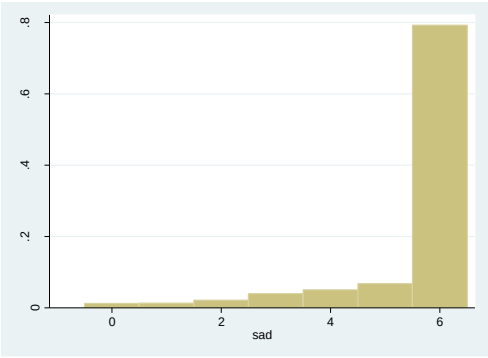


Figure 4.4 – Histogram of sadness felt during activity, where 0 is very sad and 6 is not sad at all. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

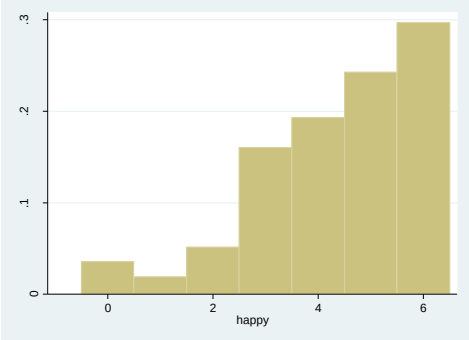


Figure 4.5 – Histogram of stress felt during activity, where 0 is very stressed and 6 is not stressed at all. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

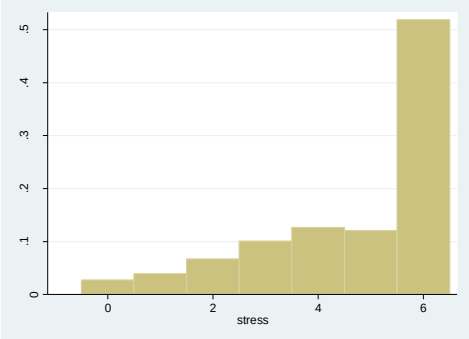


Figure 4.6 – Histogram of tiredness felt during activity, where 0 is very tired and 6 is not tired at all. Sample is all activities for which well-being questions were asked, excluding individuals that did not report well-being for three activities or were not in work. Pooled data from 2010, 2012 and 2013. N=60,165. Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

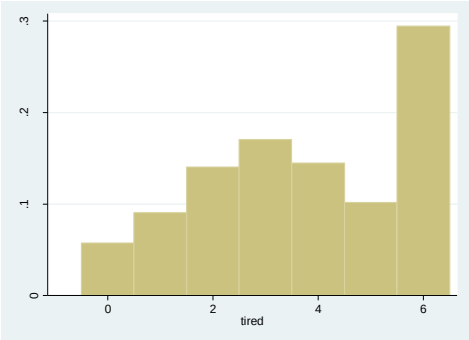


Figure 4.7 – Histogram of worthwhileness, where 0 is not at all worthwhile and 10 is completely worthwhile. Sample is all individuals aged 18-64 answering the question. Pooled data from 2011-12 to 2015-16. N=588,718. Source: APS (Office for National Statistics 2016b).

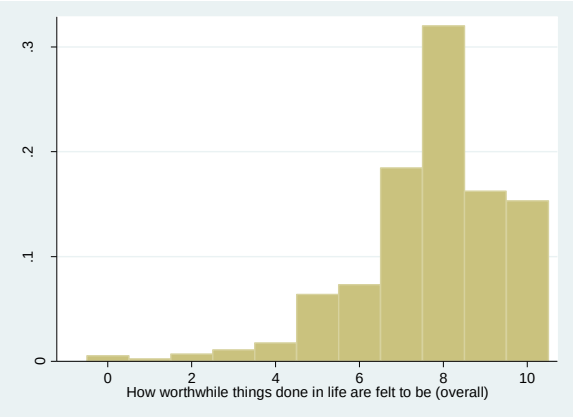


Figure 4.8 – Histogram of life satisfaction, where 0 is not at all satisfied and 10 is completely satisfied. Sample is all individuals aged 18-64 answering the question. Pooled data from 2011-12 to 2015-16. N=590,241. Source: APS (Office for National Statistics 2016b).

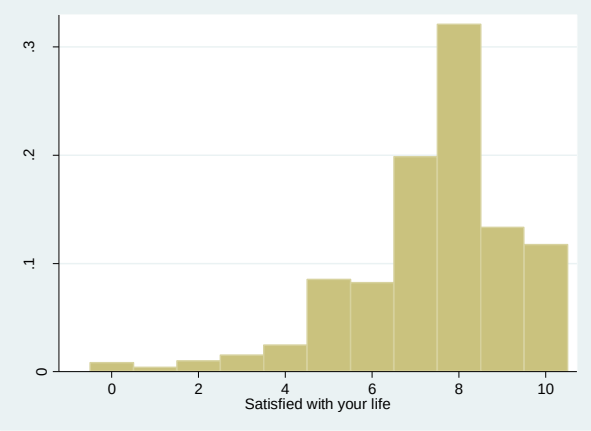


Figure 4.9 – Histogram of happiness, where 0 is not at all happy and 10 is completely happy. Sample is all individuals aged 18-64 answering the question. Pooled data from 2011-12 to 2015-16. N=590,107. Source: APS (Office for National Statistics 2016b).

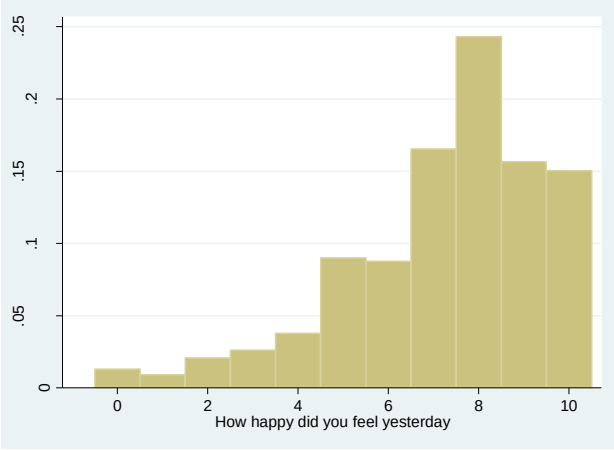


Figure 4.10 – Histogram of anxiety, where 0 is completely anxious and 10 is not at all anxious. Sample is all individuals aged 18-64 answering the question. Pooled data from 2011-12 to 2015-16. N=589,432. Source: APS (Office for National Statistics 2016b).

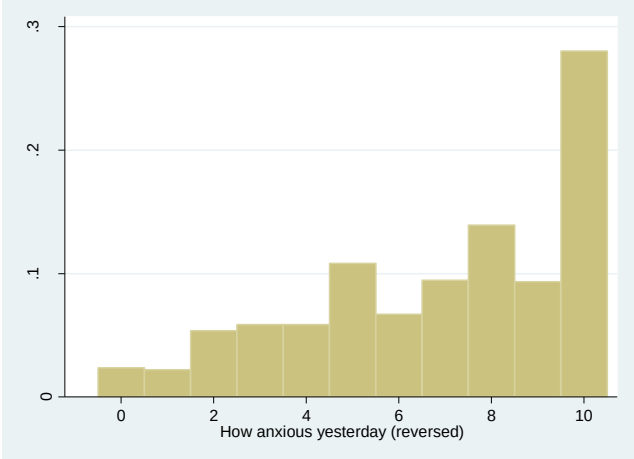


Figure 5.1 – UK employment rates (aged 16 to 64 years), seasonally adjusted, January to March 1971 to May to July 2018. Source: Labour Force Survey (Office for National Statistics 2018). Adapted from Figure 2.

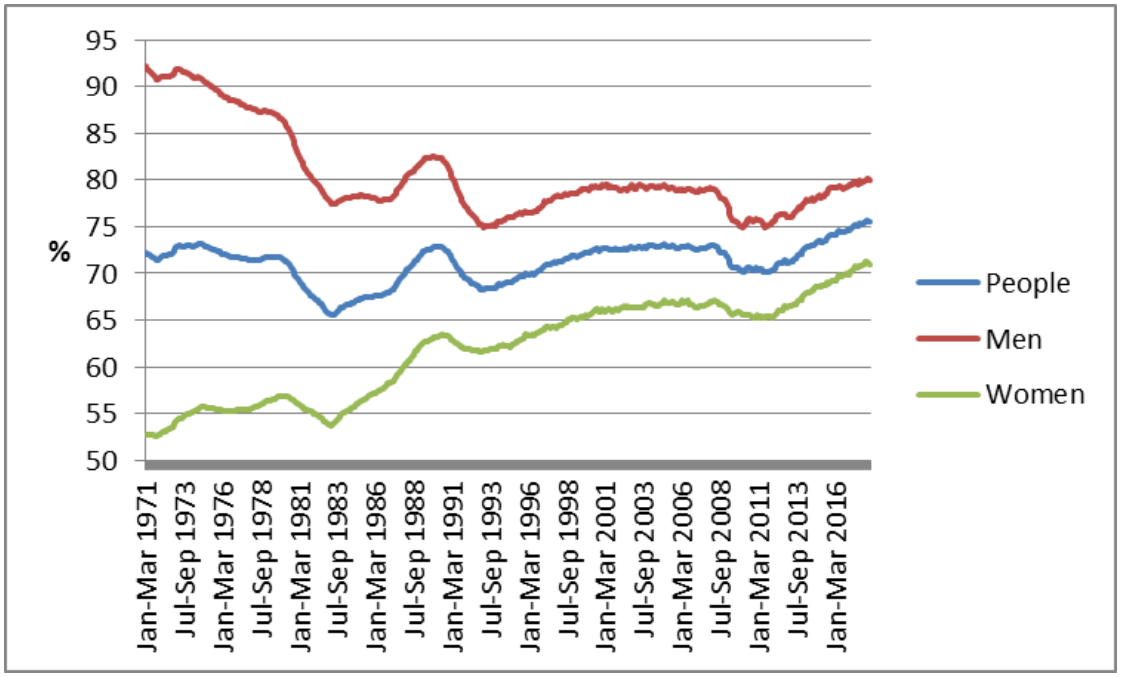


Figure 5.2 – UK economic inactivity rates (aged 16 to 64 years), seasonally adjusted, January to March 1971 to May to July 2018. Source: Labour Force Survey (Office for National Statistics 2018). Adapted from Figure 13.

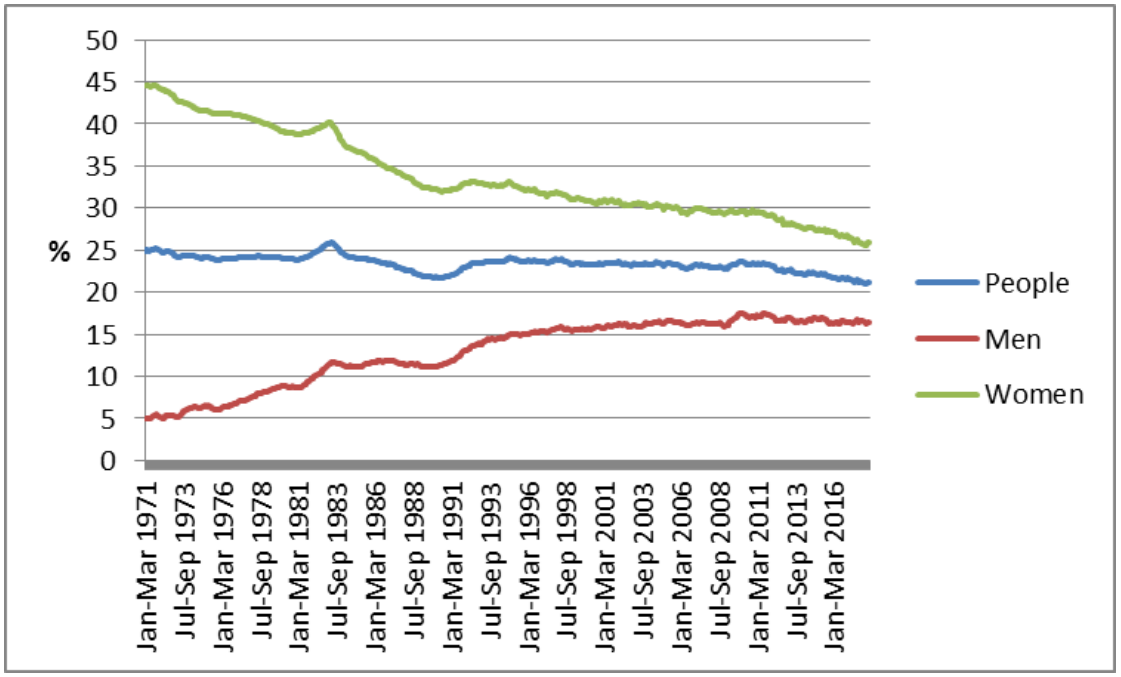


Figure 5.3 – UK unemployment rates (aged 16 years and over), seasonally adjusted, January to March 1971 to May to July 2018. Source: Labour Force Survey (Office for National Statistics 2018). Adapted from Figure 11.

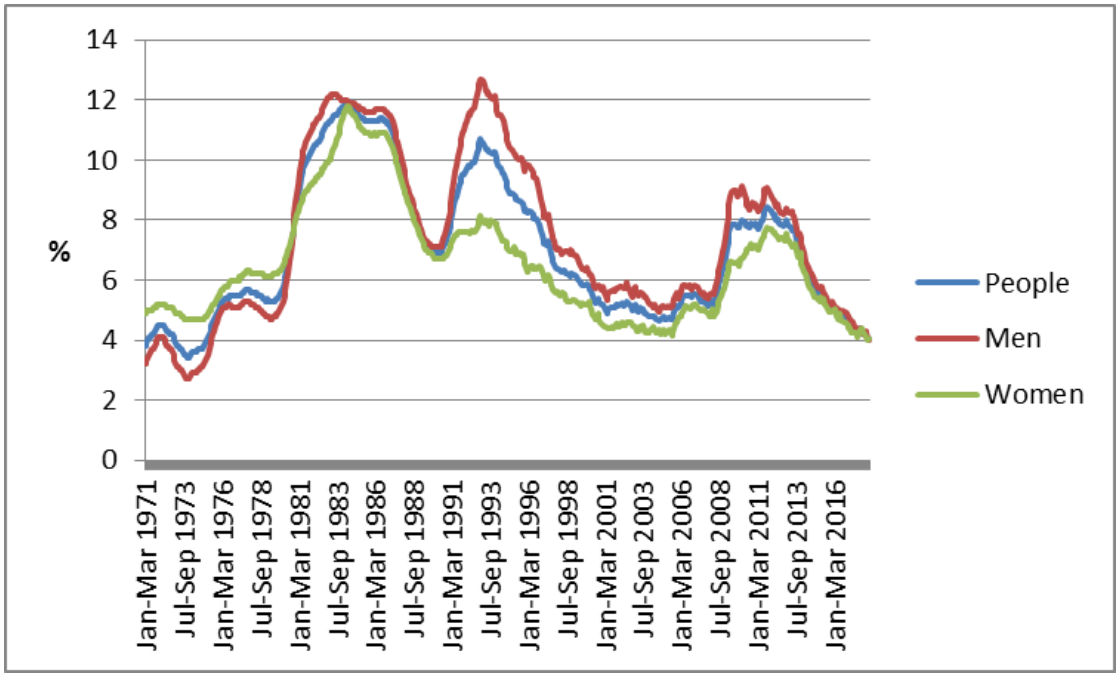


Figure 5.4 – Histogram of male partner's GHQ score reversed, conditional on both partners having a non-missing GHQ score. Pooled observations, waves 1-25. N=104,920. Source: Harmonised BHPS (University of Essex 2018).

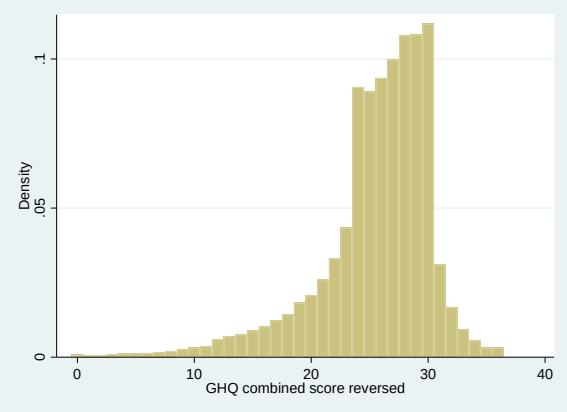


Figure 5.5 – Histogram of female partner's GHQ score reversed, conditional on both partners having a non-missing GHQ score. Pooled observations, waves 1-25. N=104,920. Source: Harmonised BHPS (University of Essex 2018).

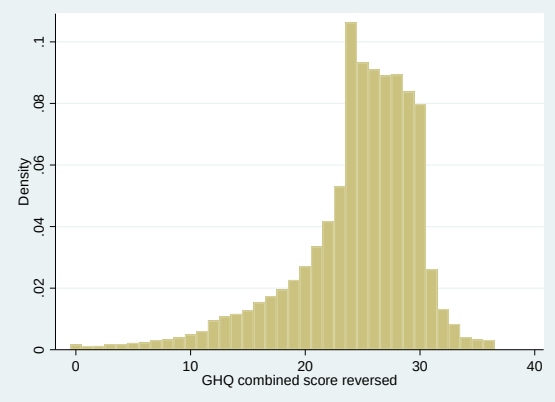


Figure 5.6 – Histogram of male partner's life satisfaction (1-7 scale), conditional on both partners having non-missing life satisfaction. Pooled observations, waves 6-25. N=89,486. Source: Harmonised BHPS (University of Essex 2018).

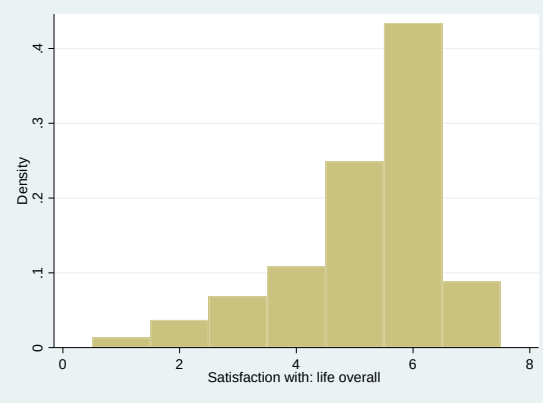
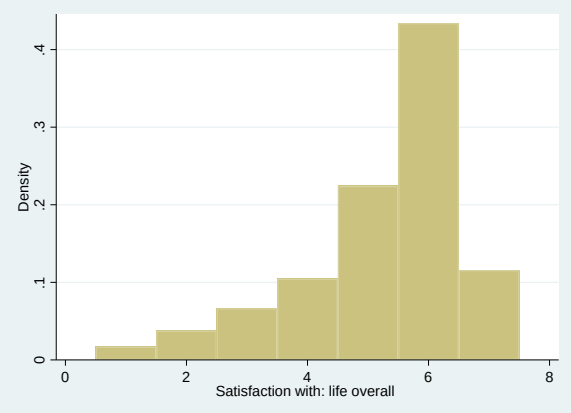


Figure 5.7 – Histogram of female partner's life satisfaction (1-7 scale), conditional on both partners having non-missing life satisfaction. Pooled observations, waves 6-25. N=89,486 Source: Harmonised BHPS (University of Essex 2018).



Tables

Table 3.1 - Weekend working in the UK by gender. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
Male	23.5	14.1	26.0	17,336
Female	18.7	11.1	21.5	16,110
Total	21.3	12.7	24.0	33,446

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.2 - Weekend working in the UK by age group. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
18-19	43.3	31.0	50.7	496
20-24	32.9	20.0	38.2	1,625
25-29	21.8	13.0	24.9	2,545
30-34	19.1	10.8	21.3	3,386
35-39	20.1	11.8	22.5	3,897
40-44	19.8	11.7	22.1	4,774
45-49	18.9	11.1	21.2	5,142
50-54	19.3	11.5	21.5	4,578
55-59	20.1	12.1	22.6	3,711
60-64	22.2	12.9	24.2	2,208
65+	25.5	17.2	28.9	1,084

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.3 - Weekend working in the UK by whether has dependent children living in the household. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
Without children	21.8	12.8	24.3	18,544
With children	20.7	12.6	23.5	14,902

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.4 - Weekend working in the UK by major occupational group. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
Managers, Directors and Senior Officials	26.9	14.1	28.6	3,694
Professional Occupations	9.3	6.5	10.7	7,104
Associate Professional and Technical Occupations	14.3	9.9	16.3	4,658
Administrative and Secretarial Occupations	8.1	3.8	9.3	4,029
Skilled Trades Occupations	28.6	15.1	30.2	3,489
Caring, Leisure and Other Service Occupations	28.3	19.5	32.9	2,910
Sales and Customer Service Occupations	42.4	25.8	50.5	2,350
Process, Plant and Machine Operatives	28.5	15.3	32.4	2,139
Elementary Occupations	33.6	20.6	37.9	3,052

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.5 - Weekend working in the UK by major industrial sector. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
Agriculture, forestry and fishing	63.8	55.4	65.6	391
Energy and water	16.3	9.5	17.4	640
Manufacturing	11.5	7.3	13.4	3,617
Construction	16.4	5.7	17.1	2,420
Distribution, hotels and restaurants	45.3	25.1	50.8	5,511
Transport and communication	23.8	13.4	27.1	2,875
Banking and finance	13.1	6.9	14.4	5,350
Public admin, education and health	13.0	10.2	15.2	10,906
Other services	36.8	19.2	24.0	1,694

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.6 - Weekend working in the UK by job type. Source: LFS, Jan 12 – Sep 13 (Office for National Statistics 2016a).

	Scheduled to work on Saturday (%)	Scheduled to work on Sunday (%)	Scheduled to work on weekend (%)	Unweighted N
Employee	18.8	11.6	21.6	28,809
Self Employed	36.8	19.7	38.6	4,576
Permanent	18.9	11.6	21.7	27,604
Temporary	16.7	11.8	19.7	1,201
Full time	21.1	12.4	23.2	25,028
Part time	21.9	13.8	26.2	8,405
Private sector	24.9	14.2	27.8	24,618
Public sector	10.8	8.4	12.6	8,740

Weighted data. Sample includes all individuals scheduled to work in the reference week. Pooled data from 2012 Q1 to 2013 Q3, wave 1 responses only.

Table 3.7 - Cross-tabulation of Saturday working variable in LFS waves 1 and 5. Source: LFS (Office for National Statistics 2016a).

	Scheduled to work Saturday in W5	Not scheduled to work Saturday in W5	Total
Scheduled to work Saturday in W1	4,176	1,815	5,991
	(13.6%)	(5.9%)	(19.5%)
Not scheduled to work Saturday in W1	2,231	22,506	24,737
	(7.3%)	(73.2%)	(80.5%)
Total	6,407	24,321	30,728
	(20.9%)	(79.1%)	(100.0%)

Unweighted data. Sample includes all individuals scheduled to work in the reference week in both waves 1 and 5, pooled across all individuals with a wave 5 interview between January 2013 and September 2014.

Table 3.8 - Cross-tabulation of Sunday working variable in LFS waves 1 and 5. Source: LFS (Office for National Statistics 2016a).

	Scheduled to work Sunday in W5	Not scheduled to work Sunday in W5	Total
Scheduled to work Sunday in W1	2,133	1,367	3,500
	(6.9%)	(4.4%)	(11.4%)
Not scheduled to work Sunday in W1	1,615	25,613	27,228
	(5.3%)	(83.3%)	(88.6%)
Total	3,748	26,980	30,728
	(12.2%)	(87.8%)	(100.0%)

Unweighted data. Sample includes all individuals scheduled to work in the reference week in both waves 1 and 5, pooled across all individuals with a wave 5 interview between January 2013 and September 2014.

Table 3.9 - Cross-tabulation of weekend working variable in LFS waves 1 and 5. Source: LFS (Office for National Statistics 2016a).

	Scheduled to work weekend in W5	Not scheduled to work weekend in W5	Total
Scheduled to work weekend in W1	4,953	1,848	6,801
	(16.1%)	(6.0%)	(22.1%)
Not scheduled to work weekend in W1	2,252	21,675	23,927
	(7.3%)	(70.5%)	(77.9%)
Total	7,205	23,523	30,728
	(23.4%)	(76.6%)	(100.0%)

Unweighted data. Sample includes all individuals scheduled to work in the reference week in both waves 1 and 5, pooled across all individuals with a wave 5 interview between January 2013 and September 2014.

Table 3.10 - Cross-tabulation of weekend working variable (binary recoding) in UKHLS waves 2, 4 and 6. Source: UKHLS (University of Essex 2016).

	Any weekend working in W2		No weekend working in W2	
	Any weekend working in W4	No weekend working in W4	Any weekend working in W4	No weekend working in W4
Any weekend working in W6	5,612	635	942	859
	(40.2%)	(4.5%)	(6.7%)	(6.2%)
No weekend working in W6	803	787	530	3,795
	(5.8%)	(5.6%)	(3.8%)	(27.2%)

Unweighted data. Sample includes all individuals that answered the weekend working question in waves 2, 4 and 6.

Table 3.11 - Mean well-being scores by weekend working status – LFS. Source: LFS (Office for National Statistics 2016a).

	Satisfied	Worthwhile	Happy	Anxious
Does not work weekends	7.66	7.90	7.47	2.92
Works weekends	7.55	7.85	7.40	2.86
F-statistic to test whether difference $\neq 0$	27.00***	6.37**	7.37***	3.43*
N	38,033	37,986	38,028	34,950
Does not work Saturdays	7.65	7.90	7.47	2.92
Works Saturdays	7.55	7.85	7.41	2.86
F-statistic to test whether difference $\neq 0$	21.71***	5.57**	5.25**	2.81*
N	38,033	37,986	38,028	34,950
Does not work Sundays	7.65	7.90	7.47	2.91
Works Sundays	7.50	7.86	7.35	2.90
F-statistic to test whether difference $\neq 0$	30.26***	2.63	12.23***	0.06
N	38,033	37,986	38,028	34,950

*Unweighted data. Pooled from waves 1 and 5. F-statistic from adjusted Wald test; probability that subgroups have equal means: ***p<1%; **p<5%; *p<10%.*

Table 3.12 - Mean well-being scores by weekend working status – UKHLS. Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ reversed
Does not work weekends	5.32	4.54	5.27	25.54
Works weekends	5.35	4.33	5.18	25.45
F-statistic to test whether difference $\neq 0$	7.39***	182.22***	41.42***	3.54*
N	41,850	39,479	39,468	39,387

*Unweighted data. Pooled from waves 2, 4 and 6. F-statistic from adjusted Wald test; probability that difference is zero: ***p<1%; **p<5%; *p<10%.*

Table 3.13 - Means of explanatory variables – LFS (pooled). Source: LFS (Office for National Statistics 2016a).

	Mean	N
Weekend working	0.228	61,456
Saturday working	0.202	61,456
Sunday working	0.118	61,456
Married/partnered	0.733	61,456
Whether has dependent children in household	0.440	61,456
Self-assessed health on five-point scale	4.315	60,931
Log of net personal income in pounds	5.710	40,404
Working hours (main and second job)	35.553	60,765
Temporary employment status	0.041	53,056
Public sector	0.260	61,299

Table 3.14 - Means of explanatory variables – UKHLS (pooled). Source: UKHLS (University of Essex 2016).

	Mean	N
Weekend working	0.567	41,889
Married/partnered	0.756	41,889
Carer status	0.047	37,379
Whether has children in household	0.404	41,889
Self-assessed health on five-point scale	3.707	39,606
Log of net personal income in pounds	7.329	41,764
Working hours, including overtime	37.012	40,997
Self-employment status	0.134	41,877
Temporary employment status	0.056	41,833
Daytime working	0.727	41,884

Table 3.15 – Pooled OLS regression results (LFS). Source: LFS (Office for National Statistics 2016a).

	Satisfaction			Worthwhile			Happy			Anxious		
Weekend	-0.052**			0.005			-0.029			-0.036		
	(0.022)			(0.021)			(0.029)			(0.043)		
Saturday		-0.055**			-0.001			-0.031			-0.003	
		(0.023)			(0.023)			(0.031)			(0.045)	
Sunday			-0.104***			0.004			-0.077**			0.001
			(0.028)			(0.027)			(0.037)**			(0.054)
Female	0.096***	0.096***	0.096***	0.240***	0.240***	0.240***	0.049*	0.049*	0.049*	0.330***	0.330***	0.330***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.026)	(0.026)	(0.026)	(0.037)	(0.037)	(0.037)
Married	0.622***	0.623***	0.621***	0.341***	0.340***	0.340***	0.414***	0.414***	0.413***	-0.119***	-0.118***	-0.118***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.025)	(0.025)	(0.025)	(0.037)	(0.037)	(0.037)
Children	-0.012	-0.012	-0.011	0.163***	0.163***	0.163***	0.008	0.007	0.008	0.017	0.017	0.017
	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)	(0.026)	(0.026)	(0.026)	(0.038)	(0.038)	(0.038)
Health	0.495***	0.495***	0.495***	0.359***	0.359***	0.359***	0.534***	0.534***	0.534***	-0.666***	-0.666***	-0.666***
	(0.012)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.015)	(0.015)	(0.015)	(0.022)	(0.022)	(0.022)
Income	0.132***	0.132***	0.132***	0.064***	0.063***	0.063***	0.003	0.003	0.002	-0.035	-0.031	-0.031
	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)	(0.023)	(0.023)	(0.023)	(0.034)	(0.034)	(0.034)
Degree	-0.087*	-0.086*	-0.087*	0.036	0.035	0.036	-0.011	-0.011	-0.013	0.497***	0.502***	0.502***
	(0.046)	(0.046)	(0.046)	(0.044)	(0.044)	(0.044)	(0.061)	(0.061)	(0.061)	(0.089)	(0.089)	(0.089)
Higher Ed	0.003	0.003	0.004	0.108**	0.108**	0.108**	0.028	0.028	0.028	0.334***	0.337***	0.338***
	(0.048)	(0.048)	(0.048)	(0.047)	(0.047)	(0.047)	(0.064)	(0.064)	(0.064)	(0.093)	(0.093)	(0.093)
A-level	-0.026	-0.026	-0.026	0.057	0.057	0.057	-0.000	-0.000	-0.001	0.181**	0.183**	0.183**
	(0.045)	(0.045)	(0.045)	(0.043)	(0.043)	(0.043)	(0.060)	(0.060)	(0.060)	(0.087)	(0.087)	(0.087)
GCSE	-0.059	-0.058	-0.059	-0.025	-0.026	-0.025	-0.014	-0.014	-0.015	0.194**	0.195**	0.195**
	(0.045)	(0.045)	(0.045)	(0.043)	(0.043)	(0.043)	(0.060)	(0.060)	(0.060)	(0.087)	(0.087)	(0.087)
Other qual	-0.027	-0.027	-0.026	-0.031	-0.031	-0.031	0.017	0.016	0.017	0.262***	0.262***	0.262***
	(0.052)	(0.052)	(0.052)	(0.050)	(0.050)	(0.050)	(0.068)	(0.068)	(0.068)	(0.099)	(0.099)	(0.099)
Age	-0.098***	-0.098***	-0.098***	-0.068***	-0.068***	-0.068***	-0.054***	-0.054***	-0.054***	0.062***	0.062***	0.062***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.008)	(0.008)	(0.008)	(0.011)	(0.011)	(0.011)
Age square	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BME	-0.189***	-0.189***	-0.187***	-0.044	-0.043	-0.044	0.135***	0.135***	0.137***	0.127*	0.125*	0.124*
	(0.034)	(0.034)	(0.034)	(0.033)	(0.033)	(0.033)	(0.045)	(0.045)	(0.045)	(0.066)	(0.066)	(0.066)
Pub sector	0.054***	0.055***	0.056***	0.155***	0.155***	0.155***	0.017	0.018	0.018	-0.048	-0.046	-0.046
	(0.019)	(0.019)	(0.019)	(0.018)	(0.018)	(0.018)	(0.025)	(0.025)	(0.025)	(0.037)	(0.037)	(0.037)
Temp job	-0.089**	-0.089**	-0.088**	-0.065	-0.065	-0.065	-0.146**	-0.146**	-0.146**	0.009	0.011	0.011
	(0.044)	(0.044)	(0.044)	(0.042)	(0.042)	(0.042)	(0.057)	(0.057)	(0.057)	(0.083)	(0.083)	(0.083)
Hours	-0.002**	-0.002**	-0.002**	-0.001	-0.001	-0.001	-0.002**	-0.002**	-0.002**	0.006***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	6.432***	6.426***	6.433***	6.641***	6.647***	6.644***	5.858***	5.854***	5.869***	4.068***	4.031***	4.027***
	(0.146)	(0.145)	(0.145)	(0.140)	(0.140)	(0.139)	(0.193)	(0.192)	(0.191)	(0.279)	(0.278)	(0.276)
N	29,224	29,224	29,224	29,194	29,194	29,194	29,222	29,222	29,222	26,828	26,828	26,828

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.16 – Pooled OLS regression results (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.042**	-0.108***	-0.057***	-0.214***
	(0.016)	(0.018)	(0.016)	(0.055)
Female	0.175***	-0.215***	0.036**	-0.896***
	(0.016)	(0.018)	(0.016)	(0.055)
Married	0.032	0.079***	0.420***	0.431***
	(0.021)	(0.024)	(0.021)	(0.073)
Carer	0.012	-0.170***	-0.191***	-0.543***
	(0.034)	(0.038)	(0.034)	(0.117)
Health	0.233***	0.316***	0.321***	1.604***
	(0.008)	(0.009)	(0.008)	(0.027)
Log income	0.116***	0.046***	0.105***	0.159***
	(0.013)	(0.015)	(0.013)	(0.044)
Children	0.045***	-0.356***	-0.061***	-0.156***
	(0.017)	(0.019)	(0.016)	(0.057)
Age	-0.046***	-0.047***	-0.062***	-0.167***
	(0.005)	(0.005)	(0.004)	(0.015)
Age squared	0.001***	0.001***	0.001***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Degree	-0.267***	-0.024	0.119***	-0.638***
	(0.040)	(0.045)	(0.039)	(0.135)
Other higher	-0.194***	0.046	0.109***	-0.454***
	(0.042)	(0.047)	(0.041)	(0.142)
A-level	-0.214***	0.017	0.100**	-0.343**
	(0.040)	(0.045)	(0.039)	(0.137)
GCSE	-0.174***	0.048	0.083**	-0.247*
	(0.040)	(0.045)	(0.039)	(0.136)
Other qual	-0.042	0.021	0.037	-0.012
	(0.045)	(0.051)	(0.044)	(0.154)
Hours	-0.002***	-0.023***	-0.003***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.002)
Temporary job	-0.142***	-0.086**	-0.096***	-0.288***
	(0.032)	(0.036)	(0.031)	(0.109)
Self-employed	0.411***	0.018	-0.003	0.350***
	(0.023)	(0.025)	(0.022)	(0.077)
Daytime	0.042**	0.061***	0.041**	0.034
	(0.018)	(0.020)	(0.017)	(0.060)
Constant	4.459***	4.852***	4.317***	22.654***
	(0.128)	(0.142)	(0.125)	(0.432)
N	34,417	34,321	34,314	34,236

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.17 – Fixed effects OLS regression results (LFS). Source: LFS (Office for National Statistics 2016a).

	Satisfaction			Worthwhile			Happy			Anxious		
Weekend	-0.014			0.050			-0.185***			0.070		
	(0.042)			(0.041)			(0.066)			(0.099)		
Saturday		-0.023			0.026			-0.165**			0.115	
		(0.043)			(0.041)			(0.067)			(0.101)	
Sunday			-0.021			0.029			-0.101			-0.107
			(0.048)			(0.046)			(0.076)			(0.113)
Married	0.503***	0.503***	0.503***	0.198**	0.198**	0.198**	0.455***	0.456***	0.457***	-0.097	-0.097	-0.103
	(0.099)	(0.099)	(0.099)	(0.095)	(0.095)	(0.095)	(0.155)	(0.155)	(0.155)	(0.242)	(0.242)	(0.242)
Children	0.038	0.038	0.037	-0.008	-0.007	-0.007	-0.068	-0.068	-0.073	-0.027	-0.027	-0.025
	(0.075)	(0.075)	(0.075)	(0.072)	(0.072)	(0.072)	(0.119)	(0.119)	(0.119)	(0.179)	(0.179)	(0.179)
Health	0.207***	0.207***	0.207***	0.126***	0.126***	0.126***	0.252***	0.251***	0.251***	-0.326***	-0.327***	-0.326***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.037)	(0.037)	(0.037)	(0.055)	(0.055)	(0.055)
Income	-0.012	-0.012	-0.011	0.009	0.008	0.008	-0.008	-0.006	-0.006	0.009	0.009	0.008
	(0.043)	(0.043)	(0.043)	(0.042)	(0.042)	(0.042)	(0.068)	(0.068)	(0.068)	(0.101)	(0.101)	(0.101)
Pub sector	0.163**	0.162**	0.163**	0.071	0.069	0.069	0.221*	0.225*	0.227*	-0.125	-0.124	-0.133
	(0.077)	(0.077)	(0.077)	(0.075)	(0.075)	(0.075)	(0.122)	(0.122)	(0.122)	(0.181)	(0.181)	(0.181)
Quality	-0.055*	-0.055*	-0.055*	-0.038	-0.037	-0.038	0.073	0.071	0.070	-0.101	-0.101	-0.096
	(0.033)	(0.033)	(0.033)	(0.032)	(0.031)	(0.032)	(0.052)	(0.052)	(0.052)	(0.077)	(0.077)	(0.077)
Temp job	-0.025	-0.025	-0.025	0.014	0.014	0.014	-0.119	-0.118	-0.119	-0.047	-0.048	-0.047
	(0.076)	(0.076)	(0.076)	(0.074)	(0.074)	(0.074)	(0.120)	(0.120)	(0.120)	(0.180)	(0.180)	(0.180)
New job	0.029**	0.029**	0.029**	-0.003	-0.003	-0.003	0.008	0.008	0.009	0.001	0.001	-0.001
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.023)	(0.023)	(0.023)	(0.034)	(0.034)	(0.034)
Hours	0.003***	0.003***	0.003***	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.005*	0.005*	0.005*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Constant	6.263***	6.263***	6.262***	7.123***	7.131***	7.131***	6.084***	6.063***	6.055***	4.231***	4.230***	4.256***
	(0.273)	(0.273)	(0.273)	(0.263)	(0.263)	(0.263)	(0.430)	(0.430)	(0.430)	(0.639)	(0.639)	(0.639)
N	29,236	29,236	29,236	29,206	29,206	29,206	29,234	29,234	29,234	26,839	26,839	26,839

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.18 – Fixed effects OLS regression results (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.048*	-0.094***	-0.023	-0.233***
	(0.026)	(0.028)	(0.026)	(0.085)
Married	-0.108**	0.028	0.188***	0.127
	(0.054)	(0.059)	(0.054)	(0.180)
Carer	-0.062	-0.007	-0.022	-0.436**
	(0.060)	(0.066)	(0.060)	(0.200)
Health	0.111***	0.112***	0.142***	1.039***
	(0.014)	(0.015)	(0.014)	(0.047)
Log income	0.055**	-0.013	0.002	0.095
	(0.026)	(0.029)	(0.026)	(0.088)
Children	0.032	-0.208***	-0.037	-0.170
	(0.035)	(0.038)	(0.035)	(0.116)
Hours	-0.003***	-0.016***	0.000	-0.016***
	(0.001)	(0.001)	(0.001)	(0.004)
Temporary job	-0.034	0.005	-0.018	-0.227
	(0.046)	(0.050)	(0.045)	(0.152)
Self-employed	0.413***	0.147*	0.067	0.848***
	(0.070)	(0.077)	(0.070)	(0.233)
Daytime	0.018	0.072**	0.009	0.013
	(0.029)	(0.032)	(0.029)	(0.097)
New job 1	0.272***	-0.000	-0.106***	0.298***
	(0.030)	(0.033)	(0.030)	(0.099)
New job 2	0.359***	0.142***	0.144***	0.459***
	(0.031)	(0.033)	(0.030)	(0.102)
Quality	0.026	0.034	0.040	-0.185**
	(0.025)	(0.028)	(0.025)	(0.085)
Constant	4.568***	4.707***	4.565***	21.486***
	(0.205)	(0.225)	(0.204)	(0.683)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.19 – Fixed effects OLS regression results with gender interaction (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.096***	-0.092**	-0.004	-0.269**
	(0.037)	(0.040)	(0.036)	(0.122)
Female * Weekend	-0.092*	-0.003	-0.036	0.071
	(0.050)	(0.055)	(0.050)	(0.168)
N	29,967	29,884	29,878	29,805

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. The same set of control variables are used as in Table 3.18 above but the coefficients pertaining to these covariants are not shown.*

Table 3.20 – Robustness check: Sensitivity of weekend working coefficient to change in definition of covariates (LFS). Source: LFS (Office for National Statistics 2016a).

	OLS fixed effects weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model – Table 3.17	-0.014	0.050	-0.185***	0.070
	(0.042)	(0.041)	(0.066)	(0.099)
N	29,236	29,206	29,234	26,839
Hours expressed as dummy (full time / part time)	-0.006	0.047	-0.191***	0.086
	(0.042)	(0.040)	(0.066)	(0.098)
N	29,327	29,296	29,324	26,923
Hours expressed as quadratic	-0.004	0.055	-0.171**	0.040
	(0.042)	(0.041)	(0.067)	(0.099)
N	29,236	29,206	29,234	26,839

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.21 – Robustness check: Sensitivity of fixed effects weekend working coefficient to change in definition of covariates (UKHLS). Source: UKHLS (University of Essex 2016).

	OLS fixed effects weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table 3.18	0.048*	-0.094***	-0.023	-0.233***
	(0.026)	(0.028)	(0.026)	(0.085)
N	29,968	29,885	29,879	29,806
Health defined as dummy (disabled / not disabled)	0.042*	-0.094***	-0.024	-0.239***
	(0.025)	(0.028)	(0.026)	(0.087)
N	31,732	29,892	29,886	29,814
Inclusion of housework and commuting time	0.038	-0.088***	-0.014	-0.251***
	(0.027)	(0.029)	(0.027)	(0.089)
N	27,912	27,835	27,828	27,762
Hours expressed as dummy (full time / part time)	0.042*	-0.129***	-0.029	-0.285***
	(0.025)	(0.028)	(0.025)	(0.084)
N	30,552	30,468	30,462	30,389
Hours expressed as quadratic	0.046*	-0.094***	-0.025	-0.237***
	(0.026)	(0.028)	(0.026)	(0.085)
N	29,968	29,885	29,879	29,806
New job only includes those changing employer	0.054**	-0.096***	-0.026	-0.221***
	(0.026)	(0.028)	(0.026)	(0.086)
N	29,831	29,748	29,742	29,669
New job only includes those changing workplace	0.052**	-0.096***	-0.023	-0.217**
	(0.026)	(0.028)	(0.026)	(0.086)
N	29,906	29,823	29,817	29,744

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.22 – Robustness check: Sensitivity of weekend working coefficient to inclusion of interaction terms (LFS). Source: LFS (Office for National Statistics 2016a).

	OLS fixed effects weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model –Table 3.17				
Weekend working	-0.014	0.050	-0.185***	0.070
	(0.042)	(0.041)	(0.066)	(0.099)
N	29,236	29,206	29,234	26,839
Child interaction				
Weekend working	-0.004	0.097*	-0.222***	0.037
	(0.052)	(0.051)	(0.083)	(0.123)
Children	0.044	0.020	-0.090	-0.047
	(0.078)	(0.075)	(0.122)	(0.185)
Children * Weekend working	-0.028	-0.119	0.094	0.083
	(0.080)	(0.077)	(0.126)	(0.189)
N	29,236	29,206	29,234	26,839
Age group interaction				
Weekend working	-0.116*	0.083	-0.309***	0.030
	(0.070)	(0.068)	(0.111)	(0.164)
Older age (45+)	-0.052	0.023	0.018	-0.249
	(0.095)	(0.092)	(0.149)	(0.226)
Older age * Weekend working	0.154*	-0.049	0.187	0.060
	(0.085)	(0.082)	(0.134)	(0.199)
N	29,236	29,206	29,234	26,839

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.23 – Robustness check: Sensitivity of weekend working coefficient to inclusion of interaction terms (UKHLS). Source: UKHLS (University of Essex 2016).

	OLS fixed effects weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table 3.18				
Weekend working	0.048*	-0.094***	-0.023	-0.233***
	(0.026)	(0.028)	(0.026)	(0.085)
N	29,968	29,885	29,879	29,806
Child interaction				
Weekend working	0.053	-0.102***	-0.035	-0.235**
	(0.033)	(0.036)	(0.033)	(0.110)
Children	0.039	-0.217***	-0.051	-0.172
	(0.042)	(0.046)	(0.042)	(0.140)
Children * Weekend working	-0.012	0.018	0.025	0.004
	(0.045)	(0.049)	(0.045)	(0.149)
N	29,968	29,885	29,879	29,806
Age group interaction				
Weekend working	0.109***	-0.073*	-0.037	-0.105
	(0.036)	(0.039)	(0.036)	(0.120)
Older age (45+)	0.208***	-0.045	-0.018	0.101
	(0.046)	(0.050)	(0.046)	(0.153)
Older age * Weekend working	-0.113**	-0.037	0.025	-0.232
	(0.046)	(0.050)	(0.045)	(0.152)
N	29,968	29,885	29,879	29,806
Autonomy at work interaction				
Weekend working	0.039	-0.084**	-0.002	-0.194*
	(0.033)	(0.036)	(0.033)	(0.109)
Autonomy at work	0.234***	0.072**	0.074**	0.542***
	(0.029)	(0.032)	(0.029)	(0.098)
Autonomy at work * Weekend working	0.010	-0.020	-0.040	-0.086
	(0.038)	(0.042)	(0.038)	(0.128)
N	29,968	29,885	29,879	29,806
Working hours autonomy interaction				
Weekend working	0.062*	-0.054	0.017	-0.190*
	(0.033)	(0.036)	(0.033)	(0.109)
Working hours autonomy	0.174***	0.067**	0.075**	0.203**
	(0.031)	(0.034)	(0.031)	(0.103)
Working hours autonomy * Weekend working	-0.033	-0.077*	-0.078**	-0.090
	(0.040)	(0.043)	(0.039)	(0.132)
N	29,968	29,885	29,879	29,806
Depressed at work interaction				
Weekend working	0.064**	-0.070**	0.004	-0.172*
	(0.031)	(0.035)	(0.032)	(0.103)
Depressed at work	-0.721***	-0.266***	-0.239***	-2.093***
	(0.028)	(0.031)	(0.028)	(0.093)
Depressed at work * Weekend working	0.027	-0.024	-0.033	0.053
	(0.036)	(0.041)	(0.037)	(0.122)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix B for details about the interaction terms.*

Table 3.24 – Robustness check: Sensitivity of weekend working coefficient to change in definition of weekend working (UKHLS). Source: UKHLS (University of Essex 2016).

	OLS fixed effects weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table 3.18 (most/every/some vs none)	0.048*	-0.094***	-0.023	-0.233***
	(0.026)	(0.028)	(0.026)	(0.085)
N	29,968	29,885	29,879	29,806
Alternative model (most/every vs some/none)	-0.025	-0.127***	0.015	0.098
	(0.031)	(0.034)	(0.031)	(0.104)
N	29,968	29,885	29,879	29,806
*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*				

Table 3.25 – Robustness check: Sensitivity of weekend working coefficient to change in sample (LFS). Source: LFS (Office for National Statistics 2016a).

	OLS fixed effects weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model –Table 3.17	-0.014	0.050	-0.185***	0.070
	(0.042)	(0.041)	(0.066)	(0.099)
N	29,236	29,206	29,234	26,839
Managers and professionals removed	0.007	0.086	-0.158*	0.032
	(0.061)	(0.058)	(0.090)	(0.135)
N	15,481	15,452	15,475	14,146
Young people (<25) removed	0.005	0.046	-0.184***	0.021
	(0.044)	(0.042)	(0.069)	(0.103)
N	27,860	27,829	27,857	25,583
*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*				

Table 3.26 – Robustness check: Sensitivity of weekend working coefficient to change in sample (UKHLS). Source: UKHLS (University of Essex 2016).

	OLS fixed effects weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table 3.18	0.048*	-0.094***	-0.023	-0.233***
	(0.026)	(0.028)	(0.026)	(0.085)
N	29,968	29,885	29,879	29,806
Managers and professionals removed	0.077*	-0.102**	-0.008	-0.260**
	(0.041)	(0.046)	(0.043)	(0.128)
N	15,076	15,032	15,030	14,976
Young people (<25) removed	0.049*	-0.104***	-0.034	-0.261***
	(0.026)	(0.029)	(0.026)	(0.088)
N	28,700	28,621	28,616	28,545
General Population Sample Great Britain only	0.053	-0.113***	-0.026	-0.128
	(0.033)	(0.035)	(0.031)	(0.105)
N	19,436	19,393	19,387	19,338

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.27 – Robustness check: Sensitivity of weekend working coefficient to change in sample (with gender interaction) – UKHLS. Source: UKHLS (University of Essex 2016).

	OLS fixed effects weekend working and gender interaction coefficients			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table 3.19				
Weekend working	0.096***	-0.092**	-0.004	-0.269**
	(0.037)	(0.040)	(0.036)	(0.122)
Female * Weekend working	-0.092*	-0.003	-0.036	0.071
	(0.050)	(0.055)	(0.050)	(0.168)
N	29,967	29,884	29,878	29,805
Managers and professionals removed				
Weekend working	0.150**	-0.030	0.058	-0.273
	(0.060)	(0.068)	(0.063)	(0.190)
Female * Weekend working	-0.133*	-0.129	-0.120	0.024
	(0.081)	(0.090)	(0.084)	(0.253)
N	15,076	15,032	15,030	14,976
Young people (<25) removed				
Weekend working	0.104***	-0.099**	-0.022	-0.281**
	(0.037)	(0.041)	(0.037)	(0.124)
Female * Weekend working	-0.108**	-0.011	-0.024	0.040
	(0.052)	(0.057)	(0.051)	(0.172)
N	28,699	28,620	28,615	28,544
General Population Sample Great Britain only				
Weekend working	0.088*	-0.123**	0.028	-0.047
	(0.047)	(0.051)	(0.045)	(0.153)
Female * Weekend working	-0.065	0.020	-0.100	-0.151
	(0.064)	(0.068)	(0.060)*	(0.206)
N	19,436	19,393	19,387	19,338

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.28 – Fixed effects OLS regression results with individual GHQ questions as dependent variables (UKHLS). Source: UKHLS (University of Essex 2016).

	GHQ questions – see Appendix A for key to questions A-L											
	A	B	C	D	E	F	G	H	I	J	K	L
Weekend	0.012	0.054***	-0.001	0.006	0.058***	0.017	0.014	0.020**	0.007	0.016	-0.004	0.031***
	(0.009)	(0.014)	(0.010)	(0.008)	(0.014)	(0.013)	(0.010)	(0.008)	(0.014)	(0.014)	(0.011)	(0.011)
Married	0.004	0.019	0.015	0.034*	0.008	-0.035	0.029	0.010	-0.062**	-0.055*	-0.071***	-0.033
	(0.020)	(0.029)	(0.021)	(0.018)	(0.029)	(0.028)	(0.020)	(0.018)	(0.030)	(0.028)	(0.023)	(0.023)
Carer	0.042*	0.063*	-0.021	0.011	0.087***	0.076**	0.031	0.018	0.095***	-0.017	-0.007	0.060**
	(0.022)	(0.032)	(0.024)	(0.020)	(0.032)	(0.031)	(0.023)	(0.020)	(0.034)	(0.032)	(0.026)	(0.026)
Health	-0.076***	-0.101***	-0.063***	-0.045***	-0.110***	-0.103***	-0.104***	-0.052***	-0.111***	-0.117***	-0.075***	-0.086***
	(0.005)	(0.008)	(0.006)	(0.005)	(0.008)	(0.007)	(0.005)	(0.005)	(0.008)	(0.007)	(0.006)	(0.006)
Income	-0.001	-0.021	0.016	-0.002	-0.005	-0.008	0.006	-0.001	-0.031**	-0.029**	-0.013	-0.009
	(0.010)	(0.014)	(0.010)	(0.009)	(0.014)	(0.014)	(0.010)	(0.009)	(0.015)	(0.014)	(0.011)	(0.011)
Children	0.026**	-0.056***	-0.008	0.016	0.044**	0.025	0.007	0.014	0.042**	0.030	0.026*	0.006
	(0.013)	(0.019)	(0.014)	(0.011)	(0.019)	(0.018)	(0.013)	(0.011)	(0.020)	(0.018)	(0.015)	(0.015)
Hours	0.001**	0.003***	-0.001**	-0.001	0.006***	0.002***	0.001*	0.000	0.003***	0.000	-0.000	0.001
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Temp job	0.034**	0.038	0.020	0.024	0.011	0.002	-0.039**	0.006	0.016	0.048**	0.032	0.027
	(0.017)	(0.025)	(0.018)	(0.015)	(0.025)	(0.024)	(0.017)	(0.015)	(0.026)	(0.024)	(0.020)	(0.020)
Self-employed	-0.049*	-0.045	-0.061**	-0.054**	-0.116***	-0.105***	-0.068**	-0.051**	-0.093**	-0.114***	-0.013	-0.089***
	(0.026)	(0.038)	(0.028)	(0.023)	(0.038)	(0.036)	(0.027)	(0.023)	(0.039)	(0.037)	(0.030)	(0.030)
Daytime	0.007	0.006	0.010	0.005	-0.032**	-0.016	0.012	0.010	-0.001	0.001	-0.018	0.010
	(0.011)	(0.016)	(0.011)	(0.010)	(0.016)	(0.015)	(0.011)	(0.010)	(0.016)	(0.015)	(0.013)	(0.013)
New job 1	0.009	-0.066***	-0.011	0.002	-0.057***	-0.026*	-0.020*	-0.000	-0.058***	-0.013	-0.021	-0.031**
	(0.011)	(0.016)	(0.012)	(0.010)	(0.016)	(0.015)	(0.011)	(0.010)	(0.017)	(0.016)	(0.013)	(0.013)
New job 2	-0.027**	-0.039**	-0.028**	-0.011	-0.069***	-0.058***	-0.019*	0.005	-0.081***	-0.067***	-0.047***	-0.013
	(0.011)	(0.016)	(0.012)	(0.010)	(0.017)	(0.016)	(0.012)	(0.010)	(0.017)	(0.016)	(0.013)	(0.013)
Quality	0.025***	0.030**	-0.004	0.014*	0.064***	0.014	0.009	0.012	0.008	0.007	0.003	0.004
	(0.009)	(0.014)	(0.010)	(0.008)	(0.014)	(0.013)	(0.010)	(0.008)	(0.014)	(0.013)	(0.011)	(0.011)
Constant	2.335***	2.185***	2.155***	2.160***	2.207***	2.114***	2.370***	2.189***	2.345***	2.322***	1.784***	2.391***
	(0.076)	(0.111)	(0.081)	(0.067)	(0.111)	(0.106)	(0.078)	(0.067)	(0.115)	(0.108)	(0.089)	(0.088)
N	29,898	29,903	29,898	29,907	29,902	29,893	29,902	29,905	29,903	29,899	29,901	29,908

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table 3.29 – Fixed effects OLS regression results accounting for voluntary and involuntary job loss (LFS). Source: LFS (Office for National Statistics 2016a).

	Satisfaction			Worthwhile			Happy			Anxious		
Quit	0.273**	0.259**	0.355***	0.115	0.126	0.218*	0.278	0.312	0.456**	0.356	0.249	0.135
	(0.134)	(0.131)	(0.125)	(0.129)	(0.126)	(0.120)	(0.211)	(0.207)	(0.196)	(0.320)	(0.313)	(0.295)
Fired	-0.028	-0.071	-0.101	-0.137	-0.175	-0.018	-0.259	-0.284	-0.153	-0.173	-0.014	-0.110
	(0.231)	(0.223)	(0.221)	(0.222)	(0.215)	(0.212)	(0.364)	(0.352)	(0.348)	(0.543)	(0.522)	(0.529)
Weekend	-0.017			0.038			-0.197***			0.099		
	(0.042)			(0.041)			(0.067)			(0.100)		
Quit * Weekend	0.610**			0.778***			0.724*			-1.952***		
	(0.272)			(0.261)			(0.428)			(0.623)		
Fired * Weekend	-0.775			0.430			0.675			0.527		
	(0.543)			(0.522)			(0.856)			(1.327)		
Saturday		-0.031			0.009			-0.179***			0.152	
		(0.043)			(0.041)			(0.068)			(0.101)	
Quit * Saturday		0.759***			0.833***			0.680			-1.785***	
		(0.286)			(0.275)			(0.450)			(0.656)	
Fired * Saturday		-0.793			0.974			1.216			-0.774	
		(0.642)			(0.617)			(1.011)			(1.683)	
Sunday			-0.020			0.025			-0.098			-0.079
			(0.049)			(0.047)			(0.077)			(0.114)
Quit * Sunday			0.517			0.683**			0.008			-2.274***
			(0.353)			(0.340)			(0.557)			(0.811)
Fired * Sunday			-0.669			-0.406			0.090			0.323
			(0.697)			(0.670)			(1.099)			(1.529)
N	29,236	29,236	29,236	29,206	29,206	29,206	29,234	29,234	29,234	26,839	26,839	26,839

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix C for details about the interaction terms. The same set of control variables are used as in Table 3.17 above but the coefficients pertaining to these covariants are not shown.*

Table 3.30 – Fixed effects OLS regression results accounting for voluntary and involuntary job loss (UKHLS). Source: UKHLS (University of Essex 2016).

	Dependent variable			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.053*	-0.085***	-0.036	-0.255***
	(0.027)	(0.030)	(0.027)	(0.090)
Quit 1	0.714***	0.212**	0.060	0.494*
	(0.084)	(0.092)	(0.084)	(0.280)
Quit 1 * Weekend	-0.067	-0.153	0.124	0.093
	(0.093)	(0.103)	(0.093)	(0.313)
Fired 1	0.085	0.102	-0.170	-0.343
	(0.116)	(0.127)	(0.115)	(0.385)
Fired 1 * Weekend	0.087	-0.071	0.014	0.503
	(0.135)	(0.148)	(0.134)	(0.450)
Quit 2	0.337***	-0.046	-0.097	0.393
	(0.090)	(0.099)	(0.090)	(0.300)
Quit 2 * Weekend	0.145	0.045	0.050	-0.018
	(0.114)	(0.126)	(0.114)	(0.382)
Fired 2	0.154	-0.174	-0.302**	0.508
	(0.133)	(0.145)	(0.132)	(0.442)
Fired 2 * Weekend	-0.121	0.121	0.316*	0.550
	(0.177)	(0.193)	(0.175)	(0.588)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix C for details about the interaction terms. The same set of control variables are used as in Table 3.18 above but the coefficients pertaining to these covariants are not shown.*

Table 4.1 - Means and distributions of explanatory variables – activity-level variables (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a).

	Mean	N
Activity type:		
Personal care	0.002	141
Household activities	0.154	9,248
Caring for and helping household members	0.056	3,380
Caring for and helping non-household members	0.009	558
Working and work-related activities	0.104	6,242
Educational activities	0.005	306
Consumer purchases	0.041	2,488
Professional and personal care services	0.005	285
Household services	0.001	60
Government services and civic obligations	0.000	18
Eating and drinking	0.149	8,989
Socialising, relaxing and leisure	0.159	9,577
Sports, exercise and recreation	0.018	1,055
Religious and spiritual activities	0.009	564
Volunteer activities	0.007	408
Telephone calls	0.008	471
Travelling	0.262	15,774
Unknown	0.010	601
Time of day:		
Morning (start time 04.00-11.59)	0.353	21,243
Afternoon (start time 12.00-17.59)	0.389	23,411
Evening (start time 18.00-23.59)	0.250	15,016
Night (start time 00.00-03.59)	0.080	495
Location:		
Home	0.448	26,936
Workplace	0.114	6,848
Travelling	0.258	15,514
Other place	0.178	10,731
Unspecified	0.002	136
Whether looking after children as secondary activity:		
Yes	0.233	14,003
No	0.767	46,162
Whether interacting with others at the time:		
Yes	0.600	36,101
No	0.400	24,064
Duration of activity in minutes (mean)	69	60,165
Total number of activities		60,165

Table 4.2 - Means and distributions of explanatory variables – work-related variables (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a).

	Mean	N
Sector:		
Government (federal, state or local)	0.179	3,590
Private, for profit	0.630	12,635
Private, non-profit	0.078	1,558
Self-employed (incorporated or unincorporated)	0.112	2,253
Without pay	0.001	19
Occupation:		
Management	0.128	2,559
Business and financial operations	0.052	1,040
Computer and mathematical science	0.032	638
Architecture and engineering	0.023	451
Life, physical and social science	0.011	217
Community and social service	0.022	441
Legal	0.014	279
Education, training and library	0.079	1,586
Arts, design, entertainment, sports and media	0.022	433
Healthcare practitioner and technical	0.061	1,223
Healthcare support	0.022	450
Protective service	0.022	434
Food preparation and serving related	0.040	804
Building and grounds cleaning and maintenance	0.036	728
Personal care and service	0.036	715
Sales and related	0.093	1,860
Office and administrative support	0.126	2,529
Farming, fishing and forestry	0.008	154
Construction and extraction	0.042	836
Installation, maintenance and repair	0.034	675
Production	0.051	1,018
Transportation and material moving	0.049	985
Industry:		
Agriculture, forestry, fishing and hunting	0.018	353
Mining	0.006	114
Construction	0.056	1,120
Manufacturing – durable goods	0.065	1,310
Manufacturing – non-durable goods	0.039	772
Wholesale trade	0.027	543
Retail trade	0.093	1,862
Transportation and warehousing	0.038	757
Utilities	0.009	181
Information	0.024	477
Finance and insurance	0.051	1,029
Real estate and rental and leasing	0.019	381
Professional and technical services	0.078	1,570

	Mean	N
Management, administrative and waste management	0.041	816
Educational services	0.114	2,291
Health care and social services	0.147	2,941
Arts, entertainment and recreation	0.020	399
Accommodation and food services	0.051	1,016
Private households	0.006	123
Other services, except private households	0.045	894
Public administration	0.055	1,106
Hourly earnings ($)	16.78	9,746
Total number of individuals		20,055

Table 4.3 - Means and distributions of explanatory variables – personal characteristics (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a).

	Mean	N
Gender:		
Male	0.491	9,845
Female	0.509	10,210
Ethnicity:		
Hispanic	0.136	2,731
Non-Hispanic	0.864	17,324
White only	0.812	16,293
Black only	0.128	2,576
Other and mixed	0.059	1,186
Region:		
Northeast	0.167	3,339
Midwest	0.257	5,106
South	0.357	7,163
West	0.222	4,447
Marital status:		
Married – spouse present	0.529	10,589
Married – spouse absent	0.017	335
Widowed	0.029	589
Divorced	0.143	2,867
Separated	0.029	585
Never married	0.254	5,090
Children under 18 in household:		
No	0.486	9,742
Yes	0.514	10,313
Disabled:		
Yes	0.037	732
No	0.964	19,323
Age (mean)	43	20,055
Diary day:		
Sunday	0.255	5,106
Monday	0.097	1,943
Tuesday	0.097	1,953
Wednesday	0.100	1,998
Thursday	0.101	2,030
Friday	0.101	2,029
Saturday	0.249	4,996
Total number of individuals		20,055

Table 4.4 – Mean well-being by activity type (0-6 scale) (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Working and work-related activities	4.42	3.96	5.12	5.32	3.78	3.61
Personal care	3.83*	3.16*	3.09*	4.62*	4.04	2.12*
Household activities	4.13*	4.15*	5.18*	5.48*	4.78*	3.73*
Caring for and helping household members	5.17*	4.76*	5.45*	5.66*	4.62*	3.30*
Caring for and helping non-household members	4.90*	4.72*	5.29*	5.41	4.76*	3.75
Educational activities	4.58	3.73*	5.45*	5.39	3.38*	3.07*
Consumer purchases	3.82*	4.18*	5.32*	5.50*	4.66*	3.98*
Professional and personal care services	4.31	3.86	4.82*	5.12*	4.26*	3.87*
Household services	4.03	3.62	5.37	5.50	4.33*	4.02
Government services and civic obligations	4.50	3.17*	5.28	5.78	4.06	4.61*
Eating and drinking	4.46	4.61*	5.33*	5.55*	4.93*	3.88*
Socialising, relaxing and leisure	4.05*	4.48*	5.29*	5.50*	5.05*	3.65
Sports, exercise and recreation	5.03*	4.85*	4.93*	5.70*	5.19*	3.94*
Religious and spiritual activities	5.66*	5.04*	5.51*	5.43*	5.34*	4.49*
Volunteer activities	5.16*	4.79*	5.35*	5.74*	4.68*	4.11*
Telephone calls	4.74*	4.42*	5.15	5.21	4.55*	3.78
Travelling	3.97*	4.37*	5.33*	5.46*	4.67*	3.80*
Unknown	4.42	4.34*	5.24*	5.47*	4.64*	3.63

Star (*) denotes that the mean is significantly different to the mean of work and work-related activities, according to a pairwise mean test (95% confidence interval). Note that the scales for pain, sadness, stress and tiredness have been reversed and therefore a higher score denotes higher well-being.

Table 4.5 – OLS fixed effects regression results, by sector (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	0.034	-0.181**	-0.016	-0.014	-0.285***	-0.024
	(0.097)	(0.077)	(0.053)	(0.058)	(0.080)	(0.090)
Work * Govt	-0.096	-0.102	0.007	-0.106**	-0.206***	-0.096
	(0.087)	(0.069)	(0.048)	(0.052)	(0.072)	(0.081)
Work * Profit	-0.218**	-0.119**	0.006	-0.089**	-0.179***	-0.113*
	(0.072)	(0.057)	(0.039)	(0.043)	(0.059)	(0.066)
Work * Non-profit	0.102	-0.024	0.008	-0.066	-0.266***	-0.030
	(0.105)	(0.083)	(0.057)	(0.062)	(0.087)	(0.097)
Personal care	-0.038	0.064	-0.493***	-0.013	0.099	-0.573***
	(0.167)	(0.133)	(0.091)	(0.099)	(0.138)	(0.155)
Household activities	-0.202***	-0.110*	-0.051	-0.028	0.013	-0.012
	(0.073)	(0.058)	(0.040)	(0.044)	(0.061)	(0.068)
Caring own	0.609***	0.309***	0.045	0.036	0.008	-0.097
	(0.078)	(0.062)	(0.042)	(0.046)	(0.064)	(0.072)
Caring other	0.125	0.096	0.009	-0.054	-0.053	-0.134
	(0.102)	(0.081)	(0.056)	(0.061)	(0.085)	(0.095)
Education	0.387***	-0.478***	-0.086	-0.088	-1.223***	-0.344***
	(0.123)	(0.098)	(0.067)	(0.073)	(0.102)	(0.114)
Shopping	-0.705***	-0.256***	-0.000	0.001	-0.171***	-0.053
	(0.080)	(0.063)	(0.044)	(0.048)	(0.066)	(0.074)
Personal services	-0.437***	-0.404***	-0.156**	-0.109	-0.260**	-0.119
	(0.124)	(0.098)	(0.068)	(0.074)	(0.103)	(0.115)
Household services	-0.463**	-0.656***	0.010	-0.129	-0.309	0.097
	(0.226)	(0.180)	(0.124)	(0.135)	(0.188)	(0.210)
Govt services	-0.094	-0.855***	-0.134	0.540**	-0.788**	0.899**
	(0.409)	(0.325)	(0.223)	(0.244)	(0.340)	(0.379)
Eating	0.077	0.268***	0.064	0.042	0.167***	0.116*
	(0.073)	(0.058)	(0.040)	(0.043)	(0.061)	(0.068)
Leisure	-0.271***	0.177***	0.060	0.009	0.254***	-0.044
	(0.073)	(0.058)	(0.040)	(0.043)	(0.060)	(0.068)
Sport	0.616***	0.364***	-0.572***	0.125**	0.202***	-0.179**
	(0.088)	(0.070)	(0.048)	(0.053)	(0.073)	(0.082)
Religion	0.574***	0.244***	0.071	-0.085	0.340***	0.089
	(0.102)	(0.081)	(0.056)	(0.061)	(0.084)	(0.094)
Volunteer	0.285**	0.217**	-0.040	0.107	-0.130	0.133
	(0.112)	(0.089)	(0.061)	(0.067)	(0.093)	(0.104)
Telephone	0.288***	0.061	0.064	-0.176***	-0.080	0.093
	(0.106)	(0.084)	(0.058)	(0.063)	(0.088)	(0.098)
Travel	-0.386***	0.005	-0.045	-0.018	-0.075	0.022
	(0.085)	(0.067)	(0.046)	(0.050)	(0.070)	(0.079)
Duration	0.001***	0.000***	-0.000***	-0.000***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Morning	-0.028	-0.149**	0.113**	-0.011	-0.041	1.266***
	(0.081)	(0.064)	(0.044)	(0.048)	(0.067)	(0.075)
Afternoon	-0.139*	-0.168***	0.076*	0.005	-0.003	0.990***
	(0.081)	(0.064)	(0.044)	(0.048)	(0.067)	(0.075)
Evening	-0.167**	-0.185***	0.033	0.009	0.163**	0.408***
	(0.081)	(0.064)	(0.044)	(0.048)	(0.067)	(0.075)

	Meaning	Happy	Pain	Sad	Stress	Tired
Secondary childcare	0.333***	0.219***	0.010	0.037*	0.037	-0.012
	(0.032)	(0.025)	(0.017)	(0.019)	(0.026)	(0.030)
Home	0.159	0.017	-0.043	0.149*	-0.100	-0.374***
	(0.147)	(0.117)	(0.081)	(0.088)	(0.122)	(0.137)
Workplace	0.084	-0.107	-0.088	0.107	-0.446***	-0.038
	(0.151)	(0.120)	(0.082)	(0.090)	(0.125)	(0.140)
Travelling	0.316**	0.167	0.018	0.129	-0.104	-0.180
	(0.157)	(0.125)	(0.086)	(0.094)	(0.130)	(0.146)
Other place	0.456***	0.217*	-0.016	0.132	-0.022	0.005
	(0.148)	(0.117)	(0.081)	(0.088)	(0.122)	(0.137)
Interacting with others	0.499***	0.265***	0.006	0.047***	-0.015	0.090***
	(0.017)	(0.014)	(0.009)	(0.010)	(0.014)	(0.016)
Constant	3.845***	4.199***	5.245***	5.333***	4.857***	3.015***
	(0.181)	(0.144)	(0.099)	(0.108)	(0.151)	(0.168)
R^2	0.09	0.05	0.02	0.01	0.08	0.08
N	60,108	60,108	60,108	60,108	60,108	60,108

*Omitted variables: Work * Self-employed; Unknown activity; Night; Unspecified location. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Table 4.6 – OLS fixed effects regression results, by occupation (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-0.362***	-0.174*	-0.115*	-0.159**	-0.076	-0.123
	(0.122)	(0.097)	(0.067)	(0.073)	(0.101)	(0.113)
Work * Management	0.279**	-0.058	0.146**	0.114*	-0.479	0.070
	(0.114)	(0.091)	(0.063)	(0.068)	(0.095)***	(0.106)
Work * Business	0.164	-0.226**	0.137*	0.062	-0.551	0.076
	(0.139)	(0.110)	(0.076)	(0.083)	(0.115)***	(0.129)
Work * Computer	0.320**	-0.298**	0.178**	0.090	-0.636	0.126
	(0.162)	(0.129)	(0.088)	(0.096)	(0.134)***	(0.150)
Work * Architecture	0.382**	0.058	0.206**	0.062	-0.434	0.152
	(0.186)	(0.148)	(0.102)	(0.111)	(0.154)***	(0.173)
Work * Life science	0.341	-0.214	0.122	0.183	-0.459	0.023
	(0.252)	(0.200)	(0.138)	(0.150)	(0.209)**	(0.234)
Work * Community	0.740***	0.180	0.284***	0.017	-0.271	0.203
	(0.182)	(0.145)	(0.100)	(0.109)	(0.151)*	(0.169)
Work * Legal	0.618***	-0.562***	0.189	-0.249**	-0.967	-0.082
	(0.212)	(0.169)	(0.116)	(0.127)	(0.176)***	(0.197)
Work * Education	0.665***	-0.177*	0.168**	0.089	-0.625	0.004
	(0.131)	(0.104)	(0.071)	(0.078)	(0.108)***	(0.121)
Work * Arts	0.465***	0.023	0.062	0.109	-0.235	0.035
	(0.173)	(0.137)	(0.094)	(0.103)	(0.143)	(0.160)
Work * Healthcare	0.617***	-0.087	0.147*	0.092	-0.653	0.109
	(0.138)	(0.110)	(0.076)	(0.082)	(0.115)***	(0.128)
Work * Health support	0.266	-0.042	0.024	0.093	-0.370	-0.116
	(0.179)	(0.142)	(0.098)	(0.107)	(0.149)**	(0.166)
Work * Protective	0.109	-0.310**	0.146	-0.017	-0.460	0.104
	(0.177)	(0.140)	(0.097)	(0.105)	(0.146)***	(0.164)
Work * Food	0.220	-0.096	-0.007	0.198**	-0.320	0.023
	(0.154)	(0.122)	(0.084)	(0.092)	(0.127)**	(0.143)
Work * Cleaning	0.153	0.086	-0.126	0.058	0.192	-0.322**
	(0.163)	(0.130)	(0.089)	(0.097)	(0.135)	(0.151)
Work * Care	0.279*	0.040	0.161*	0.248***	-0.025	0.152
	(0.160)	(0.128)	(0.088)	(0.096)	(0.133)	(0.149)
Work * Sales	0.121	-0.227**	0.060	0.071***	-0.360	0.035
	(0.121)	(0.096)	(0.066)	(0.072)	(0.100)	(0.112)
Work * Office	0.013	-0.030	0.101	0.034	-0.391***	0.034
	(0.119)	(0.095)	(0.065)	(0.071)	(0.099)	(0.111)
Work * Farming	0.177	-0.025	-0.055	0.017	-0.129	-0.136
	(0.244)	(0.194)	(0.133)	(0.145)	(0.202)	(0.226)
Work * Construction	0.240*	0.049	0.033	0.198	0.013	-0.145
	(0.145)	(0.115)	(0.079)	(0.086)**	(0.120)	(0.134)
Work * Installation	0.085	-0.151	0.086	-0.078	-0.296**	-0.052
	(0.152)	(0.121)	(0.083)	(0.090)	(0.126)	(0.141)
Work * production	0.028	-0.110	0.088	-0.024	-0.274**	-0.188
	(0.136)	(0.108)	(0.074)	(0.081)	(0.113)	(0.126)
R^2	0.09	0.05	0.02	0.01	0.08	0.08
N	60,165	60,165	60,165	60,165	60,165	60,165

*Omitted variable: Work * Transportation. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets. The same set of control variables are used as in Table 4.5 above but the coefficients pertaining to these covariants are not shown.*

Table 4.7 – OLS fixed effects regression results, by industry (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-0.286**	-0.218**	0.056	-0.087	-0.350***	0.056
	(0.128)	(0.101)	(0.070)	(0.076)	(0.106)	(0.118)
Work * Agriculture	0.404**	0.129	-0.233**	0.043	0.300**	-0.100
	(0.183)	(0.146)	(0.100)	(0.109)	(0.152)	(0.170)
Work * Mining	0.086	0.286	-0.066	0.011	0.447*	-0.399
	(0.311)	(0.247)	(0.170)	(0.186)	(0.258)	(0.289)
Work * Construction	0.109	0.098	-0.094	0.088	0.178	-0.175
	(0.140)	(0.111)	(0.076)	(0.083)	(0.116)	(0.130)
Work * Manufacture durables	0.042	-0.067	-0.089	-0.039	-0.091	-0.248**
	(0.135)	(0.107)	(0.074)	(0.081)	(0.112)	(0.125)
Work * Manufacture non-durables	-0.102	-0.299**	-0.146*	-0.073	-0.185	-0.306
	(0.151)	(0.120)	(0.083)	(0.090)	(0.126)	(0.140)**
Work * Wholesale	-0.063	-0.200	-0.266***	-0.051	-0.116	-0.027
	(0.168)	(0.134)	(0.092)	(0.100)	(0.140)	(0.156)
Work * Retail	0.035	-0.015	-0.086	-0.009	0.024	-0.148
	(0.128)	(0.102)	(0.070)	(0.076)	(0.106)	(0.119)
Work * Transportation	-0.082	-0.015	-0.057	-0.112	0.057	-0.064
	(0.151)	(0.120)	(0.083)	(0.090)	(0.126)	(0.141)
Work * Utilities	0.029	-0.405**	-0.113	-0.098	0.042	-0.092
	(0.259)	(0.206)	(0.141)	(0.154)	(0.215)	(0.240)
Work * Information	0.202	0.056	0.141	0.035	0.029	-0.031
	(0.171)	(0.136)	(0.094)	(0.102)	(0.142)	(0.159)
Work * Finance	0.153	-0.082	-0.042	-0.030	-0.469***	-0.150
	(0.144)	(0.115)	(0.079)	(0.086)	(0.120)	(0.134)
Work * Real estate	0.285	-0.228	-0.106	0.022	-0.179	-0.238
	(0.192)	(0.153)	(0.105)	(0.115)	(0.160)	(0.178)
Work * Professional	0.403***	-0.240**	-0.009	0.026	-0.298***	-0.113
	(0.131)	(0.105)	(0.072)	(0.078)	(0.109)	(0.122)
Work * Management	-0.036	-0.082	-0.129	-0.041	-0.130	-0.314**
	(0.157)	(0.125)	(0.086)	(0.094)	(0.131)	(0.146)
Work * Educational	0.423***	-0.090	-0.030	-0.007	-0.295***	-0.243**
	(0.127)	(0.101)	(0.069)	(0.076)	(0.105)	(0.118)
Work * Health	0.400***	0.042	-0.022	0.064	-0.092	-0.179
	(0.121)	(0.096)	(0.066)	(0.072)	(0.100)	(0.112)
Work * Arts	0.112	0.250	-0.050	-0.013	0.070	0.006
	(0.201)	(0.160)	(0.110)	(0.120)	(0.167)	(0.186)
Work * Accommodation	0.010	-0.094	-0.120	0.101	-0.185	-0.265**
	(0.144)	(0.115)	(0.079)	(0.086)	(0.120)	(0.134)
Work * Households	-0.200	0.032	-0.284	-0.048	0.451	-0.658*
	(0.385)	(0.307)	(0.211)	(0.230)	(0.320)	(0.358)
Work * Other services	0.161	0.071	-0.087	-0.105	0.070	-0.089
	(0.147)	(0.117)	(0.080)	(0.088)	(0.122)	(0.137)
R^2	0.09	0.05	0.02	0.01	0.08	0.08
N	60,165	60,165	60,165	60,165	60,165	60,165

*Omitted variables: Work * Public administration. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets. The same set of control variables are used as in Table 4.5 above but the coefficients pertaining to these covariants are not shown.*

Table 4.8 – OLS fixed effects regression results, by hourly earnings (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-0.999**	0.045	-0.504*	0.119	1.361***	-0.855*
	(0.509)	(0.417)	(0.291)	(0.319)	(0.423)	(0.480)
Work * Log wage	0.107	-0.028	0.062	-0.029	-0.225***	0.102
	(0.068)	(0.055)	(0.039)	(0.042)	(0.056)	(0.064)
R^2	0.07	0.05	0.02	0.01	0.07	0.07
N	29,229	29,229	29,229	29,229	29,229	29,229

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets. The same set of control variables are used as in Table 4.5 above but the coefficients pertaining to these covariants are not shown.*

Table 4.9 - Means and distributions of pre-treatment variables (APS). Source: APS (Office for National Statistics 2016b).

	Mean	N
Birth pre-treatments:		
Gender:		
Male	0.427	251,317
Female	0.573	337,401
Ethnicity:		
White	0.906	533,316
Mixed / multiple ethnic groups	0.008	4,534
Indian	0.021	12,064
Pakistani	0.012	7,275
Bangladeshi	0.005	2,620
Chinese	0.005	2,649
Other Asian	0.008	4,817
Black / African / Caribbean / Black British	0.023	13,779
Other ethnic group	0.013	7,342
Age (mean)	44	588,718
Other pre-treatments:		
Qualifications held:		
Degree level qualification	0.255	150,330
Diploma in HE	0.031	18,273
HNC / HND	0.059	34,790
ONC / OND	0.021	12,344
BTEC / BEC / TEC / Edexcel / LQL	0.056	33,231
SCOTVEC / SCOTEC / SCOTBTEC	0.007	4,005
Teaching excluding PGCE	0.022	12,999
Nursing or other medical	0.027	15,758
Other HE qualification below degree	0.018	10,727
A-level / Vocational A-level / GCE Applied subjects	0.243	143,221
New Diploma	0.003	1,640
Welsh Baccalaureate	0.000	190
International Baccalaureate	0.001	744
NVQ / SVQ	0.192	113,173
GNVQ / GSVQ	0.019	11,151
AS-level / Vocational AS-level or equivalent	0.026	15,237
Certificate of 6th Year Studies (CSYS)	0.004	2,326
Access to HE	0.005	3,075
O-level or equivalent	0.270	159,119
Standard / Ordinary Grade / Lower (Scotland)	0.076	44,434
GCSE / Vocational GCSE	0.305	179,564
CSE	0.128	75,389
Advanced Higher / Intermediate / Access qual (Scotland)	0.053	31,015
RSA / OCR	0.044	25,997
City and Guilds	0.104	61,491
YT Certificate	0.006	3,467

	Mean	N
Key Skills / Core Skills (Scotland)	0.003	1,856
Basic Skills (Life / Literacy / Lang / Num)	0.012	7,227
Entry Level quals	0.004	2,102
Award / Certificate / Diploma at Entry / 1-8 level	0.006	3,361
Other professional / work qual	0.348	204,576
Religion:		
No Religion	0.339	195,658
Christian (all denominations)	0.588	339,806
Buddhist	0.005	2,604
Hindu	0.012	6,928
Jewish	0.003	1,927
Muslim	0.031	18,140
Sikh	0.005	2,775
Any Other Religion	0.018	10,173
Marital status:		
Single, never married	0.319	187,609
Married, living with spouse	0.499	293,573
Married, separated from spouse	0.041	24,222
Divorced	0.116	68,186
Widowed	0.023	13,352
Currently or previously in civil partnership	0.003	1,776
Region:		
North East	0.067	39,514
North West	0.095	55,805
Merseyside	0.026	15,157
Yorkshire & Humberside	0.081	47,831
East Midlands	0.049	28,829
West Midlands	0.072	42,598
Eastern	0.061	35,849
London	0.091	53,480
South East	0.117	68,806
South West	0.078	45,707
Wales	0.111	65,518
Scotland	0.135	79,624
Northern Ireland	0.017	10,000
Disability:		
Disabled	0.231	135,526
Not disabled	0.769	450,528
Total number of individuals		588,718

Table 4.10 – Means and distributions of treatment variables (APS). Source: APS (Office for National Statistics 2016b).

	Mean	N
Whether working:		
Working	0.712	419,364
Not working	0.288	169,354
Whether economically active:		
Active (working or unemployed)	0.762	448,617
Not active	0.238	140,101
Whether self-employed:		
Self-employed	0.135	56,189
Employee	0.865	360,089
Whether public sector:		
Public sector worker	0.281	117,087
Private sector worker	0.719	299,061
Type of organisation:		
Private firm, business or limited company	0.658	272,916
Public limited company (plc)	0.022	9,140
Nationalised industry / state corporation	0.004	1,805
Central government or civil service	0.030	12,227
Local government or council (includes fire services and schools)	0.140	57,954
University or other grant funded establishment	0.023	9,409
Health authority or NHS trust	0.077	31,853
Charity, voluntary organisation or trust	0.033	13,561
The armed forces	0.004	1,537
Other kind of organisation	0.010	4,259
Industry:		
Agriculture, forestry and fishing (A)	0.010	4,110
Mining and quarrying (B)	0.005	1,899
Manufacturing (C)	0.097	40,268
Electricity, gas, air condition supply (D)	0.007	2,824
Water supply, sewerage, waste (E)	0.007	3,019
Construction (F)	0.058	24,238
Wholesale, retail, repair of vehicles (G)	0.122	51,012
Transport and storage (H)	0.048	19,940
Accommodation and food services (I)	0.043	18,078
Information and communication (J)	0.036	15,143
Financial and insurance activities (K)	0.037	15,446
Real estate activities (L)	0.012	4,826
Professional, scientific, technical activities (M)	0.063	26,211
Admin and support services (N)	0.045	18,666
Public admin and defence (O)	0.074	30,701
Education (P)	0.123	51,165
Health and social work (Q)	0.163	67,989
Arts, entertainment and recreation (R)	0.023	9,635
Other service activities (S)	0.026	10,877

	Mean	N
Households as employers (T)	0.002	845
Extraterritorial organisations (U)	0.001	529
Occupation:		
Chief Executives and Senior Officials (111)	0.002	905
Production Managers and Directors (112)	0.014	6,007
Functional Managers and Directors (113)	0.026	10,956
Financial Institution Managers and Directors (115)	0.003	1,198
Managers and Directors in Transport and Logistics (116)	0.005	2,161
Senior Officers in Protective Services (117)	0.002	669
Health and Social Services Managers and Directors (118)	0.004	1,690
Managers and Directors in Retail and Wholesale (119)	0.011	4,424
Managers and Proprietors in Agriculture Related Services (121)	0.001	481
Managers and Proprietors in Hospitality and Leisure Services	0.009	3,798
Managers and Proprietors in Health and Care Services (124)	0.003	1,277
Managers and Proprietors in Other Services (125)	0.019	7,797
Natural and Social Science Professionals (211)	0.007	2,869
Engineering Professionals (212)	0.014	5,648
Information Technology and Telecommunications Professionals	0.027	11,153
Conservation and Environment Professionals (214)	0.002	834
Research and Development Managers (215)	0.001	597
Health Professionals (221)	0.017	7,134
Therapy Professionals (222)	0.005	2,194
Nursing and Midwifery Professionals (223)	0.028	11,700
Teaching and Educational Professionals (231)	0.058	24,325
Legal Professionals (241)	0.006	2,308
Business, Research and Administrative Professionals (242)	0.022	9,106
Architects, Town Planners and Surveyors (243)	0.007	2,848
Welfare Professionals (244)	0.007	3,070
Librarians and Related Professionals (245)	0.001	576
Quality and Regulatory Professionals (246)	0.004	1,842
Media Professionals (247)	0.004	1,775
Science, Engineering and Production Technicians (311)	0.011	4,394
Draughtspersons and Related Architectural Technicians (312)	0.002	742
Information Technology Technicians (313)	0.006	2,663
Health Associate Professionals (321)	0.006	2,336
Welfare and Housing Associate Professionals (323)	0.013	5,416
Protective Service Occupations (331)	0.013	5,468
Artistic, Literary and Media Occupations (341)	0.011	4,670
Design Occupations (342)	0.004	1,780
Sports and Fitness Occupations (344)	0.004	1,626
Transport Associate Professionals (351)	0.002	623
Legal Associate Professionals (352)	0.002	880
Business, Finance and Related Associate Professionals (353)	0.022	8,998
Sales, Marketing and Related Associate Professionals (354)	0.029	12,019
Conservation and Environmental Associate Professionals (355)	0.000	152
Public Services and Other Associate Professionals (356)	0.020	8,133
Administrative Occupations: Government and Related Orgs	0.019	7,780

	Mean	N
Administrative Occupations: Finance (412)	0.029	11,953
Administrative Occupations: Records (413)	0.015	6,197
Other Administrative Occupations (415)	0.024	10,078
Administrative Occupations: Office Managers and Supervisors	0.008	3,195
Secretarial and Related Occupations (421)	0.027	11,266
Agricultural and Related Trades (511)	0.010	4,110
Metal Forming, Welding and Related Trades (521)	0.003	1,180
Metal Machining, Fitting and Instrument Making Trades (522)	0.010	3,953
Vehicle Trades (523)	0.007	2,742
Electrical and Electronic Trades (524)	0.012	5,080
Skilled Metal, Electrical and Electronic Trades Supervisors (525)	0.001	565
Construction and Building Trades (531)	0.020	8,230
Building Finishing Trades (532)	0.005	2,161
Construction and Building Trades Supervisors (533)	0.002	717
Textiles and Garments Trades (541)	0.001	592
Printing Trades (542)	0.002	721
Food Preparation and Hospitality Trades (543)	0.014	5,926
Other Skilled Trades (544)	0.003	1,246
Childcare and Related Personal Services (612)	0.032	13,474
Animal Care and Control Services (613)	0.002	960
Caring Personal Services (614)	0.051	21,466
Leisure and Travel Services (621)	0.005	2,187
Hairdressers and Related Services (622)	0.008	3,265
Housekeeping and Related Services (623)	0.004	1,749
Cleaning and Housekeeping Managers and Supervisors (624)	0.003	1,144
Sales Assistants and Retail Cashiers (711)	0.043	18,030
Sales Related Occupations (712)	0.006	2,350
Sales Supervisors (713)	0.006	2,603
Customer Service Occupations (721)	0.015	6,096
Customer Service Managers and Supervisors (722)	0.005	2,047
Process Operatives (811)	0.009	3,842
Plant and Machine Operatives (812)	0.005	2,045
Assemblers and Routine Operatives (813)	0.008	3,406
Construction Operatives (814)	0.004	1,623
Road Transport Drivers (821)	0.026	10,694
Mobile Machine Drivers and Operatives (822)	0.004	1,777
Other Drivers and Transport Operatives (823)	0.003	1,217
Elementary Agricultural Occupations (911)	0.003	1,036
Elementary Construction Occupations (912)	0.003	1,290
Elementary Process Plant Occupations (913)	0.007	2,939
Elementary Administration Occupations (921)	0.007	2,891
Elementary Cleaning Occupations (923)	0.026	10,910
Elementary Security Occupations (924)	0.011	4,642
Elementary Sales Occupations (925)	0.004	1,719
Elementary Storage Occupations (925)	0.011	4,746
Other Elementary Services Occupations (927)	0.025	10,588
Total number of individuals		417,640

Table 4.11 - Means and distributions of work covariates (APS). Source: APS (Office for National Statistics 2016b).

	Mean	N
Full time / part time:		
Full time	0.708	295,691
Part time	0.292	122,054
Permanent / temporary:		
Temporary	0.055	19,628
Permanent	0.945	340,322
New job (started in last 12 months):		
New job	0.130	54,398
Not new job	0.870	362,491
Net weekly earnings (£)	339.64	316,326

Table 4.12 – Weighted least squares regression results (APS). Source: APS (Office for National Statistics 2016b).

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Whether working	0.585***	0.692***	0.487***	0.517***	0.187***	0.224***	0.032***	0.046***
	(0.005)	(0.005)	(0.006)	(0.008)	(0.005)	(0.005)	(0.006)	(0.008)
N	588,396	589,914	589,781	589,108	575,147	576,614	576,504	575,855
Whether active	0.476***	0.529***	0.429***	0.484***	-0.005	-0.028***	-0.103***	-0.089***
	(0.005)	(0.005)	(0.006)	(0.008)	(0.005)	(0.005)	(0.006)	(0.008)
N	588,396	589,914	589,781	589,108	575,147	576,614	576,504	575,855
Whether self-employed	0.130***	0.022***	0.101***	-0.007	0.149***	0.034***	0.109***	0.017*
	(0.005)	(0.005)	(0.006)	(0.009)	(0.005)	(0.005)	(0.006)	(0.009)
N	414,783	415,525	415,454	415,076	406,245	406,966	406,908	406,537
Whether public sector	0.212***	0.056***	0.073***	-0.011	0.148***	0.016***	0.039***	-0.003
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
N	314,211	314,676	314,661	314,433	309,331	309,786	309,775	309,547
Type of organisation:								
Private firm or business	-0.217***	-0.046***	-0.058***	0.029***	-0.162***	-0.019***	-0.033***	0.004
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Public limited company (plc)	-0.135***	-0.037***	-0.064***	0.035***	-0.119***	-0.017***	-0.041***	0.037***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Nationalised industry	-0.033***	0.032***	0.075***	0.183***	-0.009*	0.066***	0.097***	0.238***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Central government	-0.133***	-0.128***	-0.086***	-0.134***	-0.092***	-0.092***	-0.056***	-0.056***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Local government or council	0.200***	0.066***	0.100***	-0.033***	0.154***	0.032***	0.068***	-0.024**
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
University / grant funded school	0.106***	0.044***	0.016**	-0.222***	0.083***	0.053***	0.051***	-0.125***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Health authority or NHS trust	0.231***	0.046***	0.028***	0.160***	0.143***	-0.017***	-0.019**	0.098***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Charity or voluntary organisation	0.225***	-0.018***	-0.015**	-0.113***	0.237***	0.021***	0.010	-0.070***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
The armed forces	-0.022***	0.137***	0.086***	0.284***	-0.271***	-0.314***	-0.064***	0.192***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Other kind of organisation	0.149***	0.089***	0.072***	-0.064***	0.149***	0.116***	0.064***	-0.022**
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
N (type of organisation)	314,349	314,814	314,798	314,570	309,466	309,921	309,909	309,681

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Industry:								
Agriculture (A)	0.124***	0.264***	0.225***	0.089***	-0.762***	-0.944***	-0.915***	-2.127***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.007)	(0.011)
Mining and quarrying (B)	-0.036***	0.159***	0.049***	0.140***	-0.114***	0.056***	-0.114***	-0.206***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Manufacturing (C)	-0.113***	0.027***	-0.021***	0.060***	-0.129***	0.007	-0.039***	0.010
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Electricity, gas supply (D)	-0.083***	0.015***	-0.095***	0.047***	-0.120***	-0.022***	-0.116***	0.059***
	(0.005)	(0.006)	(0.008)	(0.010)	(0.005)	(0.006)	(0.008)	(0.010)
Water supply, sewerage (E)	0.005	0.059***	-0.082***	-0.170***	0.034***	0.071***	-0.056***	-0.227***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Construction (F)	0.042***	0.091***	0.064***	0.055***	0.074***	0.104***	0.060***	-0.104***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Wholesale, retail (G)	-0.216***	-0.090***	-0.071***	0.050***	-0.209***	-0.076***	-0.058***	-0.000
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Transport and storage (H)	-0.109***	-0.012**	-0.002	0.087***	-0.091***	0.008	-0.002	0.049***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Accommodation and food (I)	-0.175***	-0.095***	-0.030***	0.010	-0.162***	-0.051***	-0.004	0.039***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Information and comm (J)	-0.173***	-0.023***	-0.007	-0.138***	-0.093***	0.005	0.052***	-0.063***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Financial and insurance (K)	-0.118***	0.068***	0.010	-0.065***	-0.099***	0.029***	-0.048***	-0.047***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Real estate activities (L)	0.025***	0.003	-0.011	-0.019**	0.053***	0.005	-0.002	0.007
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Professional, scientific (M)	-0.090***	0.034***	0.003	-0.129***	-0.053***	0.022***	-0.019***	-0.068***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Admin and support services (N)	-0.173***	-0.082***	-0.066***	-0.026**	-0.135***	-0.049***	-0.034***	-0.014
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.007)	(0.010)
Public admin and defence (O)	-0.043***	-0.060***	-0.046***	-0.035***	-0.057***	-0.084***	-0.060***	-0.025**
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Education (P)	0.296***	0.119***	0.148***	-0.111***	0.244***	0.090***	0.127***	-0.057***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Health and social work (Q)	0.235***	-0.032***	-0.033***	0.046***	0.198***	-0.036***	-0.030***	0.030***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Arts, entertainment (R)	-0.034***	-0.016***	0.029***	-0.031***	0.004	0.032***	0.059***	0.028***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.005)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Other service activities (S)	0.173***	0.098***	0.128***	0.071***	0.190***	0.106***	0.134***	0.052***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Households as employers (T)	0.140***	0.211***	0.322***	0.361***	0.155***	0.299***	0.376***	0.725***
	(0.006)*	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Extraterritorial organisations (U)	0.038***	0.137***	0.091***	0.051***	0.126***	0.246***	0.175***	0.120***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
N (industry)	315,399	315,867	315,852	315,618	310,533	310,990	310,980	310,746
Occupation:								
Chief Executives (111)	0.275***	0.227***	0.195***	-0.243***	0.081***	0.047***	-0.046***	-0.182***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.008)	(0.011)
Production Managers (112)	0.130***	0.132***	0.035***	-0.115***	0.061***	0.045***	0.007	-0.149***
	(0.005)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.007)	(0.011)
Functional Managers (113)	0.077***	0.156***	0.113***	-0.200***	0.076***	0.123***	0.127***	-0.063***
	(0.005)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.007)	(0.010)
Financial Managers (115)	0.089***	0.254***	0.287***	0.095***	0.211***	0.487***	-0.339***	-0.439***
	(0.006)	(0.006)	(0.007)	(0.011)	(0.005)	(0.006)	(0.008)	(0.010)
Managers in Transport (116)	-0.114***	0.009	-0.055***	-0.327***	-0.167***	-0.097***	-0.145***	-0.415***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Senior Officers (117)	0.441***	0.133***	0.335***	0.461***	0.339***	0.228***	0.362***	0.681***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.009)
Health Directors (118)	0.265***	0.018***	0.047***	-0.197***	0.335***	0.073***	0.140***	-0.126***
	(0.005)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.007)	(0.011)
Managers in Retail (119)	0.006	0.008	-0.021***	-0.075***	-0.032***	-0.046***	-0.100***	-0.153***
	(0.005)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Managers in Agriculture (121)	0.273***	0.206***	0.246***	0.064***	0.234***	0.020***	0.226***	-0.005
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Managers in Hospitality (122)	0.044***	0.088***	0.066***	0.011	0.020***	0.069***	0.071***	-0.038***
	(0.005)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Managers in Health (124)	0.368***	-0.032***	0.102***	0.101***	0.302***	-0.087***	0.219***	0.215***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Managers in Other Services (125)	0.034***	0.091***	-0.028***	-0.160***	0.034***	0.104***	-0.025***	-0.154***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Science Professionals (211)	0.018***	0.022***	-0.015**	-0.164***	0.283***	-0.030***	-0.223***	-0.218***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.008)	(0.010)
Engineering Professionals (212)	-0.092***	0.103***	0.074***	0.095***	-0.039***	0.037***	-0.071***	-0.126***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.008)	(0.011)
IT Professionals (213)	-0.266***	-0.050***	-0.079***	-0.085***	-0.226***	-0.094***	-0.052***	0.014
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.008)	(0.010)
Conservation Professionals (214)	0.031***	0.001	-0.158***	-0.385***	0.333***	-0.022***	-0.001	0.368***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
R&D Managers (215)	-0.195***	0.009	-0.145***	-0.419***	-0.248***	-0.223***	-0.378***	-0.388***
	(0.005)	(0.005)	(0.008)	(0.011)	(0.005)	(0.005)	(0.008)	(0.011)
Health Professionals (221)	0.409***	0.177***	0.091***	0.029***	0.679***	0.193***	0.326***	-0.174***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.007)	(0.012)
Therapy Professionals (222)	0.457***	0.175***	0.176***	0.244***	0.518***	0.123***	0.226***	0.214***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Nursing Professionals (223)	0.368***	0.088***	0.064***	0.294***	0.231***	0.011*	-0.006	0.239***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Teaching Professionals (231)	0.402***	0.144***	0.171***	-0.180***	0.388***	0.126***	0.127***	-0.087***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Legal Professionals (241)	-0.043***	0.026***	-0.022***	-0.486***	0.037***	0.105***	0.083***	-0.184***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.005)	(0.007)	(0.010)
Business Professionals (242)	-0.076***	0.060***	-0.023***	-0.213***	-0.054***	0.019***	-0.079***	-0.225***
	(0.005)	(0.006)	(0.007)	(0.011)	(0.005)	(0.006)	(0.007)	(0.010)
Architects (243)	0.029***	0.076***	0.081***	-0.248***	-0.222***	-0.252**	-0.074***	-0.243***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Welfare Professionals (244)	0.482***	0.133***	0.173***	-0.072***	0.436***	0.118***	0.228***	-0.143***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Librarians (245)	0.048***	-0.080***	-0.032***	-0.302***	0.137***	-0.172***	-0.076***	0.174***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Quality Professionals (246)	0.003	0.150***	0.064***	-0.145***	-0.041***	0.106***	0.006	-0.183***
	(0.005)	(0.006)	(0.007)	(0.011)	(0.006)	(0.006)	(0.007)	(0.011)
Media Professionals (247)	-0.081***	0.031***	0.044***	-0.321***	0.060***	0.017***	0.211***	-0.288***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Science Technicians (311)	-0.039***	-0.013**	-0.061***	-0.031***	-0.006	-0.010*	-0.111***	-0.054***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Draughtspersons (312)	-0.092***	-0.100***	-0.084***	-0.150***	-0.003	-0.019***	0.048***	0.073***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
IT Technicians (313)	-0.267***	-0.098***	-0.134***	-0.054***	-0.202***	-0.037***	-0.102***	-0.119***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Health Associate Prof (321)	0.156***	-0.049***	-0.027***	0.212***	0.149***	-0.030***	0.018**	0.214***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Welfare Associate Prof (323)	0.237***	-0.053***	0.010	-0.217***	0.270***	-0.013**	0.058***	-0.151***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Protective Service (331)	0.085***	0.036***	0.099***	0.259***	0.041***	-0.063***	0.018**	0.224***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Artistic Occupations (341)	-0.041***	-0.050***	0.015*	-0.182***	0.157***	0.111***	0.209***	-0.070***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Design Occupations (342)	-0.110***	0.041***	0.019***	-0.029***	-0.045***	0.041***	0.006	-0.120***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Sports Occupations (344)	0.335***	0.190***	0.232***	0.283***	0.316***	0.084***	0.048***	0.188***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Transport Associate Prof (351)	0.117***	0.180***	0.276***	0.169***	0.332***	0.056***	0.178***	0.604***
	(0.006)	(0.007)	(0.008)	(0.012)	(0.007)	(0.007)	(0.008)	(0.011)
Legal Associate Prof (352)	-0.189***	0.005	-0.111***	-0.111***	-0.087***	0.164***	0.019***	0.171***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.010)
Business Associate Prof (353)	-0.115***	0.014**	-0.041***	-0.112***	-0.040***	-0.047***	-0.039***	-0.117***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Sales Associate Prof (354)	-0.069***	0.055***	0.056***	-0.118***	-0.056***	0.030***	0.035***	-0.133***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Conservation Assoc Prof (355)	0.018***	0.108***	0.313***	-0.119***	0.118***	-0.042***	0.300***	-0.265***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Public Services Assoc Prof (356)	-0.008	-0.014**	-0.034***	-0.088***	-0.019***	-0.012**	-0.049***	-0.079***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Admin: Government (411)	-0.150***	-0.114***	-0.093***	-0.080***	-0.117***	-0.118***	-0.040***	-0.130***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Admin: Finance (412)	-0.193***	-0.025***	-0.066***	-0.011	-0.200***	-0.061***	-0.072***	-0.016*
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Admin: Records (413)	-0.167***	-0.025***	-0.048***	0.014	-0.163***	-0.015***	-0.040***	-0.012
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Other Administrative (415)	-0.147***	-0.060***	-0.046***	-0.030***	-0.164***	-0.111***	-0.108***	-0.089***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Admin: Office Managers (416)	-0.016***	0.034***	-0.029***	-0.040***	-0.006	0.015***	-0.044***	0.026**
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Secretarial (421)	-0.171***	-0.018***	0.005	0.132***	-0.229***	-0.096***	-0.165***	-0.151***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.007)	(0.010)
Agricultural Trades (511)	0.095***	0.043***	0.045***	0.395***	0.067***	-0.037***	0.009	0.261***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.007)	(0.007)	(0.009)	(0.012)	(0.006)	(0.007)	(0.009)	(0.011)
Metal Forming Trades (521)	-0.169***	-0.488***	-0.440***	-0.844***	0.003	-0.176***	-1.838***	-1.382***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.005)	(0.006)	(0.009)	(0.010)
Metal Machining Trades (522)	-0.141***	-0.009	-0.149***	0.333***	-0.066***	-0.376***	-0.092***	0.519***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Vehicle Trades (523)	-0.007	0.120***	0.210***	0.342***	0.369***	0.507***	0.464***	1.415***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.006)	(0.007)	(0.006)	(0.010)
Electrical Trades (524)	-0.075***	-0.023***	-0.151***	0.085***	-0.500***	-0.562***	-0.159***	-0.013
	(0.005)	(0.006)	(0.007)	(0.010)	(0.006)	(0.007)	(0.007)	(0.010)
Skilled Trades Supervisors (525)	0.075***	0.020***	-0.130***	-0.099***	0.449***	-0.020***	-0.014**	0.439***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.007)	(0.011)
Construction Trades (531)	0.099***	0.194***	-0.223***	0.083***	0.060***	0.030***	0.111***	-0.207***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.005)	(0.006)	(0.007)	(0.010)
Building Finishing Trades (532)	0.041***	0.233***	0.065***	0.483***	-0.010	0.149***	0.168***	0.747***
	(0.006)	(0.007)	(0.009)	(0.012)	(0.007)	(0.007)	(0.009)	(0.013)
Construction Supervisors (533)	0.562***	0.350***	0.293***	0.647***	0.787***	0.406***	0.458***	0.695***
	(0.005)	(0.005)	(0.007)	(0.009)	(0.005)	(0.005)	(0.007)	(0.009)
Textiles Trades (541)	-0.322***	0.059***	0.031***	0.201***	-0.481***	-0.028***	0.033***	-0.012
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)
Printing Trades (542)	-0.263***	-0.102***	-0.019**	0.125***	-0.491***	-0.302***	0.179***	-0.270***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.006)	(0.006)	(0.007)	(0.010)
Food Preparation Trades (543)	-0.043***	-0.013**	0.037***	0.052***	-0.124***	-0.056***	-0.048***	0.031***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Other Skilled Trades (544)	-0.022***	0.067***	0.065***	0.276***	-0.056***	0.063***	-0.028***	0.153***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Childcare Services (612)	0.302***	0.048***	0.075***	0.122***	0.237***	-0.069***	-0.136***	0.085***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.011)
Animal Care Services (613)	0.100***	0.065***	-0.038***	0.835***	0.348***	0.227***	0.119***	0.900***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Caring Personal Services (614)	0.171***	-0.149***	-0.110***	0.018*	0.086***	-0.221***	-0.157***	0.009
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)
Leisure and Travel Services (621)	-0.051***	0.002	0.047***	0.048***	-0.000	0.122***	0.157***	0.118***
	(0.005)	(0.005)	(0.007)	(0.010)	(0.005)	(0.006)	(0.007)	(0.010)
Hairdressers (622)	0.131***	0.038***	0.084***	0.279***	0.111***	-0.279***	0.179***	0.271***
	(0.007)	(0.007)	(0.009)	(0.012)	(0.006)	(0.007)	(0.009)	(0.012)
Housekeeping Services (623)	0.020***	-0.044***	-0.017**	0.011	0.024***	-0.011*	0.033***	-0.217***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.006)	(0.007)	(0.008)	(0.011)	(0.006)	(0.007)	(0.008)	(0.011)
Cleaning Managers (624)	-0.031***	-0.031***	0.126***	0.240***	-0.138***	-0.147***	-0.213***	-0.144***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)
Sales Assistants (711)	-0.295***	-0.227***	-0.108***	0.132***	-0.237***	-0.162***	-0.054***	0.152***
	(0.007)	(0.007)	(0.009)	(0.012)	(0.007)	(0.007)	(0.009)	(0.012)
Sales Related Occupations (712)	-0.215***	-0.098***	-0.051***	0.018*	-0.189***	-0.102***	-0.014*	-0.054***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.007)	(0.010)
Sales Supervisors (713)	-0.137***	-0.062***	-0.163***	-0.030***	-0.163***	-0.219***	-0.200***	-0.110***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)
Customer Service (721)	-0.234***	-0.194***	-0.124***	-0.102***	-0.138***	-0.051***	0.037***	-0.010
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Cust Service Managers (722)	-0.080***	0.019***	-0.045***	-0.119***	-0.100***	0.022***	-0.072***	-0.092***
	(0.005)	(0.006)	(0.007)	(0.010)	(0.005)	(0.006)	(0.008)	(0.010)
Process Operatives (811)	-0.192***	-0.072***	-0.082***	0.075***	-0.295***	-0.073***	-0.124***	-0.099***
	(0.006)	(0.006)	(0.008)	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)
Plant Operatives (812)	-0.226***	-0.058***	0.003	0.076***	-0.059***	0.313***	-0.146***	-0.912***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Assemblers (813)	-0.170***	-0.056***	-0.054***	0.167***	-0.079***	0.082***	0.014*	0.204***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Construction Operatives (814)	0.179***	0.327***	0.491***	0.443***	0.987***	0.675***	0.530***	0.581***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.005)	(0.005)	(0.006)	(0.008)
Road Transport Drivers (821)	-0.197***	-0.276***	-0.199***	-0.012	-0.456***	-0.057***	-0.048***	-0.038***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.011)
Mobile Machine Drivers (822)	-0.135***	-0.259***	0.333***	0.126***	0.396***	-1.048***	1.257***	-0.061***
	(0.006)	(0.007)	(0.008)	(0.010)	(0.009)	(0.010)	(0.009)	(0.013)
Other Drivers (823)	0.102***	0.193***	0.043***	0.292***	0.155***	0.130***	0.015*	0.199***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.005)	(0.009)	(0.011)
Elementary Agricultural (911)	-0.053***	-0.087***	0.184***	0.608***	-0.361***	-0.761***	-0.281***	0.389***
	(0.006)	(0.007)	(0.008)	(0.011)	(0.007)	(0.008)	(0.008)	(0.010)
Elementary Construction (912)	-0.019***	0.153***	0.359***	0.600***	-0.211***	0.410***	0.599***	0.854***
	(0.006)	(0.006)	(0.007)	(0.010)	(0.005)	(0.005)	(0.007)	(0.009)
Elementary Process Plant (913)	-0.251***	-0.101***	0.013	-0.002	-0.650***	-0.706***	-0.340***	-1.305***
	(0.006)	(0.007)	(0.008)	(0.011)	(0.006)	(0.006)	(0.007)	(0.011)
Elementary Administration (921)	-0.195***	-0.056***	0.013*	0.196***	-0.192***	-0.050***	0.017**	0.229***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.006)	(0.006)	(0.008)	(0.010)
Elementary Cleaning (923)	-0.275***	-0.164***	-0.058***	-0.001	0.664***	0.793***	0.949***	1.117***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.007)	(0.007)	(0.009)	(0.012)	(0.007)	(0.007)	(0.008)	(0.011)
Elementary Security (924)	-0.240***	-0.207***	-0.051***	0.137***	-0.237***	-0.230***	-0.140***	0.128***
	(0.006)	(0.007)	(0.008)	(0.011)	(0.006)	(0.007)	(0.008)	(0.011)
Elementary Sales (925)	-0.484***	-0.411***	-0.289***	0.026**	-0.467***	-0.326***	-0.228***	0.010
	(0.007)	(0.007)	(0.009)	(0.011)	(0.007)	(0.007)	(0.009)	(0.011)
Elementary Storage (926)	-0.311***	-0.155***	-0.033***	0.118***	-0.775***	-0.760***	-0.438***	-0.311***
	(0.006)	(0.006)	(0.008)	(0.010)	(0.007)	(0.008)	(0.008)	(0.011)
Other Elementary Services (927)	-0.228***	-0.104***	-0.000	0.057***	-0.301***	-0.164***	-0.006	0.153***
	(0.007)	(0.007)	(0.009)	(0.012)	(0.007)	(0.007)	(0.009)	(0.012)
N (occupation)	315,571	316,039	316,025	315,791	310,591	311,049	311,039	310,805

*Each cell represents a separate regression and shows the coefficient and associated standard error pertaining to the explanatory variable of interest in the WLS regression. Other covariates not shown are whether full time, whether permanent, whether new job and log net weekly earnings. The Working and Active regressions do not include any covariates and the Self-employed regression only includes whether full time and whether new job; * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Table 5.1 – Distribution of male/female couples (aged 18-64). Source: Harmonised BHPS (University of Essex 2018).

Number of panels (p)	Frequency
1	5,694
2	4,009
3	2,421
4	2,015
5	2,087
6	2,046
7	3,542
8	434
9	344
10	366
11	303
12	289
13	260
14	304
15	217
16	267
17	129
18	239
19	101
20	110
21	86
22	73
23	74
24	183
Total	25,594

Table 5.2 – Distribution of couples according to employment status of male and female partner. Source: Harmonised BHPS (University of Essex 2018).

				Self-reported unemployment				ILO unemployment				Not working			
Wave	Year	Male employed	Female employed	Male unemployed		Female unemployed		Male unemployed		Female unemployed		Male not working		Female not working	
		N		N	%	N	%	N	%	N	%	N	%	N	%
1	1991	2,123	1,777	206	8.8	59	3.2	n/a		n/a		532	20.0	878	33.1
2	1992	2,106	1,669	195	8.5	68	3.9	n/a		n/a		424	16.8	861	34.0
3	1993	1,988	1,620	182	8.4	60	3.6	n/a		n/a		418	17.4	786	32.7
4	1994	1,959	1,609	180	8.4	48	2.9	n/a		n/a		425	17.8	775	32.5
5	1995	1,946	1,617	148	7.1	46	2.8	n/a		n/a		403	17.2	732	31.2
6	1996	2,009	1,658	141	6.6	55	3.2	85	4.1	53	3.1	390	16.3	741	30.9
7	1997	2,304	1,888	132	5.4	53	2.7	80	3.4	46	2.4	449	16.3	865	31.4
8	1998	2,302	1,878	111	4.6	43	2.2	64	2.7	39	2.0	425	15.6	849	31.1
9	1999	3,145	2,615	160	4.8	82	3.0	88	2.7	42	1.6	654	17.2	1,184	31.2
10	2000	3,154	2,585	139	4.2	83	3.1	78	2.4	37	1.4	620	16.4	1,189	31.5
11	2001	3,725	3,034	180	4.6	81	2.6	90	2.4	48	1.6	724	16.3	1,415	31.8
12	2002	3,339	2,745	131	3.8	65	2.3	83	2.4	38	1.4	617	15.6	1,211	30.6
13	2003	3,310	2,700	132	3.8	67	2.4	61	1.8	38	1.4	561	14.5	1,171	30.3
14	2004	3,189	2,589	113	3.4	79	3.0	53	1.6	39	1.5	533	14.3	1,133	30.4
15	2005	3,129	2,508	114	3.5	78	3.0	55	1.7	58	2.3	495	13.7	1,116	30.8
16	2006	2,930	2,377	111	3.7	67	2.7	65	2.2	54	2.2	479	14.1	1,032	30.3
17	2007	2,819	2,302	89	3.1	47	2.0	42	1.5	34	1.5	437	13.4	954	29.3
18	2008	2,655	2,173	121	4.4	56	2.5	58	2.1	48	2.2	434	14.0	916	29.7
19	2009	8,730	7,011	811	8.5	411	5.5	446	4.9	216	3.0	1,980	18.5	3,699	34.5
20	2010	10,098	8,168	741	6.8	443	5.1	384	3.7	262	3.1	2,039	16.8	3,969	32.7
21	2011	9,100	7,421	630	6.5	357	4.6	327	3.5	205	2.7	1,745	16.1	3,424	31.6
22	2012	8,720	7,146	525	5.7	347	4.6	238	2.7	197	2.7	1,525	14.9	3,099	30.2
23	2013	8,278	6,818	426	4.9	299	4.2	205	2.4	170	2.4	1,305	13.6	2,765	28.9
24	2014	8,199	6,618	397	4.6	376	5.4	175	2.1	149	2.2	1,271	13.4	2,852	30.1
25	2015	7,607	6,199	340	4.3	301	4.6	144	1.9	131	2.1	1,125	12.9	2,533	29.0
Total		108,864	88,725	6,455	5.6	3,671	4.0	2,821	2.8	1,904	2.3	20,010	15.5	40,149	31.2

Table 5.3 – Cross-tabulation of couples according to employment status of male and female partner, row proportions. Source: Harmonised BHPS (University of Essex 2018).

	Male employed	Male unemployed (self-report)	Male unemployed (ILO)	Male not working	Female employed	Female unemployed (self-report)	Female unemployed (ILO)	Female not working	N
Male employed	1.00	0.00	0.00	0.00	0.74	0.02	0.01	0.26	108,862
Male unemployed (self-report)	0.00	1.00	0.39	1.00	0.39	0.14	0.05	0.61	6,455
Male unemployed (ILO)	0.00	0.89	1.00	1.00	0.45	0.15	0.09	0.55	2,821
Male not working	0.00	0.32	0.14	1.00	0.38	0.07	0.03	0.62	20,011
Female employed	0.91	0.03	0.01	0.09	1.00	0.00	0.00	0.00	88,725
Female unemployed (self-report)	0.62	0.24	0.11	0.38	0.00	1.00	0.27	1.00	3,671
Female unemployed (ILO)	0.74	0.18	0.13	0.26	0.00	0.51	1.00	1.00	1,904
Female not working	0.69	0.10	0.04	0.31	0.00	0.09	0.05	1.00	40,148

The figures in the table refer to the proportion of couples in each row criterion that also fulfil the column criterion in question.

Table 5.4 – Mean well-being scores by employment status of self and partner. Source: Harmonised BHPS (University of Essex 2018).

	Male partner's GHQ	Female partner's GHQ	Male partner's life satisfaction	Female partner's life satisfaction
Male partner employed	25.92	24.68	5.27	5.29
Male partner unemployed (self-report)	23.15*	22.52*	4.59*	4.67*
Male partner unemployed (ILO)	22.91*	22.75*	4.56*	4.73*
Male partner not working	23.26*	23.07*	4.74*	4.90*
Female partner employed	25.74	24.88	5.25	5.31
Female partner unemployed (self-report)	24.67*	22.28*	4.84*	4.70*
Female partner unemployed (ILO)	24.57*	22.51*	4.84*	4.74*
Female partner not working	24.99*	23.40*	5.05*	5.05*

Star (*) indicates that the mean well-being in the non-employment category is significantly lower than the mean well-being where the respective partner is employed, according to a pairwise mean test (95% confidence interval).

Table 5.5 – Means of dependent and explanatory variables. Source: Harmonised BHPS (University of Essex 2018).

	Mean	N
Male partner's GHQ	25.52	104,920
Female partner's GHQ	24.42	104,920
Male partner's life satisfaction	5.20	89,486
Female partner's life satisfaction	5.25	89,486
Male partner unemployed (self-report)	0.039	86,769
Female partner unemployed (self-report)	0.037	86,769
Male partner unemployed (ILO)	0.018	84,000
Female partner unemployed (ILO)	0.020	84,000
Male partner not working	0.155	128,874
Female partner not working	0.312	128,874
Log of real household income	8.11	124,109
Male partner's age	43.9	128,874
Female partner's age	41.7	128,874
Male partner's age squared	2049	128,874
Female partner's age squared	1860	128,874
Male partner's highest qualification: degree	0.231	125,741
Female partner's highest qualification: degree	0.230	127,180
Male partner's highest qualification: other higher degree	0.099	125,741
Female partner's highest qualification: other higher degree	0.125	127,180
Male partner's highest qualification: A-level	0.236	125,741
Female partner's highest qualification: A-level	0.175	127,180
Male partner's highest qualification: GCSE	0.220	125,741
Female partner's highest qualification: GCSE	0.247	127,180
Male partner's highest qualification: Other qualification	0.096	125,741
Female partner's highest qualification: Other qualification	0.097	127,180
Male partner's health	2.259	116,848
Female partner's health	2.314	122,244
Dependent children in household	0.497	128,874
Other adults in household	0.296	128,874

Table 5.6 – Random effects two-equation SUR results: GHQ. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
Male partner unemployed	-2.485***	-0.508	-2.494***	-0.552	-2.951***	-0.805*	-2.819***	-0.763*	-1.723***	-0.211*	-1.633***	-0.205*
	(0.420)	(0.418)	(0.431)	(0.410)	(0.447)	(0.478)	(0.441)	(0.458)	(0.118)	(0.116)	(0.117)	(0.116)
Female partner unemployed	0.233	-1.256***	0.312	-1.289***	-0.269	-1.599***	-0.246	-1.510***	0.273***	-0.502***	0.200***	-0.484***
	(0.389)	(0.387)	(0.389)	(0.378)	(0.348)	(0.373)	(0.325)	(0.337)	(0.075)	(0.074)	(0.074)	(0.074)
Household income	0.221	0.364**	0.210	0.324**	0.208*	0.356***	0.166	0.320***	0.166***	0.195***	0.196***	0.183***
	(0.148)	(0.147)	(0.154)	(0.148)	(0.116)	(0.124)	(0.116)	(0.120)	(0.061)	(0.060)	(0.060)	(0.059)
Age			-0.306**	-0.136			-0.298***	-0.154			-0.388***	-0.250***
			(0.126)	(0.109)			(0.093)	(0.094)			(0.058)	(0.052)
Age squared			0.004***	0.002			0.003***	0.002*			0.005***	0.003***
			(0.001)	(0.001)			(0.001)	(0.001)			(0.001)	(0.001)
Degree			1.473*	-0.679			1.191	0.941			0.219	-0.382***
			(0.767)	(1.255)			(1.048)	(3.467)			(0.541)	(0.118)
Other higher			1.037	-1.470			1.062	-0.073			1.049*	-0.768*
			(0.872)	(2.796)			(1.005)	(3.410)			(0.611)	(0.453)
A-levels			1.443	-0.752			1.108	0.722			1.471***	0.070
			(0.888)	(2.712)			(0.742)	(3.339)			(0.467)	(0.492)
GCSEs			0.863	-0.751			0.621	0.780			0.696	-0.033
			(0.849)	(3.095)			(0.882)	(3.400)			(0.507)	(0.664)
Other qual			0.143	0.645			-0.102	1.510***			0.035	-0.049
			(0.789)	(4.020)			(2.029)	(0.380)			(0.503)	(1.118)
Male partner's health			-0.870***	-0.049			-0.837***	-0.054			-1.014***	-0.060*
			(0.067)	(0.065)			(0.053)	(0.055)			(0.032)	(0.032)
Female partner's health			-0.066	-1.169***			-0.071	-1.145***			-0.084**	-1.275***
			(0.068)	(0.065)			(0.053)	(0.055)			(0.033)	(0.033)
Children			-0.278	0.131			-0.220	0.220			-0.111	0.456***
			(0.188)	(0.179)			(0.145)	(0.152)			(0.096)	(0.095)
Other adults			-0.126	-0.051			-0.168	0.103			-0.190**	-0.128*
			(0.144)	(0.139)			(0.132)	(0.136)			(0.077)	(0.077)
Mean (Male unemployed)	1.142**	1.472***	1.826***	1.921***	1.988***	1.441**	2.109***	1.746***	0.121	0.221	1.227***	0.724***
	(0.556)	(0.553)	(0.654)	(0.630)	(0.621)	(0.663)	(0.616)	(0.639)	(0.148)	(0.146)	(0.157)	(0.154)
Mean (Female unemployed)	0.846	-0.472	0.894	0.209	1.049*	0.094	1.275**	0.812	0.429***	-0.080	0.724***	0.993***
	(0.583)	(0.579)	(0.557)	(0.540)	(0.587)	(0.627)	(0.590)	(0.606)	(0.097)	(0.096)	(0.100)	(0.099)
Mean (Household income)	2.933***	2.663***	2.511***	2.214***	2.945***	2.671***	2.575***	2.198***	2.987***	2.841***	2.650***	2.515***
	(0.149)	(0.148)	(0.185)	(0.191)	(0.116)	(0.124)	(0.138)	(0.149)	(0.061)	(0.060)	(0.074)	(0.073)
Mean (Age)			0.646***	0.558***			0.631***	0.576***			0.703***	0.625***
			(0.129)	(0.115)			(0.096)	(0.099)			(0.060)	(0.055)
Mean (Age squared)			-0.007***	-0.007***			-0.007***	-0.007***			-0.008***	-0.007***

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
			(0.001)	(0.001)			(0.001)	(0.001)			(0.001)	(0.001)
Mean (Degree)			-2.485***	-0.023			-2.249**	-1.458			-0.946*	-0.192
			(0.839)	(0.000)			(1.066)	(3.453)			(0.549)	(0.000)
Mean (Other higher)			-1.396	1.254			-1.394	0.006			-1.189*	0.551
			(0.940)	(2.325)			(1.025)	(3.397)			(0.621)	(0.438)
Mean (A-levels)			-1.421	0.620			-1.007	-0.646			-1.187**	-0.072
			(0.951)	(2.249)			(0.765)	(3.324)			(0.478)	(0.482)
Mean (GCSEs)			-0.447	0.894			-0.094	-0.491			-0.069	0.159
			(0.908)	(2.670)			(0.905)	(3.385)			(0.516)	(0.655)
Mean (Other qual)			0.181	-0.481			0.563	-1.041			0.524	0.197
			(0.899)	(3.710)			(2.068)	(0.000)			(0.518)	(1.112)
Mean (Male partner's health)			-0.640***	0.081			-0.651***	0.119			-0.862***	-0.028
			(0.088)	(0.085)			(0.070)	(0.073)			(0.043)	(0.042)
Mean (Female partner's health)			0.249***	-0.513***			0.203***	-0.576***			0.135***	-0.792***
			(0.086)	(0.085)			(0.071)	(0.074)			(0.042)	(0.042)
Mean (Children)			-0.326	-0.487**			-0.354**	-0.573***			-0.528***	-0.714***
			(0.231)	(0.225)			(0.171)	(0.180)			(0.112)	(0.112)
Mean (Other adults)			-1.030***	-1.292***			-0.968***	-1.367***			-1.343***	-1.588***
			(0.188)	(0.191)			(0.169)	(0.175)			(0.101)	(0.100)
N	64,368	64,368	63,565	63,565	55,802	55,802	55,096	55,096	93,725	93,725	92,181	92,181

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. The variables labelled 'Mean(.)' are the within-couple means of the variable in the brackets. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table 5.7 – Random effects two-equation SUR results: Life satisfaction. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
Male partner unemployed	-0.291***	-0.201**	-0.322***	-0.231***	-0.301***	-0.235**	-0.297***	-0.244**	-0.167***	-0.083***	-0.171***	-0.108***
	(0.087)	(0.080)	(0.086)	(0.079)	(0.103)	(0.093)	(0.093)	(0.105)	(0.032)	(0.029)	(0.031)	(0.029)
Female partner unemployed	-0.194***	-0.143**	-0.155**	-0.119**	-0.191**	-0.163**	-0.185**	-0.115	0.038*	0.046***	0.017	0.033*
	(0.062)	(0.058)	(0.062)	(0.056)	(0.086)	(0.078)	(0.077)	(0.087)	(0.020)	(0.018)	(0.020)	(0.018)
Household income	0.037	0.067**	0.039	0.070***	0.037	0.084***	0.070***	0.103***	0.047***	0.044***	0.059***	0.061***
	(0.029)	(0.027)	(0.029)	(0.027)	(0.030)	(0.027)	(0.027)	(0.031)	(0.017)	(0.015)	(0.017)	(0.015)
Age			-0.069***	-0.039*			-0.081***	-0.028			-0.098***	-0.089***
			(0.024)	(0.022)			(0.022)	(0.024)			(0.015)	(0.012)
Age squared			0.001***	0.000			0.001***	0.000			0.001***	0.001***
			(0.000)	(0.000)			(0.000)	(0.000)			(0.000)	(0.000)
Degree			0.611	-0.175			0.685	0.035			0.279*	-0.361
			(0.384)	(1.543)			(0.662)	(1.312)			(0.161)	(0.495)
Other higher			0.095	-0.301			0.174	-0.137			0.118	-0.312
			(0.375)	(1.538)			(0.663)	(1.306)			(0.151)	(0.493)
A-levels			0.165	-0.240			0.276	-0.060			0.310**	-0.321
			(0.362)	(1.543)			(0.649)	(1.293)			(0.138)	(0.487)
GCSEs			0.146	-0.002			0.193	0.115			0.075	-0.218
			(0.359)	(1.545)			(0.640)	(1.307)			(0.146)	(0.491)
Other qual			0.114	0.093			0.236	0.321			0.085	-0.216
			(0.312)	(0.886)			(0.646)	(1.002)			(0.104)	(0.410)
Male partner's health			-0.149***	-0.002			-0.137***	0.015			-0.170***	0.002
			(0.014)	(0.012)			(0.013)	(0.014)			(0.008)	(0.007)
Female partner's health			-0.020	-0.172***			-0.030**	-0.158***			-0.012	-0.194***
			(0.014)	(0.013)			(0.013)	(0.015)			(0.008)	(0.008)
Children			-0.009	0.014			0.020	-0.002			0.055**	0.112***
			(0.042)	(0.039)			(0.037)	(0.041)			(0.026)	(0.024)
Other adults			-0.012	-0.001			-0.023	-0.008			-0.041*	-0.037*
			(0.037)	(0.034)			(0.034)	(0.038)			(0.021)	(0.019)
Mean (Male unemployed)	-0.282**	0.025	0.002	0.240**	-0.294**	-0.050	-0.027	0.173	-0.163***	-0.069**	0.167***	0.125***
	(0.115)	(0.107)	(0.121)	(0.109)	(0.148)	(0.133)	(0.139)	(0.158)	(0.039)	(0.035)	(0.040)	(0.036)
Mean (Female unemployed)	0.266**	-0.231**	0.322***	-0.041	0.090	-0.261**	0.148	-0.079	0.046*	-0.100***	0.196***	0.189***
	(0.110)	(0.102)	(0.112)	(0.102)	(0.140)	(0.128)	(0.129)	(0.144)	(0.025)	(0.023)	(0.026)	(0.024)
Mean (Household income)	0.605***	0.581***	0.625***	0.582***	0.606***	0.564***	0.595***	0.545***	0.595***	0.604***	0.622***	0.625***
	(0.029)	(0.027)	(0.035)	(0.032)	(0.030)	(0.027)	(0.033)	(0.037)	(0.017)	(0.015)	(0.020)	(0.018)
Mean (Age)			0.112***	0.095***			0.123***	0.083***			0.133***	0.135***
			(0.025)	(0.022)			(0.023)	(0.026)			(0.015)	(0.013)
Mean (Age squared)			-0.001***	-0.001***			-0.001***	-0.001***			-0.001***	-0.001***

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
			(0.000)	(0.000)			(0.000)	(0.000)			(0.000)	(0.000)
Mean (Degree)			-0.818**	-0.008			-0.873	-0.160			-0.344**	0.214
			(0.382)	(1.546)			(0.661)	(1.315)			(0.163)	(0.495)
Mean (Other higher)			-0.145	0.144			-0.219	0.040			-0.092	0.218
			(0.374)	(1.540)			(0.663)	(1.308)			(0.153)	(0.493)
Mean (A-levels)			-0.237	0.125			-0.347	0.014			-0.278**	0.274
			(0.359)	(1.545)			(0.648)	(1.296)			(0.140)	(0.487)
Mean (GCSEs)			-0.099	-0.029			-0.147	-0.101			0.077	0.195
			(0.357)	(1.546)			(0.641)	(1.309)			(0.148)	(0.491)
Mean (Other qual)			-0.136	-0.171			-0.248	-0.307			-0.003	0.142
			(0.314)	(0.901)			(0.651)	(1.023)			(0.108)	(0.414)
Mean (Male partner's health)			-0.217***	-0.008			-0.231***	-0.033*			-0.251***	-0.045***
			(0.018)	(0.017)			(0.017)	(0.020)			(0.011)	(0.010)
Mean (Female partner's health)			-0.021	-0.201***			-0.007	-0.209***			-0.058***	-0.260***
			(0.019)	(0.018)			(0.017)	(0.020)			(0.011)	(0.010)
Mean (Children)			-0.129***	-0.138***			-0.159***	-0.122**			-0.227***	-0.247***
			(0.048)	(0.045)			(0.044)	(0.050)			(0.030)	(0.028)
Mean (Other adults)			-0.272***	-0.381***			-0.257***	-0.344***			-0.349***	-0.451***
			(0.046)	(0.042)			(0.042)	(0.048)			(0.027)	(0.025)
N	54,193	54,193	53,618	53,618	53,065	53,065	52,527	52,527	78,210	78,210	77,131	77,131

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. The variables labelled 'Mean(.)' are the within-couple means of the variable in the brackets. * p<0.1; ** p<0.05; *** p<0.01. *Standard errors in brackets.*

Table 5.8 – Random effects two-equation SUR results with low income interaction: GHQ. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
Low income quartile	-0.156	-0.150	-0.274	-0.134	-0.130	-0.032	-0.168	-0.116	-0.068	-0.081	-0.115	0.018
	(0.202)	(0.199)	(0.217)	(0.214)	(0.156)	(0.167)	(0.150)	(0.157)	(0.107)	(0.106)	(0.106)	(0.105)
Male partner unemployed	-2.772***	-0.392	-2.847***	-0.387	-3.123***	-0.201	-2.960***	-0.330	-1.435***	-0.139	-1.345***	-0.174
	(0.901)	(0.881)	(0.942)	(0.935)	(0.689)	(0.738)	(0.680)	(0.709)	(0.142)	(0.140)	(0.147)	(0.147)
Male partner unemployed * Low income quartile	0.277	-0.287	0.493	-0.302	0.177	-1.004	0.207	-0.641	-0.506***	-0.080	-0.514***	-0.030
	(1.075)	(1.053)	(1.105)	(1.107)	(0.905)	(0.970)	(0.892)	(0.931)	(0.181)	(0.179)	(0.180)	(0.179)
Female partner unemployed	-0.106	-1.433***	-0.055	-1.582***	-0.337	-2.007***	-0.298	-2.061***	0.201**	-0.502***	0.115	-0.482***
	(0.518)	(0.507)	(0.504)	(0.499)	(0.420)	(0.450)	(0.412)	(0.430)	(0.082)	(0.081)	(0.080)	(0.080)
Female partner unemployed * Low income quartile	0.440	0.201	0.587	0.484	-0.009	0.745	0.014	1.084	0.146	-0.020	0.178	-0.073
	(0.682)	(0.668)	(0.668)	(0.658)	(0.734)	(0.787)	(0.666)	(0.693)	(0.144)	(0.142)	(0.143)	(0.142)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	64,368	64,368	63,565	63,565	55,802	55,802	55,096	55,096	93,725	93,725	92,181	92,181

*The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Table 5.9 – Random effects two-equation SUR results with low income interaction: Life satisfaction. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
Low income quartile	-0.023	0.006	-0.058	0.001	-0.028	0.010	-0.055	-0.008	-0.003	-0.008	-0.018	0.000
	(0.037)	(0.034)	(0.037)	(0.034)	(0.038)	(0.035)	(0.034)	(0.039)	(0.024)	(0.022)	(0.024)	(0.022)
Male partner unemployed	-0.406***	-0.177	-0.477***	-0.221*	-0.347**	-0.072	-0.359**	-0.105	-0.136***	-0.058*	-0.156***	-0.084***
	(0.130)	(0.121)	(0.130)	(0.118)	(0.167)	(0.151)	(0.151)	(0.169)	(0.037)	(0.034)	(0.036)	(0.033)
Male partner unemployed * Low income quartile	0.148	-0.074	0.237	-0.039	0.057	-0.279	0.096	-0.234	-0.056	-0.030	-0.027	-0.040
	(0.145)	(0.136)	(0.145)	(0.132)	(0.213)	(0.193)	(0.191)	(0.214)	(0.044)	(0.039)	(0.043)	(0.039)
Female partner unemployed	-0.241***	-0.170**	-0.162*	-0.139*	-0.128	-0.092	-0.119	-0.066	0.041*	0.064***	0.020	0.039**
	(0.086)	(0.080)	(0.086)	(0.078)	(0.121)	(0.110)	(0.108)	(0.121)	(0.022)	(0.020)	(0.022)	(0.020)
Female partner unemployed * Low income quartile	0.046	0.014	-0.007	0.005	-0.150	-0.157	-0.147	-0.107	-0.016	-0.067**	-0.016	-0.040
	(0.125)	(0.117)	(0.125)	(0.114)	(0.171)	(0.154)	(0.153)	(0.172)	(0.033)	(0.030)	(0.033)	(0.029)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	54,193	54,193	53,618	53,618	53,065	53,065	52,527	52,527	78,210	78,210	77,131	77,131

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table 5.10 – Random effects two-equation SUR results with financial difficulty interaction: GHQ. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
Financial difficulty	-1.956***	-2.437***	-1.981***	-2.352***	-2.056***	-2.367***	-1.854***	-2.246***	-2.093***	-2.411***	-2.012***	-2.346***
	(0.225)	(0.216)	(0.242)	(0.226)	(0.181)	(0.178)	(0.190)	(0.166)	(0.130)	(0.120)	(0.131)	(0.122)
Male partner unemployed	-1.676***	-0.338	-1.918***	-0.461	-1.888***	-0.431	-1.961***	-0.530	-1.313***	-0.139	-1.230***	-0.208*
	(0.466)	(0.499)	(0.481)	(0.524)	(0.558)	(0.541)	(0.584)	(0.487)	(0.122)	(0.121)	(0.124)	(0.122)
Male partner unemployed * Financial difficulty	-1.339*	0.582	-0.761	0.358	-1.638**	-0.199	-1.663**	-0.030	-0.948***	0.186	-0.969***	0.227
	(0.784)	(0.678)	(0.842)	(0.779)	(0.663)	(0.715)	(0.690)	(0.626)	(0.213)	(0.214)	(0.196)	(0.200)
Female partner unemployed	0.392	-0.827**	0.344	-0.775**	-0.046	-1.113***	-0.085	-1.094***	0.269***	-0.447***	0.191**	-0.445***
	(0.417)	(0.392)	(0.394)	(0.384)	(0.370)	(0.404)	(0.357)	(0.364)	(0.076)	(0.077)	(0.076)	(0.077)
Female partner unemployed * Financial difficulty	-0.367	-1.913	-0.355	-1.673	-0.130	-0.403	-0.140	-0.615	0.419**	-0.034	0.427**	-0.020
	(0.829)	(1.256)	(0.798)	(1.234)	(1.081)	(1.189)	(1.102)	(0.800)	(0.182)	(0.165)	(0.179)	(0.165)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	64,295	64,295	63,500	63,500	55,744	55,744	55,043	55,043	93,600	93,600	92,070	92,070

*The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Table 5.11 – Random effects two-equation SUR results with financial difficulty interaction: Life satisfaction. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
Financial difficulty	-0.413***	-0.498***	-0.399***	-0.496***	-0.404***	-0.818***	-0.377***	-0.508***	-0.380***	-0.509***	-0.368***	-0.509***
	(0.046)	(0.038)	(0.042)	(0.042)	(0.046)	(0.032)	(0.046)	(0.037)	(0.031)	(0.027)	(0.028)	(0.029)
Male partner unemployed	-0.176*	-0.154*	-0.211**	-0.178*	-0.130	-0.057	-0.154	-0.212*	-0.096***	-0.082***	-0.107***	-0.077**
	(0.096)	(0.088)	(0.088)	(0.096)	(0.158)	(0.103)	(0.155)	(0.118)	(0.034)	(0.030)	(0.030)	(0.032)
Male partner unemployed * Financial difficulty	-0.155	-0.136	-0.097	-0.121	-0.274	0.055	-0.206	-0.021	-0.188***	0.026	-0.166***	0.020
	(0.125)	(0.115)	(0.113)	(0.125)	(0.176)	(0.138)	(0.174)	(0.144)	(0.055)	(0.053)	(0.050)	(0.058)
Female partner unemployed	-0.139**	-0.065	-0.125**	-0.050	-0.126	-0.083	-0.150	-0.055	0.047**	0.072***	0.014	0.053***
	(0.068)	(0.062)	(0.062)	(0.068)	(0.105)	(0.088)	(0.103)	(0.087)	(0.020)	(0.018)	(0.018)	(0.020)
Female partner unemployed * Financial difficulty	-0.239	-0.124	-0.280**	-0.157	-0.088	0.300*	-0.022	0.045	0.006	-0.106**	0.031	-0.126***
	(0.152)	(0.145)	(0.139)	(0.158)	(0.175)	(0.170)	(0.172)	(0.168)	(0.047)	(0.042)	(0.041)	(0.045)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	54,139	54,139	53,569	53,569	53,013	53,013	52,478	52,478	78,118	78,118	77,046	77,046

*The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Table 5.12 – Random effects two-equation SUR results with highest qualification interaction: GHQ. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
Male has higher qualification	0.194	-0.385	-0.004	-0.336	0.183	-0.211	0.176	-0.134	0.048	-0.392	0.020	-0.303
	(0.525)	(0.529)	(0.610)	(0.886)	(0.451)	(0.417)	(0.530)	(0.512)	(0.326)	(0.322)	(0.329)	(0.362)
Female has higher qualification	-0.144	-0.750	-0.179	-0.406	0.056	-0.834	0.151	-0.717	0.030	-0.834**	-0.351	-0.369
	(0.532)	(0.536)	(1.024)	(0.606)	(0.676)	(0.629)	(0.645)	(0.782)	(0.340)	(0.336)	(0.426)	(0.334)
Male partner unemployed	-1.740	-0.389	-1.832	-0.504	-2.584***	-1.021	-2.414***	-1.066	-1.303***	-0.326*	-1.212***	-0.302
	(1.173)	(1.180)	(1.161)	(1.194)	(0.725)	(0.676)	(0.677)	(0.705)	(0.197)	(0.195)	(0.191)	(0.189)
Male partner unemployed * Male higher qualification	-1.111	-0.025	-0.818	0.128	-0.817	0.117	-0.854	0.336	-0.342	0.380	-0.504*	0.190
	(5.782)	(5.829)	(6.007)	(5.778)	(1.304)	(1.223)	(1.221)	(1.270)	(0.276)	(0.272)	(0.266)	(0.264)
Male partner unemployed * Female higher qualification	-1.248	-0.131	-1.165	-0.213	-0.534	0.346	-0.566	0.590	-0.831***	0.165	-0.844***	0.127
	(1.265)	(1.273)	(1.253)	(1.278)	(1.085)	(1.011)	(1.011)	(1.052)	(0.305)	(0.301)	(0.295)	(0.292)
Female partner unemployed	0.118	-1.438**	0.083	-1.353**	-0.455	-1.729***	-0.466	-1.617***	0.161	-0.462***	0.108	-0.437***
	(0.688)	(0.692)	(0.675)	(0.660)	(0.489)	(0.456)	(0.459)	(0.479)	(0.118)	(0.116)	(0.114)	(0.113)
Female partner unemployed * Male higher qualification	0.435	0.008	0.204	-0.094	0.469	0.175	0.459	-0.153	0.139	-0.240	0.014	-0.271
	(1.174)	(1.183)	(1.155)	(1.125)	(0.897)	(0.846)	(0.840)	(0.874)	(0.175)	(0.173)	(0.169)	(0.167)
Female partner unemployed * Female higher qualification	0.474	0.275	0.554	0.323	0.342	0.337	0.251	0.512	0.269	0.137	0.274	0.101
	(0.883)	(0.889)	(0.868)	(0.845)	(0.821)	(0.767)	(0.772)	(0.806)	(0.192)	(0.189)	(0.184)	(0.183)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	63,593	63,593	63,565	63,565	55,119	55,119	55,096	55,096	92,229	92,229	92,181	92,181

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table 5.13 – Random effects two-equation SUR results with highest qualification interaction: Life satisfaction. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
Male has higher qualification	-0.028	0.058	-0.010	0.075	0.019	0.153	-0.010	0.202	-0.094	0.140**	-0.115	0.158**
	(0.106)	(0.097)	(0.157)	(0.102)	(0.111)	(0.124)	(0.142)	(0.141)	(0.070)	(0.063)	(0.077)	(0.068)
Female has higher qualification	-0.150	-0.104	-0.049	-0.005	-0.167	-0.072	-0.084	0.023	-0.242***	-0.078	-0.243***	-0.004
	(0.115)	(0.107)	(0.118)	(0.128)	(0.129)	(0.143)	(0.138)	(0.156)	(0.070)	(0.063)	(0.071)	(0.073)
Male partner unemployed	-0.321***	-0.283***	-0.365***	-0.329***	-0.263*	-0.260	-0.276*	-0.262	-0.130***	-0.089**	-0.131***	-0.148***
	(0.118)	(0.110)	(0.117)	(0.108)	(0.153)	(0.170)	(0.150)	(0.169)	(0.044)	(0.040)	(0.044)	(0.040)
Male partner unemployed * Male higher qualification	-0.063	0.111	-0.023	0.155	-0.236	0.057	-0.192	0.071	-0.076	-0.013	-0.083	0.018
	(0.313)	(0.284)	(0.309)	(0.277)	(0.309)	(0.345)	(0.296)	(0.333)	(0.073)	(0.066)	(0.072)	(0.066)
Male partner unemployed * Female higher qualification	0.066	0.098	0.119	0.141	0.052	-0.008	0.062	-0.004	-0.062	0.076	-0.052	0.113*
	(0.187)	(0.173)	(0.185)	(0.169)	(0.203)	(0.225)	(0.199)	(0.224)	(0.076)	(0.068)	(0.074)	(0.067)
Female partner unemployed	-0.264**	-0.230**	-0.235*	-0.146	-0.238*	-0.228	-0.236*	-0.218	0.057*	0.011	0.033	0.016
	(0.126)	(0.116)	(0.125)	(0.113)	(0.133)	(0.148)	(0.132)	(0.148)	(0.030)	(0.027)	(0.030)	(0.027)
Female partner unemployed * Male higher qualification	0.309*	0.074	0.261*	0.043	0.225	0.137	0.223	0.189	0.014	0.010	-0.011	-0.000
	(0.160)	(0.147)	(0.158)	(0.143)	(0.239)	(0.266)	(0.236)	(0.266)	(0.047)	(0.042)	(0.046)	(0.041)
Female partner unemployed * Female higher qualification	0.052	0.079	0.003	0.042	-0.114	0.133	-0.090	0.134	-0.061	0.068	-0.046	0.053
	(0.166)	(0.153)	(0.165)	(0.150)	(0.173)	(0.193)	(0.171)	(0.193)	(0.047)	(0.042)	(0.046)	(0.042)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	53,642	53,642	53,618	53,618	52,549	52,549	52,527	52,527	77,169	77,169	77,131	77,131

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table 5.14 – Random effects two-equation SUR results with gender attitudes interaction (one factor solution): GHQ. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ	Male GHQ	Female GHQ
Egalitarian	0.066	0.317***	0.071	0.282***	0.177**	0.320***	0.216**	0.330***	0.105**	0.192***	0.124**	0.175***
	(0.104)	(0.100)	(0.102)	(0.098)	(0.087)	(0.079)	(0.086)	(0.084)	(0.052)	(0.056)	(0.052)	(0.053)
Male partner unemployed	-2.631***	-0.429	-2.509***	-0.411	-3.285***	-1.028***	-3.102***	-0.819**	-1.560***	-0.188**	-1.541***	-0.330***
	(0.316)	(0.313)	(0.339)	(0.333)	(0.287)	(0.308)	(0.281)	(0.355)	(0.092)	(0.093)	(0.094)	(0.091)
Male partner unemployed * Egalitarian	-0.275	-0.257	-0.180	-0.244	0.377	0.591*	0.298	0.365	0.161**	0.176**	0.223***	0.202**
	(0.295)	(0.332)	(0.379)	(0.442)	(0.276)	(0.336)	(0.260)	(0.377)	(0.073)	(0.082)	(0.073)	(0.080)
Female partner unemployed	0.294	-1.161***	0.340	-1.129***	-0.313	-1.393***	-0.591*	-1.589***	0.215***	-0.500***	0.117*	-0.492***
	(0.314)	(0.301)	(0.315)	(0.302)	(0.389)	(0.354)	(0.319)	(0.340)	(0.067)	(0.068)	(0.067)	(0.066)
Female partner unemployed * Egalitarian	0.101	-0.403	0.055	-0.300	-0.157	-0.332	-0.042	-0.379	-0.097	-0.094	-0.114*	-0.108
	(0.298)	(0.344)	(0.302)	(0.344)	(0.375)	(0.366)	(0.342)	(0.351)	(0.063)	(0.069)	(0.063)	(0.066)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	57,797	57,797	57,339	57,339	49,887	49,887	49,478	49,478	83,954	83,954	83,149	83,149

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table 5.15 – Random effects two-equation SUR results with gender attitudes interaction (one factor solution): Life satisfaction (Harmonised BHPS)

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS	Male LS	Female LS
Egalitarian	0.056**	0.050**	0.056**	0.049**	0.068***	0.056**	0.064***	0.044*	0.065***	0.015	0.066***	0.007
	(0.025)	(0.025)	(0.027)	(0.024)	(0.024)	(0.026)	(0.025)	(0.027)	(0.016)	(0.017)	(0.017)	(0.016)
Male partner unemployed	-0.373***	-0.128	-0.376***	-0.148*	-0.441***	-0.269**	-0.414***	-0.285*	-0.199***	-0.043	-0.205***	-0.083***
	(0.075)	(0.087)	(0.088)	(0.085)	(0.095)	(0.135)	(0.109)	(0.151)	(0.029)	(0.033)	(0.032)	(0.029)
Male partner unemployed * Egalitarian	-0.026	-0.125	0.004	-0.156*	0.193**	0.036	0.171	0.043	0.057**	-0.035	0.053*	-0.044
	(0.096)	(0.082)	(0.107)	(0.082)	(0.093)	(0.110)	(0.116)	(0.114)	(0.027)	(0.032)	(0.030)	(0.029)
Female partner unemployed	-0.147	-0.192*	-0.157*	-0.165*	-0.135*	-0.115	-0.146**	-0.126	0.056***	0.044**	0.018	0.044**
	(0.090)	(0.099)	(0.093)	(0.086)	(0.075)	(0.085)	(0.069)	(0.080)	(0.020)	(0.022)	(0.022)	(0.020)
Female partner unemployed * Egalitarian	-0.027	-0.018	-0.027	0.012	0.005	-0.228***	-0.006	-0.226***	-0.003	-0.011	-0.001	0.000
	(0.148)	(0.127)	(0.134)	(0.115)	(0.078)	(0.078)	(0.079)	(0.079)	(0.020)	(0.022)	(0.022)	(0.020)
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	48,355	48,355	47,945	47,945	47,444	47,444	47,059	47,059	69,617	69,617	68,899	68,899

The male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed'. For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Appendix A – GHQ-12 Questionnaire

The GHQ score used as a dependent variable in my analysis is derived from the responses to the following questions in Understanding Society and BHPS. To compute the GHQ score, the 1-4 scale is converted to a 0-3 to scale by subtracting 1 from each numerical response, and then the scores from all 12 questions are summed to provide a composite score in the range 0-36. For the analysis, I reversed this scale by subtracting the GHQ score from 36, so that 0 indicates very poor psychological health and 36 indicates very good psychological health. Further details about the GHQ and its use is available from Goldberg and Williams (1988).

a) The next questions are about how you have been feeling recently. Have you recently been able to concentrate on whatever you're doing?
   1. Better than usual
   2. Same as usual
   3. Less than usual
   4. Much less than usual

b) Have you recently lost much sleep over worry?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

c) Have you recently felt that you were playing a useful part in things?
   1. More than usual
   2. Same as usual
   3. Less than usual
   4. Much less than usual

d) Have you recently felt capable of making decisions about things?
   1. More so than usual
   2. Same as usual
   3. Less so than usual
   4. Much less capable

e) Have you recently felt constantly under strain?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

f) Have you recently felt you couldn't overcome your difficulties?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

g) Have you recently been able to enjoy your normal day-to-day activities?
   1. More than usual
   2. Same as usual
   3. Less so that [sic] usual
   4. Much less than usual

h) Have you recently been able to face up to problems?
   1. More so than usual
   2. Same as usual
   3. Less able than usual
   4. Much less able

i) Have you recently been feeling unhappy or depressed?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

j) Have you recently been losing confidence in yourself?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

k) Have you recently been thinking of yourself as a worthless person?
   1. Not at all
   2. No more than usual
   3. Rather more than usual
   4. Much more than usual

l) Have you recently been feeling reasonably happy, all things considered?
   1. More so than usual
   2. About the same as usual
   3. Less so than usual
   4. Much less than usual

Appendix B – Description of attitudinal variables in Understanding Society and BHPS

Attitudes towards women working (used in Chapter 3 and Chapter 5)

The UKHLS and BHPS contain five questions about gender attitudes, which form part of the self-completion questionnaire. For each question, respondents are asked to state the extent to which they personally agree or disagree with the statement. Responses are coded on a five-point scale where 1 = "Strongly agree", 2 = "Agree", 3 = "Neither agree nor disagree", 4 = "Disagree" and 5 = "Strongly disagree". The five statements are:

A. "A pre-school child is likely to suffer if his or her mother works";
B. "All in all, family life suffers when the woman has a full time job";
C. "Both the husband and wife should contribute to the household income";
D. "A husband's job is to earn money, a wife's job is to look after the home and family";
E. "Employers should make special arrangements to help mothers combine jobs and childcare".

To compute a gender attitudes index, I first undertake factor analysis based on the responses to these five questions. Pooling all waves in the harmonised BHPS for partnered men and women separately generates two factors with positive eigenvalues. However, the second factor has a relatively low eigenvalue of 0.21 for men and 0.17 for women, and also has counter-intuitive factor loadings with some of the observed variables. Therefore, I retain only the first factor which loads positively on questions A, B and D and negatively on questions C and E, and interpret this as an index where high scores denote the most egalitarian attitudes. My use of these variables for a robustness check in Chapter 3 follows exactly the same approach. Although I just use two waves of UKHLS and pool all individuals together regardless of gender or marital status, the factor analysis yields very similar results.

General autonomy at work (used in Chapter 3)

Data on respondents' perception of autonomy at work is based on four questions, each of which was answered on the following four-point scale: 1. "A lot"; 2. "Some"; 3. "A little"; 4. "None". The four questions were prefixed by "In your current job, how much influence do you have over.." and the categories were:

1. "What tasks you do in your job?"
2. "The pace at which you work?"
3. "How you do your work?"
4. "The order in which you carry out tasks?"

A fifth question was asked about autonomy over work hours but I have analysed this question separately (see below). The numerical responses for the four questions are added together to create an overall autonomy score of between 4 and 16. The sample is then split into two groups: those with a combined score of between 4 and 6 (i.e. those who generally had a lot of autonomy at work) and those with a combined score of between 7 and 16 (i.e. those who generally had at best some autonomy at work). The resulting dummy variable is multiplied by the weekend working dummy to create the interaction variable for the regression.

Autonomy over work hours (used in Chapter 3)

The question on autonomy over work hours is expressed in UKHLS as: "In general, how much influence do you have over the time you start or finish your working day?" Similarly to the other work autonomy questions, this was answered on the following four-point scale: 1. "A lot"; 2. "Some"; 3. "A little"; 4. "None". This is converted into a dummy variable by coding those with a response of 1 or 2 as having high autonomy over working hours while those with a response of 3 or 4 are assumed to have low autonomy over working hours. As before, the resulting dummy variable is multiplied by the weekend working dummy to create the interaction variable for the regression.

Negative feelings at work (used in Chapter 3)

This analysis is based on a set of six questions, all of which were answered on the following five-point scale: 1. “Never”; 2. “Occasionally”; 3. “Some of the time”; 4. “Most of the time”; 5. “All of the time”. The six questions were all prefixed by: “Thinking of the past few weeks, how much of the time has your job made you feel…”. The six variables were:

1. “Tense”
2. “Uneasy”
3. “Worried”
4. “Depressed”
5. “Gloomy”
6. “Miserable”

For my analysis, I aggregate the responses from these six questions to compute an aggregate score of between 6 and 30. A dummy variable is then created whereby those scoring between 6 and 9 (i.e. those who never or, at most, occasionally experienced these negative feelings) are assumed to be generally happy in their work while those scoring between 10 and 30 (i.e. those experiencing these negative feelings with more frequency) are assumed to be generally less happy emotionally while at work. As before, the resulting dummy variable is multiplied by the weekend working dummy to create the interaction variable for the regression.

Appendix C – Description of the 'Quit' and 'Fired' variables in LFS and UKHLS

Quit and Fired are included in the regression (see Table 3.29 and Table 3.30) as two separate dummies as the majority of people in the sample (including most of those transitioning into or out of weekend working between waves) neither quit nor were fired between any given two waves. This is because they either did not change jobs, did not provide a reason for leaving their last job or their reason for leaving could not easily be coded into either Quit or Fired.

In each wave of the LFS, respondents are asked to state whether or not they left a paid job in the last 3 months and, if so, what was the reason for leaving (from a list of options). The variables Quit and Fired are both set to 0 for all individuals in wave 1. They are also set to 0 in wave 5 if the individual had not left a paid job at any point between waves 1 and 5 or if they had left a paid job but their reason for leaving the *most recent* of these jobs was something other than "dismissed", "made redundant" or "resigned". An individual is coded as Quit =1 in wave 5 if they resigned from the most recent job that they left since their wave 1 interview and Fired = 1 if they were dismissed or made redundant from the most recent job that they left since their wave 1 interview.

From wave 2 onwards, UKHLS also asks respondents to state their reason for leaving their most recent job if they had not been continuously employed with the same employer since the last wave one year ago. As there are three time periods in this panel, additional variables are derived from the UKHLS analysis to distinguish quits and fires between waves 2 and 4 and waves 4 and 6 respectively. The variables Quit1, Quit2, Fired1 and Fired2 are set to 0 for all individuals in wave 2. Quit2 and Fired2 are also set to 0 for all individuals in wave 4. Quit1 = 1 in wave 4 if they left a job since wave 2, and the most recent reason for leaving was "left for better job" while Fired1 = 1 in wave 4 if they left a job since wave 2 and the most recent reason for leaving was "made redundant" or "dismissed/sacked". If the respondent did not change jobs between waves 2 and 4 or the reason for leaving the most recent

job was not one of the aforementioned options, then both Quit1 and Fired1 are set to 0 in wave 4. Both Quit1 and Fired1 are also set to be the same in wave 6 as in wave 4. Similarly, Quit2 = 1 in wave 6 if they left a job since wave 4, and the most recent reason for leaving was “left for better job” while Fired2 = 1 in wave 6 if they left a job since wave 4 and the most recent reason for leaving was “made redundant” or “dismissed/sacked”. If the respondent did not change jobs between waves 4 and 6 or the reason for leaving the most recent job was not one of the aforementioned options, then both Quit2 and Fired2 are set to 0 in wave 6.

Appendix D – Definitions of activity categories in the American Time Use Survey

The following definitions of the major activity categories present in ATUS are taken directly from the ATUS User Guide (June 2016), pp51-53.

Caring for and helping household members. Time spent doing activities to care for or help any child (under age 18) or adult in the household, regardless of the person's relationship to the survey respondent or the physical or mental health status of the person being helped, is classified here. Caring and helping activities for household children and adults are coded separately in subcategories. Primary childcare activities include time spent providing physical care; playing with children; reading with children; assistance with homework; attending children's events; taking care of children's health care needs; and dropping off, picking up, and waiting for children. Passive childcare done as a primary activity (such as "keeping an eye on my son while he swam in the pool") also is included. A child's presence during the activity is not enough in itself to classify the activity as childcare. For example, "watching television with my child" is coded as a leisure activity, not childcare. Caring for and helping household members also includes a range of activities done to benefit adult members of households, such as providing physical and medical care or obtaining medical services. Doing something as a favor for or helping another household adult does not automatically result in classification as a helping activity. For example, a report of "helping my spouse cook dinner" is considered a household activity (food preparation), not a helping activity, because cooking dinner benefits the household as a whole. By contrast, doing paperwork for another person usually benefits the individual, so a report of "filling out an insurance application for my spouse" is considered a helping activity.

Caring for and helping non-household members .This category includes time spent in activities done to care for or help others—both children (under age 18) and adults—who do not live in the household**.** When done for or through an organization, time spent helping non-household members is classified

as volunteering rather than as helping non-household members. Care of non-household children, even when done as a favor or helping activity for another adult, is always classified as caring for and helping non-household children, not as helping another adult.

Consumer purchases. Time spent purchasing or renting consumer goods, regardless of the mode or place of purchase or rental (in person, via telephone, over the Internet, at home, or in a store) is classified into this category. Subcategories in this section include those for time spent purchasing gasoline, time spent purchasing groceries, and time spent purchasing other food items, as well as that for time spent in all other shopping activities.

Eating and drinking. All time spent eating or drinking (except that done as part of a work or volunteer activity), whether alone, with others, at home, at a place of purchase, or somewhere else, is classified as eating and drinking. Time spent purchasing or talking related to purchasing meals, snacks, and beverages is not counted as part of this category but is counted instead as time spent making consumer purchases.

Educational activities. Time spent taking classes for a degree or for personal interest (including taking Internet or other distance-learning courses), time spent doing research and homework, and time spent taking care of administrative tasks related to education (such as registering for classes or obtaining a school ID) are included in this category. For high school students, before-school and after-school extracurricular activities (except sports) also are classified as educational activities. Educational activities do not include time spent for classes or training received as part of a job. Time spent helping others with their education-related activities is classified as an activity involving caring for and helping others.

Government services and civic obligations. This category captures time spent obtaining and using government services (police, fire, social services), such as applying for welfare, and time spent purchasing government-required licenses or paying fines or fees. Civic obligations include

government-required duties—such as serving jury duty or appearing in court—as well as activities that assist or influence government processes, such as voting and attending town hall meetings.

Household activities. Household activities are activities done by people to maintain their households. This category includes time spent in housework; cooking; lawn and garden care; pet care; vehicle maintenance and repair; home maintenance, repair, decoration, and renovation; and household management and organizational activities (such as filling out paperwork, balancing a checkbook, or planning a party). Food preparation, whether or not reported as done specifically for another household member, is always classified as a household activity, unless it was done as a volunteer, work, or income-generating activity. For example, "making breakfast for my son" is coded as a household activity, not as childcare.

Household services. Time spent arranging for and purchasing household services provided by someone else for pay is classified here. Household services include housecleaning; cooking; lawn care and landscaping; pet care; tailoring, laundering, and dry cleaning; vehicle maintenance and repairs; and home repairs, maintenance, and construction.

Personal care. Personal care activities include sleeping, grooming (such as bathing or dressing), health-related self-care, and personal or private activities. Receiving unpaid personal care from others (for example, "my sister put polish on my nails") also is captured in this category.

Professional and personal care services. Time spent obtaining, receiving, and purchasing professional and personal care services provided by someone else for pay is classified into this category. Professional services include childcare, financial services and banking, legal services, medical and adult care services, real estate services, and veterinary services. Personal care services include services received from day spas, hair salons and barbershops, nail salons, and tanning salons. Activities classified here include time spent paying, meeting with, or talking to service providers, as well as time spent receiving the service or waiting to receive the service.

Religious and spiritual activities. Religious activities include activities those normally associated with membership in or identification with specific religions or denominations, such as attending religious services; participating in choirs, youth groups, orchestras, or unpaid teaching (unless identified as volunteer activities); and engaging in personal religious practices, such as praying.

Socializing, relaxing, and leisure. This category includes face-to-face social communication and hosting or attending social functions. Time spent communicating with others via telephone calls, texting, mail, or e-mail is not part of this category. Leisure activities include watching television; reading; relaxing or thinking; playing computer, board, or card games; using a computer or the Internet for personal interest; playing or listening to music; and other activities, such as attending arts, cultural, and entertainment events.

Sports, exercise, and recreation. Participating in—as well as attending or watching—sports, exercise, and recreational activities, whether team or individual and competitive or non-competitive, falls into this category. Recreational activities include yard games like croquet or horseshoes, as well as activities like billiards and dancing.

Telephone calls. This category captures time spent in telephone communication; it also includes texting and Internet voice and video calling. Telephone and Internet purchases of consumer goods are classified into the category of consumer purchases. Telephone calls identified as related to work or volunteering are classified as either work or volunteering.

Traveling. Nearly all time spent traveling is classified here. When a respondent reports doing another activity while traveling—for example, eating breakfast while riding the bus to work—the travel activity is recorded as the main activity. Walking and biking are considered traveling when they are used to get from one destination (an address or a building) to another, but not when the primary purpose is exercise. Travel done as an essential part of one's job—for example, driving a taxi—is recorded as

work, not travel. Exhibit 5.1 in the User's Guide has examples of how travel activities are classified; typically they are dependent upon the activities that immediately follow and precede them.

Volunteer activities. This category captures time spent volunteering for or through an organization.

Working and work-related activities. This category includes time spent working, doing activities as part of one's job, engaging in income-generating activities not as part of one's job, and job search activities. "Working" includes hours spent doing the specific tasks required of one's main or other job, regardless of the location or time of day. "Work-related activities" include activities that are not obviously work but are done as part of one's job, such as having a business lunch or playing golf with clients. "Other income-generating activities" are those done "on the side" or under informal arrangement and are not part of a regular job. Such activities might include selling homemade crafts, babysitting, maintaining a rental property, or having a yard sale. These activities are those that persons are paid for or will be paid.

Appendix E – Ordinal regression results for Chapter 3

The tables in this appendix support the analysis in Chapter 3. They are analogous to the main linear regression tables in Chapter 3, but treat the dependent SWB variable as ordinal not cardinal. In general, the ordinal models provide very similar results to the linear models.

Table E.1 – Pooled ordered logit regression results ordered logit (LFS). Source: LFS (Office for National Statistics 2016a).

	Satisfaction			Worthwhile			Happy			Anxious		
Weekend	-0.020			0.043			-0.004			-0.047*		
	(0.028)			(0.028)			(0.027)			(0.029)		
Saturday		-0.022			0.031			-0.002			-0.028	
		(0.030)			(0.029)			(0.029)			(0.030)	
Sunday			-0.086**			0.056			-0.052			-0.018
			(0.036)			(0.035)			(0.035)			(0.036)
Female	0.159***	0.159***	0.159***	0.341***	0.341***	0.341***	0.091***	0.091***	0.091***	0.178***	0.178***	0.178***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)
Married	0.774***	0.774***	0.772***	0.412***	0.412***	0.412***	0.386***	0.386***	0.385***	-0.089***	-0.089***	-0.088***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Children	-0.010	-0.010	-0.009	0.213***	0.213***	0.213***	-0.005	-0.005	-0.004	0.018	0.018	0.018
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)
Health	0.630***	0.630***	0.630***	0.461***	0.461***	0.461***	0.498***	0.498***	0.498***	-0.449***	-0.449***	-0.449***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Income	0.152***	0.152***	0.149***	0.057***	0.056**	0.056**	-0.017	-0.017	-0.020	-0.012	-0.009	-0.007
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)	(0.022)
Degree	-0.180***	-0.180***	-0.184***	-0.007	-0.009	-0.008	-0.163***	-0.163***	-0.167***	0.478***	0.481***	0.484***
	(0.061)	(0.061)	(0.061)	(0.060)	(0.060)	(0.060)	(0.059)	(0.059)	(0.059)	(0.061)	(0.061)	(0.061)
Higher Ed	-0.052	-0.052	-0.054	0.080	0.079	0.079	-0.074	-0.074	-0.075	0.326***	0.328***	0.330***
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)	(0.062)	(0.061)	(0.061)	(0.061)	(0.064)	(0.064)	(0.064)
A-level	-0.077	-0.077	-0.079	0.024	0.023	0.023	-0.095*	-0.095*	-0.097*	0.210***	0.211***	0.212***
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.057)	(0.057)	(0.057)	(0.060)	(0.060)	(0.060)
GCSE	-0.120**	-0.119**	-0.121**	-0.087	-0.087	-0.087	-0.094	-0.094	-0.095*	0.204***	0.205***	0.206***
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.057)	(0.057)	(0.057)	(0.060)	(0.060)	(0.060)
Other qual	-0.071	-0.071	-0.070	-0.057	-0.057	-0.057	-0.061	-0.061	-0.060	0.206***	0.205***	0.206***
	(0.068)	(0.068)	(0.068)	(0.067)	(0.067)	(0.067)	(0.066)	(0.066)	(0.066)	(0.069)	(0.069)	(0.069)
Age	-0.122***	-0.122***	-0.123***	-0.092***	-0.092***	-0.092***	-0.055***	-0.055***	-0.056***	0.044***	0.044***	0.044***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Age square	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

	Satisfaction			Worthwhile			Happy			Anxious		
BME	-0.194***	-0.194***	-0.191***	-0.017	-0.016	-0.016	0.190***	0.190***	0.192***	0.055	0.054	0.053
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)	(0.042)	(0.042)	(0.042)	(0.044)	(0.044)	(0.044)
Pub sector	0.067***	0.067***	0.067***	0.210***	0.209***	0.208***	0.006	0.007	0.006	-0.031	-0.030	-0.029
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.023)	(0.023)	(0.023)	(0.024)	(0.024)	(0.024)
Temp job	-0.144***	-0.144***	-0.144***	-0.078	-0.079	-0.079	-0.141***	-0.141***	-0.141***	0.028	0.029	0.029
	(0.054)	(0.054)	(0.054)	(0.055)	(0.055)	(0.055)	(0.053)	(0.053)	(0.053)	(0.054)	(0.054)	(0.054)
Total hours	-0.002**	-0.002**	-0.002**	-0.000	-0.000	-0.000	-0.002*	-0.002*	-0.002*	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N		29,224			29,194			29,222			26,828	

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.2 – Pooled ordered logit regression results (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.064***	-0.123***	-0.086***	-0.094***
	(0.022)	(0.022)	(0.023)	(0.021)
Female	0.267***	-0.269***	0.096***	-0.354***
	(0.022)	(0.022)	(0.023)	(0.021)
Married	0.056*	0.105***	0.633***	0.126***
	(0.029)	(0.029)	(0.030)	(0.028)
Carer	0.058	-0.221***	-0.287***	-0.236***
	(0.048)	(0.046)	(0.047)	(0.045)
Health	0.334***	0.402***	0.563***	0.623***
	(0.011)	(0.011)	(0.012)	(0.011)
Log income	0.175***	0.068***	0.169***	0.064***
	(0.018)	(0.017)	(0.019)	(0.017)
Children	0.066***	-0.447***	-0.100***	-0.062***
	(0.023)	(0.022)	(0.024)	(0.022)
Age	-0.077***	-0.069***	-0.109***	-0.074***
	(0.006)	(0.006)	(0.007)	(0.006)
Age squared	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Degree	-0.469***	-0.057	0.006	-0.235***
	(0.057)	(0.054)	(0.058)	(0.052)
Other higher	-0.346***	0.034	0.017	-0.169***
	(0.059)	(0.057)	(0.061)	(0.055)
A-level	-0.378***	-0.003	0.006	-0.117**
	(0.057)	(0.055)	(0.058)	(0.053)
GCSE	-0.310***	0.039	0.011	-0.074
	(0.057)	(0.055)	(0.058)	(0.053)
Other qual	-0.074	0.025	0.007	0.028

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
	(0.064)	(0.062)	(0.066)	(0.059)
Hours	-0.003***	-0.030***	-0.006***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Temporary job	-0.177***	-0.074*	-0.159***	-0.066
	(0.044)	(0.044)	(0.045)	(0.043)
Self-employed	0.625***	0.040	0.051	0.165***
	(0.031)	(0.031)	(0.032)	(0.029)
Daytime	0.027	0.066***	0.045*	0.001
	(0.024)	(0.024)	(0.025)	(0.023)
N	34,417	34,321	34,314	34,236

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.3 – BUC regression results (LFS). Source: LFS (Office for National Statistics 2016a).

	Satisfaction			Worthwhile			Happy			Anxious		
Weekend	-0.024			0.102			-0.219***			0.060		
	(0.088)			(0.087)			(0.082)			(0.088)		
Saturday		-0.041			0.053			-0.189**			0.098	
		(0.087)			(0.087)			(0.083)			(0.089)	
Sunday			-0.032			0.061			-0.116			-0.080
			(0.103)			(0.099)			(0.093)			(0.101)
Married	0.832***	0.833***	0.833***	0.380*	0.377*	0.375*	0.530***	0.531***	0.538***	-0.085	-0.083	-0.096
	(0.202)	(0.202)	(0.202)	(0.197)	(0.197)	(0.197)	(0.182)	(0.182)	(0.183)	(0.213)	(0.213)	(0.213)
Children	0.062	0.062	0.061	-0.022	-0.022	-0.020	-0.073	-0.072	-0.076	-0.032	-0.035	-0.029
	(0.159)	(0.159)	(0.160)	(0.164)	(0.164)	(0.163)	(0.146)	(0.146)	(0.147)	(0.155)	(0.155)	(0.155)
Health	0.380***	0.381***	0.380***	0.240***	0.241***	0.241***	0.279***	0.278***	0.277***	-0.265***	-0.265***	-0.264***
	(0.049)	(0.049)	(0.049)	(0.048)	(0.048)	(0.048)	(0.045)	(0.045)	(0.045)	(0.047)	(0.047)	(0.047)
Income	-0.031	-0.030	-0.030	0.009	0.007	0.007	-0.001	0.002	-0.000	0.017	0.018	0.015
	(0.091)	(0.091)	(0.092)	(0.086)	(0.086)	(0.086)	(0.082)	(0.083)	(0.083)	(0.090)	(0.090)	(0.090)
Pub sector	0.362**	0.361**	0.363**	0.148	0.144	0.143	0.248*	0.252*	0.259*	-0.124	-0.124	-0.128
	(0.156)	(0.155)	(0.155)	(0.159)	(0.159)	(0.159)	(0.144)	(0.144)	(0.144)	(0.162)	(0.162)	(0.162)
Quality	-0.132*	-0.132*	-0.131*	-0.076	-0.074	-0.074	0.085	0.085	0.083	-0.081	-0.081	-0.077
	(0.068)	(0.068)	(0.068)	(0.065)	(0.065)	(0.065)	(0.063)	(0.063)	(0.063)	(0.067)	(0.067)	(0.067)
Temp job	-0.035	-0.034	-0.034	0.052	0.049	0.050	-0.135	-0.137	-0.128	-0.033	-0.034	-0.028
	(0.171)	(0.171)	(0.171)	(0.161)	(0.161)	(0.161)	(0.154)	(0.155)	(0.155)	(0.158)	(0.158)	(0.157)
New job	0.066**	0.066**	0.066**	-0.002	-0.003	-0.003	0.010	0.011	0.011	0.002	0.002	0.001
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)	(0.028)	(0.028)	(0.028)	(0.030)	(0.030)	(0.030)
Total hours	0.006***	0.006***	0.006***	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	0.004*	0.004*	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
N		29,236			29,206			29,234			26,839	

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.4 – BUC regression results (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.085*	-0.144***	-0.049	-0.131***
	(0.049)	(0.048)	(0.055)	(0.048)
Married	-0.197**	0.033	0.337***	0.043
	(0.100)	(0.096)	(0.107)	(0.102)
Carer	-0.130	0.003	-0.019	-0.176
	(0.115)	(0.106)	(0.121)	(0.113)
Health	0.200***	0.179***	0.272***	0.519***
	(0.027)	(0.025)	(0.029)	(0.027)
Log income	0.097*	-0.014	0.010	0.074
	(0.050)	(0.045)	(0.056)	(0.056)
Children	0.068	-0.358***	-0.088	-0.098
	(0.068)	(0.065)	(0.074)	(0.064)
Hours	-0.006**	-0.025***	0.000	-0.009***
	(0.002)	(0.002)	(0.003)	(0.002)
Temporary job	-0.088	-0.008	-0.051	-0.093
	(0.090)	(0.085)	(0.095)	(0.092)
Self-employed	0.659***	0.222*	0.141	0.464***
	(0.133)	(0.132)	(0.148)	(0.134)
Daytime	0.028	0.111**	0.012	0.002
	(0.055)	(0.052)	(0.058)	(0.054)
New job 1	0.426***	-0.000	-0.215***	0.150***
	(0.057)	(0.054)	(0.061)	(0.056)
New job 2	0.588***	0.229***	0.313***	0.231***
	(0.060)	(0.055)	(0.064)	(0.057)
Quality	0.056	0.057	0.090*	-0.099**
	(0.050)	(0.046)	(0.052)	(0.048)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.5 – BUC regression results with gender interaction (UKHLS). Source: UKHLS (University of Essex 2016).

	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.169**	-0.147**	-0.005	-0.185***
	(0.068)	(0.070)	(0.079)	(0.070)
Female * Weekend	-0.160*	0.005	-0.082	0.094
	(0.096)	(0.094)	(0.107)	(0.095)
N	29,967	29,884	29,878	29,805

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. The same set of control variables are used as in Table E.4 above but the coefficients pertaining to these covariants are not shown.*

Table E.6 – Robustness check: Sensitivity of weekend working coefficient to change in definition of covariates (LFS). Source: LFS (Office for National Statistics 2016a).

	BUC weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model –Table E.3	-0.024	0.102	-0.219***	0.060
	(0.088)	(0.087)	(0.082)	(0.088)
N				
Hours expressed as dummy (full time / part time)	-0.015	0.097	-0.225***	0.075
	(0.087)	(0.086)	(0.081)	(0.088)
N				
Hours expressed as quadratic	-0.013	0.110	-0.201**	0.034
	(0.088)	(0.087)	(0.082)	(0.089)
N				

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.7 – Robustness check: Sensitivity of weekend working coefficient to change in definition of covariates (UKHLS). Source: UKHLS (University of Essex 2016).

	BUC weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table E.4	0.085*	-0.144***	-0.049	-0.131***
	(0.049)	(0.048)	(0.055)	(0.048)
N	29,968	29,885	29,879	29,806
Health defined as dummy (disabled / not disabled)	0.071	-0.144***	-0.053	-0.133***
	(0.047)	(0.048)	(0.054)	(0.048)
N	31,732	29,892	29,886	29,814
Inclusion of housework and commuting time	0.068	-0.135***	-0.033	-0.138***
	(0.051)	(0.050)	(0.057)	(0.050)
N	27,912	27,835	27,828	27,762
Hours expressed as dummy (full time / part time)	0.075	-0.203***	-0.062	-0.161***
	(0.048)	(0.047)	(0.054)	(0.047)
N	30,552	30,468	30,462	30,389
Hours expressed as quadratic	0.082*	-0.145***	-0.051	-0.133***
	(0.049)	(0.048)	(0.055)	(0.048)
N	29,968	29,885	29,879	29,806
New job only includes those changing employer	0.095*	-0.148***	-0.055	-0.126***
	(0.049)	(0.048)	(0.055)	(0.048)
N	29,831	29,748	29,742	29,669
New job only includes those changing workplace	0.090	-0.148***	-0.049	-0.122**
	(0.049)*	(0.048)	(0.055)	(0.048)
N	29,906	29,823	29,817	29,744

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.8 – Robustness check: Sensitivity of weekend working coefficient to inclusion of interaction terms (LFS). Source: LFS (Office for National Statistics 2016a).

	BUC weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model –Table E.3				
Weekend working	-0.024	0.102	-0.219***	0.060
	(0.088)	(0.087)	(0.082)	(0.088)
N				
Child interaction				
Weekend working	0.006	0.205*	-0.264**	0.028
	(0.109)	(0.108)	(0.104)	(0.109)
Children	0.081	0.041	-0.103	-0.051
	(0.164)	(0.167)	(0.149)	(0.160)
Children * Weekend working	-0.075	-0.256	0.115	0.080
	(0.165)	(0.166)	(0.154)	(0.170)
N				
Age group interaction				
Weekend working	-0.178	0.177	-0.346***	0.006
	(0.135)	(0.139)	(0.133)	(0.142)
Older age (45+)	-0.141	0.030	0.016	-0.210
	(0.187)	(0.200)	(0.177)	(0.196)
Older age * Weekend working	0.227	-0.113	0.192	0.085
	(0.169)	(0.171)	(0.162)	(0.174)
N				

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.9 – Robustness check: Sensitivity of weekend working coefficient to inclusion of interaction terms (UKHLS). Source: UKHLS (University of Essex 2016).

	BUC weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table E.4				
Weekend working	0.085*	-0.144***	-0.049	-0.131***
	(0.049)*	(0.048)	(0.055)	(0.048)
N	29,968	29,885	29,879	29,806
Child interaction				
Weekend working	0.093	-0.145**	-0.076	-0.126**
	(0.064)	(0.063)	(0.071)	(0.062)
Children	0.078	-0.359***	-0.120	-0.092
	(0.082)	(0.079)	(0.091)	(0.078)
Children * Weekend working	-0.018	0.003	0.058	-0.012
	(0.086)	(0.083)	(0.095)	(0.084)
N	29,968	29,885	29,879	29,806
Age group interaction				
Weekend working	0.203***	-0.106	-0.071	-0.060
	(0.069)	(0.068)	(0.077)	(0.068)
Older age (45+)	0.397***	-0.082	-0.035	0.044
	(0.090)	(0.085)	(0.097)	(0.091)
Older age * Weekend working	-0.214**	-0.067	0.042	-0.127
	(0.087)	(0.085)	(0.096)	(0.086)
N	29,968	29,885	29,879	29,806
Autonomy at work interaction				

	BUC weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend working	0.068	-0.125**	-0.005	-0.099
	(0.062)	(0.060)	(0.069)	(0.062)
Autonomy at work	0.430***	0.117**	0.155**	0.301***
	(0.056)	(0.055)	(0.063)	(0.056)
Autonomy at work * Weekend working	0.022	-0.038	-0.088	-0.073
	(0.074)	(0.071)	(0.082)	(0.074)
N	29,968	29,885	29,879	29,806
Working hours autonomy interaction				
Weekend working	0.112*	-0.083	0.031	-0.097
	(0.063)	(0.061)	(0.068)	(0.062)
Working hours autonomy	0.313***	0.107*	0.147**	0.138**
	(0.060)	(0.057)	(0.067)	(0.060)
Working hours autonomy * Weekend working	-0.058	-0.122*	-0.161*	-0.073
	(0.076)	(0.072)	(0.084)	(0.076)
N	29,968	29,885	29,879	29,806
Depressed at work interaction				
Weekend working	0.138**	-0.109*	0.001	-0.130**
	(0.065)	(0.060)	(0.073)	(0.062)
Depressed at work	-1.365***	-0.431***	-0.514***	-1.231***
	(0.058)	(0.052)	(0.062)	(0.055)
Depressed at work * Weekend working	0.020	-0.029	-0.056	0.074
	(0.076)	(0.069)	(0.082)	(0.072)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix B for details about the interaction terms.*

Table E.10 – Robustness check: Sensitivity of weekend working coefficient to change in definition of weekend working (UKHLS). Source: UKHLS (University of Essex 2016).

	BUC weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model –Table E.4 (most/every/some vs none)	0.085*	-0.144***	-0.049	-0.131***
	(0.049)	(0.048)	(0.055)	(0.048)
N	29,968	29,885	29,879	29,806
Alternative model (most/every vs some/none)	-0.059	-0.194***	0.030	0.063
	(0.060)	(0.057)	(0.062)	(0.060)
N	29,968	29,885	29,879	29,806
*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*				

Table E.11 – Robustness check: Sensitivity of weekend working coefficient to change in sample (LFS). Source: LFS (Office for National Statistics 2016a).

	BUC weekend working coefficient			
	Satisfaction	Worthwhile	Happy	Anxious
Baseline model – Table E.3	-0.024	0.102	-0.219***	0.060
	(0.088)	(0.087)	(0.082)	(0.088)
N				
Managers and professionals removed	0.016	0.160	-0.170*	0.017
	(0.109)	(0.110)	(0.103)	(0.114)
N				
Young people (<25) removed	0.004	0.092	-0.215**	0.019
	(0.092)	(0.090)	(0.084)	(0.091)
N				
*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*				

Table E.12 – Robustness check: Sensitivity of weekend working coefficient to change in sample (UKHLS). Source: UKHLS (University of Essex 2016).

	BUC weekend working coefficient			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table E.4	0.085*	-0.144***	-0.049	-0.131***
	(0.049)	(0.048)	(0.055)	(0.048)
N	29,967	29,884	29,878	29,805
Managers and professionals removed	0.145*	-0.144*	-0.009	-0.154**
	(0.076)	(0.076)	(0.084)	(0.075)
N	15,076	15,032	15,030	14,976
Young people (<25) removed	0.084*	-0.161***	-0.072	-0.145***
	(0.050)	(0.049)	(0.056)	(0.050)
N	28,699	28,620	28,615	28,544
General Population Sample Great Britain only	0.091	-0.181***	-0.056	-0.081
	(0.060)	(0.060)	(0.067)	(0.060)
N	19,436	19,393	19,387	19,338

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.13 – Robustness check: Sensitivity of weekend working and gender interaction coefficients to change in sample (UKHLS). Source: UKHLS (University of Essex 2016).

	BUC weekend working and gender interaction coefficients			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Baseline model – Table E.5				
Weekend working	0.169**	-0.147**	-0.005	-0.185***
	(0.068)	(0.070)	(0.079)	(0.070)
Female * Weekend working	-0.160*	0.005	-0.082	0.094
	(0.096)	(0.094)	(0.107)	(0.095)
N	29,967	29,884	29,878	29,805
Managers and professionals removed				
Weekend working	0.270**	-0.031	0.126	-0.176
	(0.105)	(0.114)	(0.125)	(0.111)
Female * Weekend working	-0.236	-0.200	-0.240	0.038
	(0.150)	(0.150)	(0.165)	(0.150)
N	15,076	15,032	15,030	14,976
Young people (<25) removed				
Weekend working	0.183***	-0.158**	-0.041	-0.191***
	(0.070)	(0.071)	(0.081)	(0.072)
Female * Weekend working	-0.192*	-0.007	-0.058	0.083
	(0.100)	(0.097)	(0.110)	(0.099)
N	28,699	28,620	28,615	28,544
General Population Sample Great Britain only				
Weekend working	0.149*	-0.201**	0.071	-0.065
	(0.086)	(0.087)	(0.100)	(0.089)
Female * Weekend working	-0.108	0.037	-0.224*	-0.026
	(0.119)	(0.117)	(0.132)	(0.118)
N	19,436	19,393	19,387	19,338

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.14 – BUC regression results with individual GHQ questions as dependent variables (UKHLS). Source: UKHLS (University of Essex 2016).

	GHQ questions – see Appendix A for key to questions A-L											
	A	B	C	D	E	F	G	H	I	J	K	L
Weekend	0.089	0.198***	0.002	0.070	0.207***	0.061	0.101	0.179**	0.025	0.060	-0.019	0.173***
	(0.069)	(0.051)	(0.063)	(0.073)	(0.050)	(0.051)	(0.067)	(0.079)	(0.050)	(0.053)	(0.066)	(0.060)
Married	0.062	0.087	0.125	0.242*	0.041	-0.096	0.188	0.084	-0.194*	-0.153	-0.319***	-0.119
	(0.145)	(0.107)	(0.127)	(0.139)	(0.104)	(0.106)	(0.127)	(0.140)	(0.105)	(0.104)	(0.123)	(0.113)
Carer	0.269*	0.214*	-0.156	0.047	0.304**	0.286**	0.125	0.066	0.309***	-0.082	-0.074	0.301**
	(0.148)	(0.121)	(0.149)	(0.156)	(0.122)	(0.121)	(0.153)	(0.158)	(0.118)	(0.125)	(0.149)	(0.139)
Health	-0.458***	-0.343***	-0.353***	-0.345***	-0.373***	-0.377***	-0.602***	-0.397***	-0.354***	-0.418***	-0.375***	-0.417***
	(0.036)	(0.028)	(0.035)	(0.039)	(0.028)	(0.029)	(0.036)	(0.041)	(0.028)	(0.029)	(0.034)	(0.033)
Income	-0.032	-0.085	0.091	-0.021	-0.030	-0.049	0.024	-0.030	-0.111**	-0.145***	-0.074	-0.057
	(0.077)	(0.055)	(0.085)	(0.074)	(0.052)	(0.057)	(0.075)	(0.078)	(0.052)	(0.055)	(0.065)	(0.061)
Children	0.208**	-0.193***	-0.042	0.140	0.161**	0.099	0.046	0.140	0.142**	0.111	0.146*	0.031
	(0.091)	(0.069)	(0.087)	(0.097)	(0.069)	(0.071)	(0.088)	(0.100)	(0.068)	(0.071)	(0.087)	(0.080)
Hours	0.008**	0.012***	-0.008**	-0.005	0.021***	0.008***	0.007**	0.001	0.011***	0.002	-0.000	0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.003)	(0.003)
Temp job	0.193	0.116	0.115	0.172	0.025	-0.021	-0.240**	0.051	0.030	0.153	0.158	0.149
	(0.124)	(0.094)	(0.115)	(0.125)	(0.092)	(0.094)	(0.115)	(0.148)	(0.091)	(0.095)	(0.120)	(0.108)
Self-employed	-0.372**	-0.171	-0.324*	-0.412**	-0.435***	-0.407***	-0.439**	-0.383*	-0.310**	-0.439***	-0.085	-0.407***
	(0.187)	(0.153)	(0.167)	(0.188)	(0.137)	(0.140)	(0.179)	(0.206)	(0.138)	(0.140)	(0.179)	(0.158)
Daytime	0.037	0.035	0.058	0.037	-0.110*	-0.052	0.054	0.073	-0.002	0.004	-0.105	0.054
	(0.075)	(0.057)	(0.071)	(0.080)	(0.058)	(0.058)	(0.073)	(0.084)	(0.057)	(0.061)	(0.073)	(0.065)
New job 1	0.044	-0.228***	-0.054	0.025	-0.188***	-0.094	-0.102	-0.007	-0.191***	-0.044	-0.129*	-0.155**
	(0.080)	(0.059)	(0.072)	(0.080)	(0.058)	(0.060)	(0.076)	(0.086)	(0.058)	(0.061)	(0.078)	(0.068)
New job 2	-0.172**	-0.136**	-0.148**	-0.080	-0.244***	-0.216***	-0.139*	0.039	-0.252***	-0.240***	-0.264***	-0.053
	(0.080)	(0.061)	(0.073)	(0.081)	(0.060)	(0.060)	(0.077)	(0.086)	(0.060)	(0.064)	(0.079)	(0.069)
Quality	0.186***	0.113**	-0.026	0.114	0.220***	0.058	0.048	0.107	0.024	0.018	-0.003	0.023
	(0.069)	(0.051)	(0.063)	(0.070)	(0.050)	(0.051)	(0.065)	(0.073)	(0.051)	(0.052)	(0.066)	(0.057)
N	29,898	29,903	29,898	29,907	29,902	29,893	29,902	29,905	29,903	29,899	29,901	29,908

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets.*

Table E.15 – BUC regression results accounting for voluntary and involuntary job loss (LFS). Source: LFS (Office for National Statistics 2016a).

	Dependent variable											
	Satisfaction			Worthwhile			Happy			Anxious		
Quit	0.570**	0.569**	0.730***	0.226	0.249	0.415*	0.307	0.366	0.512**	0.346	0.242	0.141
	(0.267)	(0.263)	(0.260)	(0.266)	(0.260)	(0.245)	(0.238)	(0.238)	(0.227)	(0.272)	(0.267)	(0.247)
Fired	-0.049	-0.134	-0.206	-0.314	-0.380	-0.074	-0.333	-0.359	-0.216	-0.109	0.000	-0.064
	(0.458)	(0.438)	(0.432)	(0.408)	(0.396)	(0.399)	(0.412)	(0.397)	(0.411)	(0.440)	(0.427)	(0.433)
Weekend	-0.031			0.079			-0.232***			0.092		
	(0.089)			(0.088)			(0.082)			(0.089)		
Quit * Weekend	1.003*			1.192**			0.707			-1.576***		
	(0.608)			(0.541)			(0.510)			(0.548)		
Fired * Weekend	-1.079			0.761			0.505			0.425		
	(0.947)			(1.102)			(1.004)			(1.242)		
Saturday		-0.051			0.026			-0.207**			0.134	
		(0.089)			(0.088)			(0.083)			(0.091)	
Quit * Saturday		1.075*			1.201**			0.573			-1.366**	
		(0.637)			(0.565)			(0.524)			(0.551)	
Fired * Saturday		-1.296			2.010			0.907			-0.532	
		(1.278)			(1.320)			(1.234)			(1.285)	
Sunday			-0.035			0.049			-0.109			-0.047
			(0.104)			(0.100)			(0.094)			(0.102)
Quit * Sunday			0.808			1.181			-0.009			-1.716**
			(0.758)			(0.775)			(0.681)			(0.768)
Fired * Sunday			-0.843			-1.063			0.140			0.201
			(1.119)			(1.471)			(1.279)			(1.269)
N		29,236			29,206			29,234			26,839	

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix C for details about the interaction terms. The same set of control variables are used as in Table E.3 above but the coefficients pertaining to these covariants are not shown.*

Table E.16 – Fixed effects regression results accounting for voluntary and involuntary job loss (UKHLS). Source: UKHLS (University of Essex 2016).

	Dependent variable			
	Job satisfaction	Satisfaction with leisure time	Life satisfaction	GHQ score
Weekend	0.089*	-0.134***	-0.074	-0.136***
	(0.052)	(0.050)	(0.058)	(0.051)
Quit 1	1.196***	0.329**	0.102	0.300**
	(0.166)	(0.157)	(0.177)	(0.152)
Quit 1 * Weekend	-0.117	-0.228	0.270	0.006
	(0.176)	(0.175)	(0.203)	(0.171)
Fired 1	0.095	0.143	-0.352	-0.130
	(0.203)	(0.211)	(0.230)	(0.202)
Fired 1 * Weekend	0.155	-0.077	0.056	0.196
	(0.233)	(0.264)	(0.268)	(0.231)
Quit 2	0.481***	-0.109	-0.199	0.210
	(0.176)	(0.155)	(0.181)	(0.164)
Quit 2 * Weekend	0.222	0.128	0.081	-0.049
	(0.233)	(0.201)	(0.231)	(0.214)
Fired 2	0.228	-0.279	-0.695**	0.309
	(0.258)	(0.221)	(0.279)	(0.271)
Fired 2 * Weekend	-0.201	0.200	0.651*	0.257
	(0.346)	(0.308)	(0.377)	(0.361)
N	29,968	29,885	29,879	29,806

*Unweighted data. *p<0.10; **p<0.05; ***p<0.01. Standard errors in brackets. See Appendix C for details about the interaction terms. The same set of control variables are used as in Table E.4 above but the coefficients pertaining to these covariants are not shown.*

Appendix F – Ordinal regression results for Chapter 4

The tables in this appendix support the analysis in Chapter 4. They are analogous to the main linear regression tables in Chapter 4, but treat the dependent SWB variable as ordinal not cardinal. In general, the ordinal models provide very similar results to the linear models.

Table F.1 – BUC regression results, by sector (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	0.131	-0.422**	-0.109	-0.100	-0.486***	-0.028
	(0.174)	(0.172)	(0.244)	(0.242)	(0.175)	(0.160)
Work * Govt	-0.232	-0.144	0.017	-0.316	-0.322*	-0.181
	(0.160)	(0.157)	(0.222)	(0.224)	(0.172)	(0.142)
Work * Profit	-0.407***	-0.124	0.076	-0.236	-0.233*	-0.203*
	(0.136)	(0.130)	(0.175)	(0.183)	(0.137)	(0.115)
Work * Non-profit	0.112	-0.036	-0.027	-0.301	-0.388**	-0.095
	(0.186)	(0.182)	(0.264)	(0.277)	(0.198)	(0.171)
Personal care	-0.029	0.180	-1.271***	-0.050	0.139	-1.044***
	(0.304)	(0.318)	(0.347)	(0.388)	(0.369)	(0.294)
Household activities	-0.285**	-0.175	-0.232	-0.111	0.018	-0.031
	(0.129)	(0.130)	(0.195)	(0.184)	(0.130)	(0.125)
Caring own	1.179***	0.650***	0.267	0.208	0.018	-0.168
	(0.141)	(0.138)	(0.213)	(0.198)	(0.137)	(0.132)
Caring other	0.339*	0.163	0.017	-0.244	-0.103	-0.247
	(0.188)	(0.182)	(0.273)	(0.267)	(0.190)	(0.173)
Education	0.711***	-0.767***	-0.581*	-0.321	-1.875***	-0.454**
	(0.232)	(0.199)	(0.328)	(0.308)	(0.239)	(0.198)
Shopping	-1.133***	-0.534***	-0.037	-0.006	-0.384***	-0.074
	(0.140)	(0.141)	(0.217)	(0.206)	(0.143)	(0.136)
Personal services	-0.649***	-0.710***	-0.587**	-0.365	-0.488**	-0.168
	(0.226)	(0.219)	(0.297)	(0.290)	(0.213)	(0.211)
Household services	-0.658*	-1.116***	0.080	-0.659	-0.558	0.131
	(0.355)	(0.371)	(0.550)	(0.565)	(0.418)	(0.428)
Govt services	-0.242	-0.968	-0.386	1.935**	-1.566***	1.120**
	(0.882)	(0.601)	(0.995)	(0.860)	(0.572)	(0.542)
Eating	0.187	0.659***	0.323	0.251	0.420***	0.201
	(0.130)	(0.129)	(0.196)	(0.182)	(0.130)	(0.125)
Leisure	-0.409***	0.421***	0.287	0.057	0.612***	-0.074
	(0.129)	(0.129)	(0.195)	(0.183)	(0.131)	(0.124)
Sport	1.285***	0.937***	-1.786***	0.736***	0.485***	-0.333**
	(0.164)	(0.161)	(0.237)	(0.237)	(0.165)	(0.151)
Religion	1.783***	0.658***	0.478	-0.322	1.009***	0.304
	(0.243)	(0.207)	(0.311)	(0.267)	(0.216)	(0.185)
Volunteer	0.711***	0.518**	-0.206	0.692*	-0.267	0.209
	(0.206)	(0.206)	(0.301)	(0.358)	(0.192)	(0.185)

	Meaning	Happy	Pain	Sad	Stress	Tired
Telephone	0.446**	0.143	0.213	-0.575**	-0.142	0.134
	(0.187)	(0.191)	(0.298)	(0.259)	(0.198)	(0.185)
Travel	-0.623***	0.011	-0.174	-0.075	-0.163	0.053
	(0.154)	(0.146)	(0.230)	(0.214)	(0.147)	(0.146)
Duration	0.001***	0.001***	-0.001***	-0.001***	-0.002***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Morning	-0.074	-0.241*	0.531***	-0.033	-0.051	1.867***
	(0.145)	(0.140)	(0.201)	(0.205)	(0.148)	(0.145)
Afternoon	-0.255*	-0.269*	0.353*	0.049	0.043	1.430***
	(0.145)	(0.140)	(0.201)	(0.204)	(0.147)	(0.143)
Evening	-0.290**	-0.297**	0.133	0.085	0.385***	0.526***
	(0.145)	(0.140)	(0.201)	(0.205)	(0.148)	(0.142)
Secondary childcare	0.551***	0.462***	0.027	0.219**	0.033	-0.030
	(0.055)	(0.056)	(0.094)	(0.091)	(0.059)	(0.054)
Home	0.507*	0.080	-0.078	0.708*	-0.316	-0.616***
	(0.265)	(0.322)	(0.655)	(0.416)	(0.268)	(0.239)
Workplace	0.369	-0.163	-0.273	0.553	-0.973***	-0.066
	(0.272)	(0.327)	(0.659)	(0.424)	(0.274)	(0.245)
Travelling	0.810***	0.448	0.170	0.636	-0.311	-0.304
	(0.282)	(0.335)	(0.674)	(0.438)	(0.284)	(0.256)
Other place	1.058***	0.546*	0.103	0.661	-0.152	0.051
	(0.266)	(0.321)	(0.656)	(0.416)	(0.268)	(0.239)
Interacting with others	0.775***	0.551***	0.033	0.213***	-0.017	0.160***
	(0.030)	(0.030)	(0.046)	(0.047)	(0.032)	(0.029)
N	60,108	60,108	60,108	60,108	60,108	60,108

*Omitted variables: Work * Self-employed; Unknown activity; Night; Unspecified location.* * $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table F.2 – BUC regression results, by occupation (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-0.606**	-0.286	-0.324	-0.441	-0.091	-0.176
	(0.246)	(0.219)	(0.316)	(0.299)	(0.230)	(0.201)
Work * Management	0.461**	-0.225	0.358	0.153	-0.811***	0.106
	(0.227)	(0.205)	(0.296)	(0.289)	(0.218)	(0.188)
Work * Business	0.240	-0.612**	0.350	0.061	-0.920***	0.171
	(0.268)	(0.257)	(0.382)	(0.365)	(0.261)	(0.236)
Work * Computer	0.459*	-0.746***	0.544	0.108	-1.084***	0.207
	(0.274)	(0.272)	(0.481)	(0.397)	(0.315)	(0.256)
Work * Architecture	0.773**	0.079	0.659	0.207	-0.617*	0.158
	(0.343)	(0.289)	(0.487)	(0.387)	(0.318)	(0.276)
Work * Life science	0.727*	-0.786	0.484	0.659	-0.889	0.031
	(0.373)	(0.515)	(0.554)	(0.618)	(0.575)	(0.388)
Work * Community	1.471***	0.305	0.997**	-0.126	-0.349	0.279
	(0.326)	(0.289)	(0.426)	(0.455)	(0.339)	(0.297)
Work * Legal	0.943***	-1.319***	0.572	-1.695***	-1.961***	-0.163
	(0.365)	(0.372)	(0.608)	(0.539)	(0.557)	(0.368)
Work * Education	1.094***	-0.439*	0.521	0.245	-1.159***	-0.068
	(0.247)	(0.236)	(0.323)	(0.322)	(0.255)	(0.210)
Work * Arts	0.794**	-0.045	0.009	0.205	-0.362	0.003
	(0.322)	(0.296)	(0.429)	(0.455)	(0.316)	(0.283)
Work * Healthcare	1.111***	-0.277	0.374	0.245	-0.961***	0.188
	(0.269)	(0.257)	(0.368)	(0.342)	(0.270)	(0.214)
Work * Health support	0.585	-0.044	0.105	0.249	-0.449	-0.183
	(0.375)	(0.321)	(0.431)	(0.422)	(0.357)	(0.290)
Work * Protective	0.180	-0.620*	0.553	-0.109	-0.857**	0.227
	(0.331)	(0.329)	(0.498)	(0.465)	(0.398)	(0.318)
Work * Food	0.431	-0.294	0.042	0.710*	-0.171	0.074
	(0.299)	(0.272)	(0.355)	(0.391)	(0.286)	(0.238)
Work * Cleaning	0.341	0.210	-0.241	0.255	0.451	-0.531*
	(0.304)	(0.292)	(0.382)	(0.366)	(0.313)	(0.284)
Work * Care	0.643**	0.012	0.534	0.848**	-0.178	0.136
	(0.323)	(0.310)	(0.413)	(0.418)	(0.310)	(0.270)
Work * Sales	0.238	-0.412*	0.078	0.188	-0.647***	-0.005
	(0.240)	(0.215)	(0.304)	(0.292)	(0.231)	(0.192)
Work * Office	0.089	-0.064	0.138	-0.010	-0.519**	0.014
	(0.236)	(0.213)	(0.315)	(0.301)	(0.230)	(0.191)
Work * Farming	0.322	-0.078	-0.280	0.099	-0.429	-0.300
	(0.461)	(0.419)	(0.548)	(0.561)	(0.484)	(0.389)
Work * Construction	0.440	0.003	0.052	0.607*	-0.015	-0.214
	(0.288)	(0.259)	(0.338)	(0.360)	(0.281)	(0.225)
Work * Installation	0.148	-0.263	0.292	-0.433	-0.845***	-0.159
	(0.295)	(0.273)	(0.378)	(0.405)	(0.325)	(0.248)
Work * Production	0.081	-0.207	0.266	-0.144	-0.627**	-0.387*
	(0.277)	(0.242)	(0.328)	(0.356)	(0.270)	(0.234)
N	60,165	60,165	60,165	60,165	60,165	60,165

*Omitted variables: Work * Transportation. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets. The same set of control variables are used as in Table F.1 above but the coefficients pertaining to these covariants are not shown.*

Table F.3 – BUC regression results, by industry (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-0.490**	-0.399*	0.280	-0.353	-0.485*	0.047
	(0.221)	(0.227)	(0.333)	(0.348)	(0.247)	(0.208)
Work * Agriculture	0.796**	0.256	-0.889**	0.244	0.430	-0.074
	(0.365)	(0.312)	(0.430)	(0.464)	(0.366)	(0.299)
Work * Mining	0.000	0.544	-0.176	-0.501	0.540	-0.527
	(0.706)	(0.541)	(0.675)	(1.180)	(0.602)	(0.548)
Work * Construction	0.228	0.181	-0.420	0.378	0.293	-0.172
	(0.239)	(0.244)	(0.348)	(0.386)	(0.272)	(0.226)
Work * Manufacture durables	0.145	-0.110	-0.371	-0.055	-0.123	-0.380*
	(0.231)	(0.235)	(0.340)	(0.358)	(0.258)	(0.216)
Work * Manufacture non-durables	-0.117	-0.511*	-0.533	-0.120	-0.435	-0.461*
	(0.280)	(0.283)	(0.373)	(0.410)	(0.308)	(0.255)
Work * Wholesale	-0.037	-0.446	-1.000**	-0.326	-0.306	-0.014
	(0.308)	(0.296)	(0.466)	(0.484)	(0.327)	(0.260)
Work * Retail	0.131	0.040	-0.437	0.101	-0.067	-0.229
	(0.219)	(0.224)	(0.317)	(0.347)	(0.258)	(0.207)
Work * Transportation	-0.127	-0.087	-0.274	-0.368	-0.084	-0.040
	(0.293)	(0.278)	(0.400)	(0.404)	(0.311)	(0.234)
Work * Utilities	0.078	-0.894**	-0.993	-0.524	-0.346	-0.054
	(0.478)	(0.404)	(0.666)	(0.625)	(0.525)	(0.392)
Work * Information	0.378	0.092	0.460	0.069	0.126	-0.016
	(0.271)	(0.280)	(0.382)	(0.458)	(0.313)	(0.286)
Work * Finance	0.248	-0.218	-0.386	-0.162	-0.701**	-0.158
	(0.242)	(0.258)	(0.384)	(0.410)	(0.286)	(0.231)
Work * Real estate	0.506	-0.458	-0.579	0.089	-0.281	-0.395
	(0.346)	(0.338)	(0.509)	(0.515)	(0.365)	(0.299)
Work * Professional	0.710***	-0.673***	-0.103	0.041	-0.708***	-0.131
	(0.219)	(0.236)	(0.344)	(0.360)	(0.262)	(0.211)
Work * Management	0.022	-0.185	-0.523	-0.177	-0.428	-0.468*
	(0.270)	(0.272)	(0.417)	(0.423)	(0.344)	(0.268)
Work * Educational	0.723***	-0.256	-0.175	-0.003	-0.685***	-0.367*
	(0.214)	(0.226)	(0.321)	(0.349)	(0.252)	(0.203)
Work * Health	0.823***	0.092	-0.158	0.282	-0.113	-0.256
	(0.214)	(0.214)	(0.314)	(0.334)	(0.242)	(0.197)
Work * Arts	0.218	0.502	-0.420	0.145	-0.007	-0.070
	(0.341)	(0.329)	(0.508)	(0.464)	(0.389)	(0.368)
Work * Accommodation	0.083	-0.111	-0.370	0.483	-0.093	-0.366
	(0.258)	(0.255)	(0.337)	(0.388)	(0.275)	(0.235)
Work * Households	-0.409	-0.464	-0.570	0.312	0.505	-0.874
	(0.568)	(0.627)	(0.684)	(0.818)	(0.512)	(0.664)
Work * Other services	0.344	0.133	-0.371	-0.497	-0.019	-0.155
	(0.270)	(0.263)	(0.371)	(0.401)	(0.289)	(0.238)
N	60,165	60,165	60,165	60,165	60,165	60,165

*Omitted variables: Work * Public administration. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets. The same set of control variables are used as in Table F.1 above but the coefficients pertaining to these covariants are not shown.*

Table F.4 – BUC regression results, by hourly earnings (ATUS). Source: ATUS (Bureau of Labor Statistics 2016a, 2016b).

	Meaning	Happy	Pain	Sad	Stress	Tired
Work	-1.791**	0.554	-1.101	1.631	2.976***	-1.307*
	(0.892)	(0.861)	(1.274)	(1.348)	(1.011)	(0.782)
Work * Log wage	0.206*	-0.111	0.132	-0.264	-0.455***	0.159
	(0.117)	(0.114)	(0.171)	(0.179)	(0.133)	(0.103)
N	29,229	29,229	29,229	29,229	29,229	29,229

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets. The same set of control variables are used as in Table F.1 above but the coefficients pertaining to these covariants are not shown.*

Table F.5 – Weighted ordered logit regression results (APS). Source: APS (Office for National Statistics 2016b).

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Whether working	0.403***	0.501***	0.266***	0.251***	0.072***	0.095***	-0.048***	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Whether active	0.287***	0.343***	0.218***	0.232***	-0.116***	-0.139***	-0.153***	-0.083***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Whether self-employed	0.186***	0.056***	0.106***	0.000	0.207***	0.070***	0.116***	0.019***
	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
Whether public sector	0.262***	0.051***	0.036***	-0.025***	0.183***	0.009	0.017***	-0.008
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Type of organisation:								
Private firm or business	-0.267***	-0.037***	-0.021***	0.040***	-0.200***	-0.010	-0.011	0.012*
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Public limited company (plc)	-0.165***	-0.030***	-0.040***	0.025***	-0.141***	-0.004	-0.013**	0.025***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Nationalised industry	-0.059***	0.070***	0.068***	0.119***	-0.017**	0.125***	0.089***	0.153***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Central government	-0.195***	-0.179***	-0.113***	-0.114***	-0.139***	-0.134***	-0.072***	-0.053***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Local government or council	0.250***	0.069***	0.068***	-0.037***	0.196***	0.032***	0.045***	-0.023***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
University / grant funded school	0.123***	0.025***	-0.032***	-0.183***	0.094***	0.041***	0.019***	-0.089***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Health authority or NHS trust	0.300***	0.052***	0.014**	0.112***	0.177***	-0.028***	-0.020***	0.078***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Charity or voluntary organisation	0.279***	-0.048***	-0.058***	-0.111***	0.291***	0.006	-0.024***	-0.075***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
The armed forces	-0.060***	0.141***	0.032***	0.203***	-0.397***	-0.461***	-0.089***	0.070***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Other kind of organisation	0.173***	0.087***	0.050***	-0.068***	0.171***	0.119***	0.056***	-0.025***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Industry:								
Agriculture (A)	0.113***	0.290***	0.177***	0.063***	-1.404***	-1.399***	-1.226***	-1.683***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.010)	(0.010)	(0.010)	(0.010)
Mining and quarrying (B)	-0.056***	0.183***	0.044***	0.107***	-0.105***	0.115***	-0.090***	-0.115***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Manufacturing (C)	-0.152***	0.032***	-0.009	0.046***	-0.170***	0.012*	-0.033***	0.007
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Electricity, gas supply (D)	-0.100***	0.040***	-0.060***	0.024***	-0.141***	0.011*	-0.043***	0.028***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Water supply, sewerage (E)	0.008	0.074***	-0.090***	-0.102***	0.029***	0.076***	-0.096***	-0.144***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Construction (F)	0.019***	0.102***	0.057***	0.045***	0.059***	0.112***	0.033***	-0.074***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Wholesale, retail (G)	-0.249***	-0.085***	-0.042***	0.046***	-0.241***	-0.069***	-0.039***	0.002
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Transport and storage (H)	-0.111***	0.013**	0.036***	0.087***	-0.094***	0.035***	0.021***	0.052***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Accommodation and food (I)	-0.194***	-0.093***	0.013**	0.030***	-0.203***	-0.057***	0.013*	0.029***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Information and comm (J)	-0.240***	-0.046***	-0.029***	-0.116***	-0.126***	0.016**	0.067***	-0.049***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)
Financial and insurance (K)	-0.182***	0.064***	-0.012*	-0.051***	-0.150***	0.030***	-0.052***	-0.026***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Real estate activities (L)	-0.009	-0.000	-0.019***	-0.019***	0.027***	0.001	-0.018***	0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Professional, scientific (M)	-0.145***	0.015**	-0.033***	-0.114***	-0.081***	0.015**	-0.021***	-0.052***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Admin and support services (N)	-0.194***	-0.073***	-0.033***	0.004	-0.153***	-0.048***	-0.018***	-0.000
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Public admin and defence (O)	-0.081***	-0.095***	-0.077***	-0.040***	-0.089***	-0.120***	-0.081***	-0.025***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Education (P)	0.379***	0.129***	0.105***	-0.103***	0.306***	0.096***	0.100***	-0.054***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Health and social work (Q)	0.310***	-0.038***	-0.032***	0.036***	0.258***	-0.043***	-0.031***	0.022***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Arts, entertainment (R)	-0.049***	-0.023***	0.028***	-0.027***	0.005	0.045***	0.067***	0.016**
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Other service activities (S)	0.226***	0.108***	0.111***	0.032***	0.245***	0.120***	0.112***	0.011*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Households as employers (T)	0.211***	0.278***	0.292***	0.263***	0.168***	0.334***	0.299***	0.494***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Extraterritorial organisations (U)	0.064***	0.170***	0.056***	0.015**	0.197***	0.297***	0.175***	0.082***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Occupation:								
Chief Executives (111)	0.374***	0.288***	0.146***	-0.196***	0.082***	-0.009	-0.072***	-0.102***
	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Production Managers (112)	0.178***	0.151***	0.019***	-0.057***	0.118***	0.035***	-0.014**	-0.076***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Functional Managers (113)	0.069***	0.175***	0.089***	-0.154***	0.071***	0.140***	0.131***	-0.049***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Financial Managers (115)	0.138***	0.336***	0.253***	0.070***	0.294***	0.658***	-0.349***	-0.315***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Managers in Transport (116)	-0.137***	0.015**	-0.033***	-0.178***	-0.181***	-0.097***	-0.110***	-0.227***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Senior Officers (117)	0.585***	0.258***	0.257***	0.253***	0.446***	0.229***	0.317***	0.430***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Health Directors (118)	0.373***	0.002	0.007	-0.147***	0.475***	0.071***	0.139***	-0.075***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Managers in Retail (119)	0.017***	0.024***	0.008	-0.025***	-0.010	-0.028***	-0.037***	-0.077***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)
Managers in Agriculture (121)	0.265***	0.196***	0.187***	0.001	0.219***	-0.034***	0.172***	-0.028***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Managers in Hospitality (122)	0.047***	0.094***	0.098***	0.033***	0.016**	0.072***	0.095***	-0.009
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Managers in Health (124)	0.447***	-0.052***	0.087***	0.072***	0.368***	-0.099***	0.205***	0.135***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Managers in Other Services (125)	0.058***	0.112***	-0.017**	-0.102***	0.056***	0.126***	-0.012*	-0.094***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Science Professionals (211)	-0.023***	-0.004	-0.090***	-0.181***	0.375***	-0.102***	-0.270***	-0.240***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Engineering Professionals (212)	-0.157***	0.108***	-0.002	0.009	-0.093***	-0.000	-0.056***	-0.046***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
IT Professionals (213)	-0.385***	-0.095***	-0.124***	-0.094***	-0.329***	-0.146***	-0.063***	-0.008
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Conservation Professionals (214)	-0.018***	-0.011	-0.233***	-0.301***	0.431***	0.020***	-0.071***	0.259***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
R&D Managers (215)	-0.364***	-0.096***	-0.201***	-0.321***	-0.398***	-0.475***	-0.340***	-0.284***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Health Professionals (221)	0.546***	0.217***	0.045***	-0.029***	0.942***	0.222***	0.289***	-0.046***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)
Therapy Professionals (222)	0.589***	0.209***	0.115***	0.124***	0.691***	0.174***	0.148***	0.109***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
Nursing Professionals (223)	0.492***	0.099***	0.047***	0.207***	0.247***	-0.073***	-0.057***	0.193***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Teaching Professionals (231)	0.539***	0.168***	0.130***	-0.156***	0.516***	0.131***	0.126***	-0.067***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Legal Professionals (241)	-0.067***	0.009	-0.064***	-0.352***	0.027***	0.063***	0.269***	-0.013
	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.008)	(0.008)
Business Professionals (242)	-0.149***	0.041***	-0.064***	-0.179***	-0.119***	-0.007	-0.105***	-0.167***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Architects (243)	-0.010	0.055***	0.021***	-0.182***	-0.229***	-0.262***	-0.085***	-0.142***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Welfare Professionals (244)	0.634***	0.129***	0.117***	-0.097***	0.557***	0.110***	0.180***	-0.125***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Librarians (245)	0.040***	-0.146***	-0.097***	-0.231***	0.158***	-0.290***	-0.131***	0.123***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Quality Professionals (246)	-0.019***	0.176***	-0.003	-0.126***	-0.066***	0.115***	-0.062***	-0.133***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Media Professionals (247)	-0.151***	-0.035***	-0.017***	-0.269***	0.038***	-0.027***	0.194***	-0.247***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Science Technicians (311)	-0.094***	-0.033***	-0.057***	-0.025***	-0.048***	-0.021***	-0.085***	-0.035***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Draughtspersons (312)	-0.183***	-0.219***	-0.141***	-0.125***	-0.087***	-0.102***	-0.041***	0.021***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
IT Technicians (313)	-0.385***	-0.154***	-0.128***	-0.042***	-0.303***	-0.082***	-0.110***	-0.087***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Health Associate Prof (321)	0.182***	-0.085***	-0.044***	0.137***	0.179***	-0.066***	-0.007	0.131***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Welfare Associate Prof (323)	0.298***	-0.075***	-0.038***	-0.168***	0.333***	-0.023***	0.016**	-0.122***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Protective Service (331)	0.125***	0.049***	0.098***	0.182***	0.074***	-0.079***	0.031***	0.168***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Artistic Occupations (341)	-0.064***	-0.092***	-0.035***	-0.164***	0.164***	0.121***	0.143***	-0.090***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Design Occupations (342)	-0.157***	-0.014**	-0.031***	-0.049***	-0.105***	-0.023***	-0.057***	-0.073***
	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Sports Occupations (344)	0.470***	0.214***	0.165***	0.152***	0.428***	0.078***	-0.005	0.084***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Transport Associate Prof (351)	0.174***	0.253***	0.248***	0.057***	0.583***	0.183***	0.274***	0.355***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)
Legal Associate Prof (352)	-0.256***	-0.038***	-0.120***	-0.082***	-0.129***	0.159***	-0.036***	0.083***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Business Associate Prof (353)	-0.178***	-0.011	-0.072***	-0.093***	-0.073***	-0.079***	-0.060***	-0.092***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Sales Associate Prof (354)	-0.123***	0.037***	0.025***	-0.101***	-0.101***	0.021***	0.021***	-0.100***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Conservation Assoc Prof (355)	-0.097***	0.082***	0.179***	-0.159***	0.052***	-0.085***	0.162***	-0.233***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Public Services Assoc Prof (356)	-0.020***	-0.037***	-0.047***	-0.082***	-0.030***	-0.031***	-0.048***	-0.070***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Admin: Government (411)	-0.222***	-0.151***	-0.127***	-0.073***	-0.180***	-0.145***	-0.085***	-0.103***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Admin: Finance (412)	-0.277***	-0.053***	-0.086***	-0.027***	-0.282***	-0.094***	-0.088***	-0.026***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Admin: Records (413)	-0.230***	-0.047***	-0.049***	-0.005	-0.219***	-0.033***	-0.047***	-0.027***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Other Administrative (415)	-0.210***	-0.097***	-0.068***	-0.035***	-0.230***	-0.146***	-0.114***	-0.074***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Admin: Office Managers (416)	-0.025***	0.034***	-0.035***	-0.028***	-0.013**	0.019***	-0.028***	0.031***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Secretarial (421)	-0.212***	-0.034***	-0.006	0.066***	-0.275***	-0.107***	-0.196***	-0.136***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Agricultural Trades (511)	0.101***	0.030***	0.055***	0.257***	0.117***	-0.042***	0.022***	0.121***

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.007)	(0.007)
Metal Forming Trades (521)	-0.186***	-0.365***	-0.353***	-0.555***	-0.033***	-0.124***	-1.469***	-1.090***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)
Metal Machining Trades (522)	-0.140***	-0.039***	-0.096***	0.255***	-0.113***	-0.458***	-0.081***	0.397***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Vehicle Trades (523)	0.002	0.186***	0.193***	0.291***	0.539***	0.725***	0.565***	1.267***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.010)	(0.009)	(0.011)	(0.010)
Electrical Trades (524)	-0.080***	-0.012*	-0.143***	0.053***	-0.596***	-0.570***	-0.216***	-0.046***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Skilled Trades Supervisors (525)	0.077***	0.047***	-0.171***	-0.101***	0.590***	-0.034***	-0.223***	0.412***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)
Construction Trades (531)	0.096***	0.243***	-0.137***	0.061***	0.016*	-0.154***	0.023**	-0.256***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)	(0.009)
Building Finishing Trades (532)	-0.055***	0.233***	0.081***	0.446***	-0.154***	0.092***	0.146***	0.576***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
Construction Supervisors (533)	0.778***	0.456***	0.325***	0.364***	1.214***	0.577***	0.456***	0.339***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Textiles Trades (541)	-0.366***	0.044***	0.122***	0.133***	-0.612***	-0.121***	0.026***	-0.077***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Printing Trades (542)	-0.322***	-0.118***	-0.002	0.065***	-0.675***	-0.432***	0.173***	-0.210***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Food Preparation Trades (543)	-0.041***	0.014**	0.078***	0.076***	-0.138***	-0.064***	-0.019***	0.046***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Other Skilled Trades (544)	-0.037***	0.099***	0.035***	0.173***	-0.094***	0.093***	-0.051***	0.080***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Childcare Services (612)	0.375***	0.016**	0.043***	0.049***	0.307***	-0.111***	-0.140***	0.006
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Animal Care Services (613)	0.211***	0.130***	-0.048***	0.627***	0.500***	0.299***	0.098***	0.708***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
Caring Personal Services (614)	0.230***	-0.147***	-0.062***	0.051***	0.120***	-0.213***	-0.145***	0.021***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Leisure and Travel Services (621)	-0.091***	-0.032***	0.043***	0.041***	-0.016**	0.119***	0.141***	0.091***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Hairdressers (622)	0.111***	0.025***	0.109***	0.234***	0.022***	-0.302***	0.173***	0.194***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Housekeeping Services (623)	0.066***	0.005	0.077***	0.065***	0.022***	-0.017**	0.084***	-0.094***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Cleaning Managers (624)	-0.007	0.015**	0.176***	0.203***	-0.168***	-0.202***	-0.243***	-0.117***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Sales Assistants (711)	-0.325***	-0.226***	-0.065***	0.104***	-0.283***	-0.182***	-0.042***	0.102***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)
Sales Related Occupations (712)	-0.285***	-0.112***	-0.057***	0.009	-0.254***	-0.133***	-0.034***	-0.040***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Sales Supervisors (713)	-0.169***	-0.043***	-0.114***	0.022***	-0.213***	-0.197***	-0.153***	-0.051***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Customer Service (721)	-0.271***	-0.206***	-0.088***	-0.055***	-0.161***	-0.046***	0.060***	-0.008
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Cust Service Managers (722)	-0.125***	0.017**	-0.044***	-0.061***	-0.145***	0.014**	-0.058***	-0.034***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Process Operatives (811)	-0.189***	-0.062***	-0.018***	0.098***	-0.337***	-0.065***	-0.092***	-0.042***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)
Plant Operatives (812)	-0.237***	-0.033***	0.007	0.068***	-0.039***	0.454***	-0.211***	-0.634***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Assemblers (813)	-0.212***	-0.063***	-0.032***	0.131***	-0.111***	0.094***	0.012*	0.153***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Construction Operatives (814)	0.267***	0.435***	0.534***	0.279***	1.900***	1.266***	0.792***	0.294***
	(0.007)	(0.007)	(0.007)	(0.006)	(0.010)	(0.010)	(0.011)	(0.011)
Road Transport Drivers (821)	-0.199***	-0.220***	-0.060***	0.040***	-0.602***	-0.073***	-0.052***	-0.011

Pre-treatment weights:	Birth pre-treatments only				All pre-treatments			
Dependent variable	Worthwhile	Satisfied	Happy	Anxious	Worthwhile	Satisfied	Happy	Anxious
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Mobile Machine Drivers (822)	-0.068***	-0.083***	0.296***	0.131***	0.836***	-0.644***	1.655***	-0.051***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)	(0.010)	(0.010)	(0.010)
Other Drivers (823)	0.118***	0.197***	0.138***	0.225***	0.192***	0.078***	0.188***	0.175***
	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Elementary Agricultural (911)	0.056***	0.177***	0.181***	0.405***	-0.172***	-0.299***	-0.265***	0.257***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Elementary Construction (912)	-0.128***	0.155***	0.294***	0.293***	-0.843***	1.039***	0.723***	0.767***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.011)	(0.013)	(0.012)	(0.012)
Elementary Process Plant (913)	-0.266***	-0.089***	0.033***	0.028***	-0.721***	-0.832***	-0.442***	-0.822***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Elementary Administration (921)	-0.208***	-0.041***	0.043***	0.167***	-0.157***	-0.031***	0.024***	0.173***
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Elementary Cleaning (923)	-0.259***	-0.123***	0.011	0.054***	1.009***	1.087***	1.142***	0.938***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.008)	(0.008)
Elementary Security (924)	-0.265***	-0.189***	-0.029***	0.104***	-0.281***	-0.243***	-0.145***	0.073***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Elementary Sales (925)	-0.517***	-0.423***	-0.204***	0.028***	-0.516***	-0.341***	-0.159***	0.005
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)
Elementary Storage (926)	-0.335***	-0.159***	0.003	0.102***	-0.754***	-0.544***	-0.351***	-0.189***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Other Elementary Services (927)	-0.242***	-0.092***	0.039***	0.071***	-0.337***	-0.158***	0.011	0.108***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)

*Each cell represents a separate regression and shows the coefficient and associated standard error pertaining to the explanatory variable of interest in the weighted ordered logit regression. Other covariates not shown are whether full time, whether permanent, whether new job and log net weekly earnings. The Working and Active regressions do not include any covariates and the Self-employed regression only includes whether full time and whether new job; * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets.*

Appendix G – Fixed effects results for Chapter 5

Table G.1 – Fixed effects results: GHQ of male partner. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed		ILO unemployed		Not working	
Unemployed	-2.582***	-2.569***	-2.758***	-2.745***	-1.494***	-1.474***
	(0.110)	(0.111)	(0.145)	(0.146)	(0.060)	(0.062)
Partner unemployed	0.047	0.099	-0.482***	-0.430***	0.143***	0.076*
	(0.117)	(0.118)	(0.141)	(0.141)	(0.043)	(0.044)
Household income	0.104**	0.152***	0.065	0.101**	0.052	0.144***
	(0.044)	(0.046)	(0.045)	(0.046)	(0.032)	(0.034)
Age		-0.259***		-0.251***		-0.329***
		(0.024)		(0.024)		(0.019)
Age squared		0.003***		0.003***		0.004***
		(0.000)		(0.000)		(0.000)
Degree		0.224		0.335		0.239
		(0.342)		(0.346)		(0.279)
Other higher		-0.373		-0.359		-0.071
		(0.335)		(0.342)		(0.282)
A-levels		0.311		0.474*		0.354
		(0.278)		(0.284)		(0.229)
GCSEs		0.165		0.201		-0.042
		(0.268)		(0.274)		(0.223)
Other qual		-0.252		-0.182		-0.326*
		(0.206)		(0.210)		(0.170)
Health		-0.828***		-0.826***		-0.997***
		(0.024)		(0.025)		(0.020)
Partner's health		-0.046*		-0.043*		-0.065***
		(0.024)		(0.024)		(0.020)
Children		-0.213***		-0.216***		-0.094*
		(0.057)		(0.057)		(0.050)
Other adults		-0.177***		-0.145***		-0.226***
		(0.054)		(0.054)		(0.045)
Constant	25.094***	31.886***	25.419***	32.079***	25.279***	33.392***
	(0.364)	(0.619)	(0.371)	(0.627)	(0.268)	(0.486)
R^2	0.01	0.04	0.01	0.03	0.01	0.04
N	72,245	69,886	70,153	67,962	105,966	101,913

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table G.2 – Fixed effects results: GHQ of female partner. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed		ILO unemployed		Not working	
Partner unemployed	-0.716***	-0.664***	-0.852***	-0.786***	-0.336***	-0.362***
	(0.121)	(0.126)	(0.165)	(0.167)	(0.066)	(0.069)
Unemployed	-1.375***	-1.180***	-1.465***	-1.445***	-0.471***	-0.450***
	(0.130)	(0.134)	(0.155)	(0.161)	(0.048)	(0.050)
Household income	0.005	0.081	-0.014	0.041	-0.041	0.047
	(0.048)	(0.052)	(0.049)	(0.053)	(0.035)	(0.037)
Age		-0.220***		-0.208***		-0.282***
		(0.026)		(0.026)		(0.020)
Age squared		0.002***		0.002***		0.003***
		(0.000)		(0.000)		(0.000)
Degree		0.090		0.212		-0.124
		(0.353)		(0.356)		(0.296)
Other higher		0.135		0.270		0.242
		(0.350)		(0.353)		(0.297)
A-levels		0.333		0.378		0.287
		(0.294)		(0.297)		(0.248)
GCSEs		0.086		0.179		0.074
		(0.274)		(0.279)		(0.231)
Other qual		0.230		0.192		0.139
		(0.252)		(0.259)		(0.211)
Partner's health		-0.052*		-0.068**		-0.090***
		(0.027)		(0.028)		(0.023)
Health		-1.165***		-1.141***		-1.280***
		(0.027)		(0.027)		(0.022)
Children		0.018		-0.009		0.213***
		(0.065)		(0.066)		(0.056)
Other adults		-0.147**		-0.150**		-0.189***
		(0.061)		(0.061)		(0.051)
Constant	24.863***	31.338***	25.056***	31.346***	24.968***	32.661***
	(0.399)	(0.671)	(0.407)	(0.682)	(0.293)	(0.517)
R^2	0.00	0.04	0.00	0.04	0.00	0.04
N	77,796	71,581	75,519	69,607	113,915	104,550

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table G.3 – Fixed effects results: Life satisfaction of male partner. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed		ILO unemployed		Not working	
Unemployed	-0.351***	-0.352***	-0.400***	-0.411***	-0.244***	-0.217***
	(0.034)	(0.034)	(0.041)	(0.042)	(0.019)	(0.019)
Partner unemployed	-0.040	-0.037	-0.067*	-0.069*	0.038***	0.025*
	(0.036)	(0.037)	(0.040)	(0.040)	(0.013)	(0.014)
Household income	0.030**	0.038***	0.035**	0.042***	0.016	0.035***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.010)	(0.010)
Age		-0.065***		-0.062***		-0.071***
		(0.008)		(0.008)		(0.006)
Age squared		0.001***		0.001***		0.001***
		(0.000)		(0.000)		(0.000)
Degree		0.054		0.098		-0.005
		(0.111)		(0.111)		(0.090)
Other higher		-0.064		-0.009		-0.078
		(0.111)		(0.112)		(0.092)
A-levels		0.008		0.045		-0.021
		(0.091)		(0.092)		(0.075)
GCSEs		0.078		0.123		0.038
		(0.088)		(0.089)		(0.072)
Other qual		0.015		0.040		0.032
		(0.067)		(0.069)		(0.055)
Health		-0.143***		-0.140***		-0.173***
		(0.007)		(0.007)		(0.006)
Partner's health		-0.017**		-0.017**		-0.017***
		(0.007)		(0.007)		(0.006)
Children		-0.007		-0.012		0.018
		(0.018)		(0.018)		(0.016)
Other adults		-0.036**		-0.032*		-0.042***
		(0.016)		(0.017)		(0.014)
Constant	5.027***	6.837***	4.994***	6.712***	5.088***	7.004***
	(0.112)	(0.205)	(0.114)	(0.207)	(0.082)	(0.161)
R^2	0.00	0.02	0.00	0.01	0.00	0.02
N	61,749	59,565	60,302	58,252	89,882	86,201

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Table G.4 – Fixed effects results: Life satisfaction of female partner. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed		ILO unemployed		Not working	
Partner unemployed	-0.178***	-0.159***	-0.171***	-0.180***	-0.135***	-0.116***
	(0.034)	(0.036)	(0.043)	(0.044)	(0.019)	(0.020)
Unemployed	-0.181***	-0.169***	-0.221***	-0.217***	0.003	0.002
	(0.036)	(0.038)	(0.041)	(0.042)	(0.014)	(0.014)
Household income	0.019	0.038***	0.024*	0.042***	0.007	0.026**
	(0.014)	(0.014)	(0.014)	(0.015)	(0.010)	(0.011)
Age		-0.059***		-0.057***		-0.070***
		(0.008)		(0.008)		(0.006)
Age squared		0.001***		0.000***		0.001***
		(0.000)		(0.000)		(0.000)
Degree		-0.172		-0.149		-0.126
		(0.107)		(0.107)		(0.089)
Other higher		-0.202*		-0.199*		-0.130
		(0.106)		(0.106)		(0.089)
A-levels		-0.185**		-0.177*		-0.108
		(0.091)		(0.091)		(0.077)
GCSEs		-0.140		-0.120		-0.095
		(0.086)		(0.087)		(0.072)
Other qual		0.039		0.060		-0.043
		(0.077)		(0.079)		(0.066)
Partner's health		-0.011		-0.012		-0.018***
		(0.008)		(0.008)		(0.006)
Health		-0.171***		-0.166***		-0.190***
		(0.007)		(0.007)		(0.006)
Children		0.014		0.009		0.043***
		(0.019)		(0.019)		(0.016)
Other adults		-0.078***		-0.076***		-0.072***
		(0.017)		(0.017)		(0.015)
Constant	5.160***	7.055***	5.126***	6.980***	5.194***	7.308***
	(0.113)	(0.204)	(0.115)	(0.206)	(0.083)	(0.159)
R^2	0.00	0.02	0.00	0.02	0.00	0.02
N	66,983	60,936	65,344	59,574	97,261	88,260

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. *Standard errors in brackets.*

Appendix H – Robustness check for Chapter 5: BHPS 1991 sample only

Table H.1 – Comparison between whole sample and BHPS 1991 sample only. Source: Harmonised BHPS (University of Essex 2018).

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
GHQ. Fixed effects (whole sample), Table G.1 and Table G.2:												
Male partner unemployed	-2.582***	-0.716***	-2.569***	-0.664***	-2.758***	-0.852***	-2.745***	-0.786***	-1.494***	-0.336***	-1.474***	-0.362***
	(0.110)	(0.121)	(0.111)	(0.126)	(0.145)	(0.165)	(0.146)	(0.167)	(0.060)	(0.066)	(0.062)	(0.069)
Female partner unemployed	0.047	-1.375***	0.099	-1.180***	-0.482***	-1.465***	-0.430***	-1.445***	0.143***	-0.471***	0.076*	-0.450***
	(0.117)	(0.130)	(0.118)	(0.134)	(0.141)	(0.155)	(0.141)	(0.161)	(0.043)	(0.048)	(0.044)	(0.050)
N	72,245	77,796	69,886	71,581	70,153	75,519	67,962	69,607	105,966	113,915	101,913	104,550
GHQ. Fixed effects (BHPS sample):												
Male partner unemployed	-2.788***	-0.889***	-2.782***	-0.861***	-2.910***	-1.080***	-2.846***	-1.006***	-1.507***	-0.489***	-1.498***	-0.500***
	(0.171)	(0.194)	(0.170)	(0.193)	(0.254)	(0.298)	(0.252)	(0.294)	(0.089)	(0.098)	(0.090)	(0.099)
Female partner unemployed	0.201	-1.252***	0.261	-1.065***	-0.399*	-1.455***	-0.256	-1.325***	0.184***	-0.385***	0.086	-0.369***
	(0.177)	(0.202)	(0.176)	(0.201)	(0.224)	(0.255)	(0.222)	(0.255)	(0.062)	(0.070)	(0.062)	(0.070)
N	29,705	30,969	29,364	30,247	28,876	30,111	28,554	29,418	43,153	45,078	42,573	43,990
GHQ. RE SUR (whole sample), Table 5.6:												
Male partner unemployed	-2.485***	-0.508	-2.494***	-0.552	-2.951***	-0.805*	-2.819***	-0.763*	-1.723***	-0.211*	-1.633***	-0.205*
	(0.420)	(0.418)	(0.431)	(0.410)	(0.447)	(0.478)	(0.441)	(0.458)	(0.118)	(0.116)	(0.117)	(0.116)
Female partner unemployed	0.233	-1.256***	0.312	-1.289***	-0.269	-1.599***	-0.246	-1.510***	0.273***	-0.502***	0.200***	-0.484***
	(0.389)	(0.387)	(0.389)	(0.378)	(0.348)	(0.373)	(0.325)	(0.337)	(0.075)	(0.074)	(0.074)	(0.074)
N	64,368	64,368	63,565	63,565	55,802	55,802	55,096	55,096	93,725	93,725	92,181	92,181
GHQ, RE SUR (BHPS sample):												
Male partner unemployed	-2.822***	-0.511*	n/a	n/a	-3.213***	0.037	n/a	n/a	-1.654***	-0.504***	n/a	n/a
	(0.291)	(0.290)			(0.270)	(0.289)			(0.083)	(0.085)		
Female partner unemployed	0.370	-1.308***	n/a	n/a	-0.524	-1.619***	n/a	n/a	0.140**	-0.402***	n/a	n/a
	(0.263)	(0.262)			(0.352)	(0.376)			(0.062)	(0.063)		
N	29,176	29,176			21,548	21,548			42,260	42,260		

	Self-reported unemployed				ILO unemployed				Not working			
	(1)		(2)		(1)		(2)		(1)		(2)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Life satisfaction, Fixed effects (whole sample), Table G.3andTable G.4:												
Male partner unemployed	-0.351***	-0.178***	-0.352***	-0.159***	-0.400***	-0.171***	-0.411***	-0.180***	-0.244***	-0.135***	-0.217***	-0.116***
	(0.034)	(0.034)	(0.034)	(0.036)	(0.041)	(0.043)	(0.042)	(0.044)	(0.019)	(0.019)	(0.019)	(0.020)
Female partner unemployed	-0.040	-0.181***	-0.037	-0.169***	-0.067*	-0.221***	-0.069*	-0.217***	0.038***	0.003	0.025*	0.002
	(0.036)	(0.036)	(0.037)	(0.038)	(0.040)	(0.041)	(0.040)	(0.042)	(0.013)	(0.014)	(0.014)	(0.014)
N	61,749	66,983	59,565	60,936	60,302	65,344	58,252	59,574	89,882	97,261	86,201	88,260
Life satisfaction, Fixed effects (BHPS sample):												
Male partner unemployed	-0.379***	-0.158***	-0.369***	-0.125**	-0.431***	-0.263***	-0.438***	-0.258***	-0.267***	-0.163***	-0.226***	-0.130***
	(0.055)	(0.058)	(0.055)	(0.057)	(0.067)	(0.072)	(0.067)	(0.071)	(0.028)	(0.029)	(0.029)	(0.029)
Female partner unemployed	0.024	-0.157***	0.043	-0.140**	0.018	-0.328***	0.018	-0.331***	0.063***	0.005	0.042**	0.003
	(0.054)	(0.057)	(0.055)	(0.057)	(0.058)	(0.061)	(0.058)	(0.060)	(0.019)	(0.020)	(0.019)	(0.020)
N	20,774	21,678	20,460	20,981	20,510	21,392	20,214	20,722	29,621	30,958	29,099	29,916
Life satisfaction, RE SUR (whole sample),Table 5.7:												
Male partner unemployed	-0.291***	-0.201**	-0.322***	-0.231***	-0.301***	-0.235**	-0.297***	-0.244**	-0.167***	-0.083***	-0.171***	-0.108***
	(0.087)	(0.080)	(0.086)	(0.079)	(0.103)	(0.093)	(0.093)	(0.105)	(0.032)	(0.029)	(0.031)	(0.029)
Female partner unemployed	-0.194***	-0.143**	-0.155**	-0.119**	-0.191**	-0.163**	-0.185**	-0.115	0.038*	0.046***	0.017	0.033*
	(0.062)	(0.058)	(0.062)	(0.056)	(0.086)	(0.078)	(0.077)	(0.087)	(0.020)	(0.018)	(0.020)	(0.018)
N	54,193	54,193	53,618	53,618	53,065	53,065	52,527	52,527	78,210	78,210	77,131	77,131
Life satisfaction, RE SUR (BHPS sample):												
Male partner unemployed	-0.411***	0.036	-0.401***	-0.038	-0.352***	-0.054	-0.327***	-0.168**	-0.238***	-0.073***	-0.167***	-0.074***
	(0.055)	(0.059)	(0.060)	(0.055)	(0.081)	(0.089)	(0.072)	(0.080)	(0.020)	(0.023)	(0.023)	(0.021)
Female partner unemployed	-0.027	-0.273***	-0.030	-0.260***	-0.038	-0.500***	-0.058	-0.517***	0.064***	0.007	0.052***	0.006
	(0.077)	(0.082)	(0.089)	(0.082)	(0.090)	(0.100)	(0.089)	(0.099)	(0.014)	(0.016)	(0.016)	(0.015)
N	20,406	20,406	20,208	20,208	20,154	20,154	19,973	19,973	29,029	29,029	28,665	28,665
Household income control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Mundlak controls (RE SUR models only)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Except in the case of the fixed effects regressions which are estimated separately by OLS, the male and female equations are estimated simultaneously and solved by Generalised Least Squares. The titles refer to the definition used to compute the variables 'Male partner unemployed' and 'Female partner unemployed"' For each definition, the results are shown for two specifications: (1) controlling only for household income; (2) all controls. * p<0.1; ** p<0.05; *** p<0.01. Standard errors in brackets. Mundlak controls not relevant for fixed effects models. The SUR models with GHQ as the dependent variable and the full set of controls did not converge for the BHPS sample and therefore results are not available.*