



# Time Use, Income, and Social Class: Shedding Light on the Social Foundations of Subjective Well-Being

Juana Lamote de Grignon Pérez

Thesis submitted for assessment with a view to  
obtaining the degree of Doctor of Political and Social Sciences  
of the European University Institute

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European University Institute  
**Department of Political and Social Sciences**

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**Examining Board**

Prof. Fabrizio Bernardi, European University Institute (Supervisor)

Prof. Diego Gambetta, European University Institute

Prof. Jonathan Gershuny, Oxford University

Prof. Letizia Mencarini, Università di Torino, Collegio Carlo Alberto

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A la tribu y a Leandro



# Acknowledgement

During my time in Florence many people helped me in one way or another. I would like to thank them all individually, however, they are so many that I have to limit this acknowledgement to those that have been most important. I am sure that my memory will fail me and I apologise in advance if I forget someone important.

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# Abstract

The first part of the thesis challenges the widespread view that relative income – a function of own income in relation to others’ income – affects subjective well-being (SWB). This view is based on weak empirical evidence: mostly cross-sectional, small coefficients and often a simplistic view about how social comparisons work. This chapter starts by questioning the very basic way in which social comparisons are supposed to be made. It then shows empirically that changes in relative position have no effect on life satisfaction or mental distress, using data from the British Household Panel Survey. The rest of the chapter is devoted to addressing the possible endogeneity of changes on relative income, as well as to carrying out several robustness checks.

In most countries individuals of the upper class enjoy more positive emotions and fewer negative emotions than the middle and lower classes. However the size of these differences varies across countries. Chapter 3 attempts to explain where those differences come from using a special SWB module from the European Social Survey that was carried out in 2006 and 2012. The analysis shows that most of the class differences in negative emotions can be explained by differences in health, financial situation, and unemployment. Feeling safe and socialising – while important for negative emotions – do not contribute to the gaps in negative emotions because they are much more equally distributed across classes. Having two rounds of data gives credibility to the results and allows a very interesting description of the emotional changes that occurred with the 2008 economic crisis.

Chapter 4 tries to shed light on the issue of work-life balance by exploring the effects of working hours on different SWB outcomes using time use data for employees. The analysis reveals that employees experience high levels of enjoyment and satisfaction, almost regardless of how much they work. Unfortunately this is also the case for time crunch – a shortage of time –, which is experienced to a non-negligible extent by all employees. The analysis carried out suggests that there is indeed an optimal number of hours for most of the subjective well-being outcomes considered, but these do not always coincide. However, the trade-offs are greater for individuals that are less satisfied with their jobs. Individuals that are above the median in terms of job satisfaction optimise enjoyment and satisfaction at a positive and large number of hours, whereas for individuals that have low job satisfaction maximising satisfaction and enjoyment at the same time is not possible.



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# Chapter 1

## Introduction

**What is subjective well-being and why should we care?**

This thesis is made up of three chapters that, while quite independent from each other, share the common aim of trying to shed light on the causes of subjective well-being. Each of the three chapters can be read on its own and therefore the purpose of this first chapter is simply to introduce the reader to the area of subjective well-being. After stating briefly why we should care about understanding SWB, the chapter will start by defining subjective well-being, and explaining how it is measured. After this, some of the main theories will be presented and the chapter will close by introducing the following chapters.

## 1.1 THE IMPORTANCE OF STUDYING SUBJECTIVE WELL-BEING

*“One of the most annoying songs in the often annoying history of popular music begins with this line: “Feelings, nothing more than feelings.” [...] What could be more important than feelings? Sure, war and peace may come to mind, but are war and peace important for any reason other than the feelings they produce? If war didn’t cause pain and anguish, if peace didn’t provide for delights both transcendental and carnal, would either of them matter to us at all? War, peace, art, money, marriage, birth, death, disease, religion—these are just a few of the Really Big Topics over which oceans of blood and ink have been spilled, but they are really big topics for one reason alone: Each is a powerful source of human emotion. If they didn’t make us feel uplifted, desperate, thankful, and hopeless, we would keep all that ink and blood to ourselves.”*

— Daniel Gilbert, *Stumbling on Happiness* (Gilbert, 2009, p. 132-3)

Objective well-being indicators such as life expectancy, per capita income, access to health care, or education tell us about the objective conditions of the individual and society, while subjective well-being (SWB) captures how the individual feels about those conditions. Objective conditions can be a cause of SWB but they are not the same as SWB. In other words, the relationship between objective and subjective well-being is imperfect and that is why we need to pay attention to subjective indicators as well, because they measure something very important that cannot be captured in any other way.

But, regardless of what we think that societies or policy makers should be concerned with, individuals want to be happy because it feels good to feel good (King and Broyles, 1997; King and Napa, 1998; Scollon and King, 2004). Besides, happiness is not only an end in itself but also has very desirable consequences. Happy individuals are better citizens, more successful, live longer, have better health, heal more quickly, and recover from disease faster (Cohen et al., 2003; Danner et al., 2001; Harker and Keltner, 2001; Kiecolt-Glaser et al., 2002; Lyubomirsky et al., 2005; Veenhoven, 1989, 1988, 2008a).<sup>1</sup> Even those that do not think that feeling good is something we should aim for may still be interested in understanding it because, like it or not, feeling well is a strong drive of human behaviour and thus understanding SWB can help us understand much better why we and others behave in the way we do.

It has not been until relatively recently, however, that scholars, policy makers and

---

<sup>1</sup>For instance, in one experiment, individuals were exposed to a cold virus and their symptoms monitored. Those who had reported a higher level of life satisfaction at baseline were less likely to come down with a cold and quicker to recover if they did (Cohen et al., 2003). In a similar vein, Kiecolt-Glaser et al. (2002) found that individuals that were more satisfied with their lives healed more quickly from a controlled wound.

other professionals have paid attention to SWB. It all started in psychology where there was an overwhelming emphasis on negative states, partly in the belief that happiness and well-being simply meant the absence of clinical pathology, but probably also because it seemed natural to worry first about those who suffer most. But there is more to SWB than avoiding misery, and that is why positive psychology was founded (Seligman, 1990, 2002). The number of articles in this subject has boomed since then (especially in psychology and economics).

Economists have in the past used income to proxy utility. Now, however, many economists use measures of subjective well-being to proxy utility, and by doing so have made significant contributions to happiness research. Frey and Stutzer (2002) provide an excellent account of that progress.<sup>2</sup> The wider economic community has been made aware of the subject, mainly by a small symposium of the *Economic Journal* in 1997 with papers by Frank (1997), Ng (1997) and (Oswald, 1997) but it is worth highlighting some earlier contributions by Frank (1985, 1999) and Scitovsky (1976). In sociology, however, the study of happiness has been somewhat neglected (Veenhoven, 2008b). Many believe this should be left to psychologists since much of the variance of both experienced happiness and life satisfaction is explained by variation in personal dispositions that probably have a significant genetic component (Diener et al., 1999; Lykken, 1999). It is true that personal dispositions play a significant role but this is not the whole story. For example, in rich countries people are, on average, happier than in poorer countries and, for a given income level, there is a great variation in happiness. The former suggests that happiness is not genetically determined, and that there is some social dimension to its creation (Veenhoven and Hagerty, 2006a). Hence, there is room for social science to make a contribution. Economists have already started but there is some neglect within sociology that may now be fading away. A remarkable exception to this is Ruut Veenhoven who has made an enormous contribution to the study of SWB by producing numerous papers on the subject and making it easier for other researchers to study SWB through the World Database of Happiness that he founded, and with the creation of the *Journal of Happiness Studies*.

The interest from policy makers in the subject has also increased lately. The British economist Richard Layard, for instance, has advocated for a prominent role of happiness research in policy making since the 1980s (Layard, 1980, 2005, 2006), and he has influenced the British government in the serious consideration of SWB as a policy aim. Some years ago, Nicolas Sarkozy assembled a group of experts in order to prepare a report that made proposals for measuring society's progress going beyond GDP (Stiglitz et al., 2010), and subjective well-being occupied an important part of this report. One remarkable example of taking happiness seriously, seems to be that of Bhutan, where

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<sup>2</sup>Other examples are Bruni and Porta (2005), Frey and Stutzer (1999, 2000, 2010), Di Tella et al. (2001), Layard (2005) (especially chapter 9), Di Tella and MacCulloch (2006)

they measure Gross National Happiness and use that indicator to review policy decisions and allocation of resources with the aim of fostering happiness among their citizens. In relation to national accounts of well-being, we cannot forget to mention the efforts that have taken place within time use research. Several authors have long acknowledged the value of time use data to measure quality of life. In particular the use of enjoyment of activities combined with time use data, to produce accounts of well-being (National Time Value accounts). This was first proposed by Juster and Stafford (1985) who spoke about “process benefits”, referring to the utility we derive from the things we do, and how those should be taken into account when building national accounts. Other authors that have worked in this direction are Gershuny and Halpin (1996) and Krueger (2007). These initiatives were, however, more interested in the measurement of the more affective components of SWB, i.e. the enjoyment of activities, rather than life satisfaction or self-reported happiness. But in essence, they aim at the same thing, incorporating measures of subjective well-being to evaluate societies’ progress.<sup>3</sup>

Most of the concerns or prejudices against happiness being part of policy makers’ agendas have to do with the fact that, on the one hand, we are still unable to explain most of its variation, which leads many to the premature conclusion that happiness is somehow random. The other reason why many have issues with the study of SWB involves the way it is measured. Most people think that SWB cannot be measured in an appropriate or scientific way, and therefore it cannot be studied. However, as soon as one looks into this subject it becomes clear that subjective well-being can indeed be measured with a decent degree of accuracy. If that were not the case it would be impossible to find the patterns that we actually identify in the data. It is true that people’s feelings are harder to measure than income or years of education, but this does not mean that we do not get good enough measures. The aim of the next section is to convince you of this.

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<sup>3</sup>These initiatives will be described in greater detail in Chapter 4.

## 1.2 THE CONCEPT OF SUBJECTIVE WELL-BEING, ITS MEASUREMENT AND METHODOLOGICAL ISSUES

### 1.2.1 The concept of subjective well-being

Subjective well-being (SWB) is a very broad concept; it refers to how people experience the quality of their lives and includes both emotional reactions and cognitive judgements. In other words, it is a combination of satisfaction with life and the relative frequency of positive and negative affect (Diener, 1984). The affective part refers to the amount of pleasant feelings (positive affect) and unpleasant feelings (negative affect) that people experience in their lives. The cognitive component instead refers to how people feel when they think about their life. Some of the most frequently used scales to measure subjective well-being will be introduced further below – which, I believe, should make very clear what these different components capture.

This former distinction between cognition and affect is very useful at the theoretical level, but in practice the various self-report measures of SWB are saturated to a varying degree with judgment and affect. According to Diener et al. (1999), measures of SWB can be ordered along a dimension varying from evaluative judgments of life at one end to experienced affect at the other. At the affective end, we would find Kahneman's *objective happiness*, comprising people's feelings of pleasure and displeasure summated over time (Kahneman, 1999). At the other end would be global judgments such as life satisfaction where people step back and think of certain factors that they deem to be important and salient at the time of the judgment. Although no well-being measure is ever totally free of either of these components, it is plausible to argue that a measure of life satisfaction might be more heavily weighted with judgment. Whereas the questions included in the General Health Questionnaire, which ask about things such as sleep quality, confidence, or the ability to concentrate, may be closer to the affective side.

Before getting into the details of each of these two components and its measurements, it is worth mentioning that within the study of SWB there are two distinct approaches: the hedonic approach – which emphasises positive feelings (Kahneman et al., 1999), and the eudaimonic approach – which emphasises positive functioning (Keyes, 2002; Ryan and Deci, 2001; Sen, 1993). The eudaimonic approach has been operationalised in various ways, and typically includes concepts such as autonomy, interest and engagement, positive relationships, and a sense of meaning, direction, or purpose in life (Deci and Ryan, 2000; Ryan and Deci, 2001; Ryff and Singer, 1998; Seligman, 2002). While I believe these are very interesting concepts, and very likely connected or leading to high SWB, it should be clarified that this thesis is only concerned with purely hedonic outcomes.

## 1.2.2 Positive and negative emotions

There are several scales that have been designed for measuring positive and negative emotions. Here I present the most popular ones, such as the Warwick-Edinburgh Mental Well-being Scale – WEMWBS (Tennant et al., 2007), the CESD – Center for Epidemiologic Studies Depression Scale (Radloff, 1977), and the PANAS – Positive and Negative Affect Schedule (Watson et al., 1988). Validity and reliability issues are discussed alongside.

Figure 1.1: The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

**Below are some statements about feelings and thoughts.**  
**Please tick the box that best describes your experience of each over the last 2 weeks**

STATEMENTS	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	1	2	3	4	5
I've been feeling useful	1	2	3	4	5
I've been feeling relaxed	1	2	3	4	5
I've been feeling interested in other people	1	2	3	4	5
I've had energy to spare	1	2	3	4	5
I've been dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling good about myself	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been feeling confident	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5
I've been feeling loved	1	2	3	4	5
I've been interested in new things	1	2	3	4	5
I've been feeling cheerful	1	2	3	4	5

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al., 2007) is a 14-item scale that enquires about how people have been feeling and functioning over the past two weeks, and then a single total score is obtained that summarises mental well-being. It has been used in population surveys in Scotland, the North West of England and Iceland (Bartram et al., 2013, 2011; Stewart-Brown and Janmohamed, 2008; Stewart-Brown et al., 2011), and its use has been recommended by the US National Institutes of Health. Validity and reliability issues are discussed in depth in Tennant et al. (2007) and Tennant et al. (2006).<sup>4</sup>

<sup>4</sup>A 7-item version of the scale (the Short Warwick-Edinburgh Mental Well-being Scale SWEMWBS) has also been shown to have good psychometric properties (Stewart-Brown et al., 2009).



Figure 1.2: The Positive and Negative Affect Schedule (PANAS)

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you feel this way right now, that is, at the present moment *OR* indicate the extent you have felt this way over the past week (circle the instructions you followed when taking this measure)**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

_____ 1. Interested	_____ 11. Irritable
_____ 2. Distressed	_____ 12. Alert
_____ 3. Excited	_____ 13. Ashamed
_____ 4. Upset	_____ 14. Inspired
_____ 5. Strong	_____ 15. Nervous
_____ 6. Guilty	_____ 16. Determined
_____ 7. Scared	_____ 17. Attentive
_____ 8. Hostile	_____ 18. Jittery
_____ 9. Enthusiastic	_____ 19. Active
_____ 10. Proud	_____ 20. Afraid

Another example of an affective questionnaire is the Positive and Negative Affect Schedule (PANAS) developed by Watson et al. (1988). This scale asks individuals to report the frequency with which they experience certain states (positive and negative), see Figure 1.2. The PANAS scales provide reliable, valid, and largely independent measures of positive and negative emotions, regardless of the subject population or time frame used. For more information regarding the reliability and validity of these scales, see Watson (1988), or Watson and Clark (1999).

A third very widely used mental well-being scale is the Center for Epidemiologic Studies Depression Scale (CES-D) developed by Radloff in the late 1970s (Radloff, 1977). The CES-D scale is a short self-report scale designed to measure depressive symptomatology in the general population. It therefore focuses on negative states. The CES-D helps identify individuals at risk of clinical depression, with good sensitivity and specificity and high internal consistency (Lewinsohn et al., 1997).<sup>5</sup>

<sup>5</sup>“Everyone occasionally feels blue or sad, but these feelings are usually fleeting and pass within a few hours or a couple of days. When people have a depressive disorder, they feel really sad for a long

Figure 1.3: The Center for Epidemiologic Studies Depression Scale (CES-D)

*I will now read out a list of the ways in which you might have felt or behaved in the past week. Please tell me now how much of the time during the past week*

1. ... you felt depressed
2. ... you felt that everything you did was an effort
3. ... your sleep was restless
4. ... you were happy
5. ... you felt lonely
6. ... you enjoyed life
7. ... you felt sad
8. ... you could not get going

Response code: 0-none or almost none of the time, to  
3-all or almost all of the time.

The CES-D questionnaire has been used widely (e.g Huppert et al., 2009) and its validity and reliability has been extensively assessed. For example, Roberts (1980) assessed the reliability of the CES-D scale in different ethnic contexts, (Lewinsohn et al., 1997) used the CES-D successfully across wide age ranges, and Van de Velde et al. (2010) have shown that cross-country comparisons of CES-D scores are valid. In particular they conclude that CES-D scores can be compared across countries because although the different items have a different weight in the score in different countries, meaning that separate items cannot be used to compare negative emotions across countries, the summary score can be compared. This measure will be used in Chapter 3 because it was part of two rounds of the European Social Survey that is used in that chapter.

### 1.2.3 Happiness and satisfaction

It is worth remembering that no measure is ever free of affect or judgement. However there are some measures, such as life satisfaction or happiness, that have a greater cog-

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time and cannot shake this feeling. It interferes with their ability to do things in their lives that they can normally do well; and it causes pain for both the people with the disorder and those who care about them. Depressive disorder is a common but serious illness. Almost 85% of those found to have depression after an in-depth structured interview with a psychiatrist will have a high score on the CES-D. However, about 20% of those who score high on the CES-D will have rapid resolution of their symptoms and not meet full criteria for major or clinical depression” (the Center for Epidemiologic Studies Depression Scale web site, available at: <http://cesd-r.com>).

nitive charge than the measures seen so far. These are also the questions that are most commonly asked in surveys to capture SWB, e.g.: “*All things considered, how satisfied are you with your life as a whole these days?*”, or, “*Taken all together, how happy would you say you are?*” These two questions have been asked for many years in the General Social Survey, in the World Values Survey, in the European Social Survey as well as in many panel studies such as the British Household Panel Study or the German Socio-Economic Panel, to cite some examples.

Being aware of the limitations of single items in terms of reliability due to, for instance, the influence of a preceding item in the questionnaire, Diener et al. (1985) designed the Satisfaction with life scale, a 5-item scale designed to measure global cognitive judgments of one’s life satisfaction. Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from strongly agree (7) to strongly disagree (1), see Figure 1.4. A short version of this scale is used in some rounds of the European Social Survey.<sup>6</sup>

Figure 1.4: The Satisfaction with Life Scale

**Instructions:** Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

\_\_\_\_ In most ways my life is close to my ideal.

\_\_\_\_ The conditions of my life are excellent.

\_\_\_\_ I am satisfied with my life.

\_\_\_\_ So far I have gotten the important things I want in life.

\_\_\_\_ If I could live my life over, I would change almost nothing.

However, the single items that are commonly used – such as, “*All things considered, how satisfied are you with your life as a whole these days?*” – are still useful. For a start, respondents find answering these questions relatively straightforward. For instance, Kahneman and Krueger (2006) note that, in the 1998 General Social Survey, less than 1 per cent of respondents refused to provide an answer, or answered “don’t know”, to the general happiness question (by contrast, 17 per cent of respondents refused to provide

<sup>6</sup>Other efforts in this direction are the 7-item Personal Well-being Index (PWI) developed by Cummins and colleagues (Cummins et al., 2003; Lau et al., 2005).

their earnings). Similar proportions of missing values, that is, very low ones, are what I have encountered in the first chapter of this thesis where one of my dependent variables is the general life satisfaction question.

Next, the validity and reliability of these general questions will be discussed. Note that this was not done to any significant extent for the affect scales for the very simple reason that the validity and reliability of those is very well established. Very good discussions and reviews on the methodological concerns about life satisfaction or happiness measures can be found in Kahneman et al. (1999), Ng (1996), or Kahneman and Krueger (2006), among others. What follows is just a very brief review of those.

The measures of SWB available are derived from survey questions, which ask respondents for subjective assessments of their own level of well-being. Unlike height, weight, income, or years of education, which can be assessed by looking at official documents or some objective external source, SWB needs to be measured by asking the individuals themselves. But how can we be sure that these responses actually measure individuals' well-being in a satisfactory way? In other words, are they valid and reliable measures of SWB? Whether respondents report their true feelings, and the possible biases resulting from the context in which the question is asked, have been extensively studied and there are some valid concerns (Clark and Oswald, 2002; Conti and Pudney, 2011; Veenhoven, 1993), but, in general, the fact that SWB self reports are, strongly correlated with other outcomes that are signs or symptoms of happiness, and predict future behaviour, suggest that self reports are valid (Kahneman and Krueger, 2006).

For instance, the following observable phenomena have been shown to correlate with high life satisfaction and happiness: smiling frequency, the frequency of real smiles, i.e. the 'Duchenne' smiles, the "unfakeable smiles" (Ekman et al., 1990),<sup>7</sup> ratings of one's happiness made by friends; frequent verbal expressions of positive emotions; sociability and extraversion; sleep quality; self-reported health, among others (Diener and Suh, 1999; Frey and Stutzer, 2002; Layard, 2005), all cited in Kahneman and Krueger (2006). If individuals that smile more do report higher life satisfaction and happiness, and if self reports coincide with peers assessments and so on, this means that self reports do actually tell us something. In other words, they are somewhat valid measures of SWB. But, in addition to external evidence detectable to the human eye, magnetic resonance imaging scanners have allowed researchers to learn that activity in the left prefrontal cortex of the brain is more active when individuals are experiencing happy thoughts, while the right prefrontal cortex is more active when individuals are experiencing sad

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<sup>7</sup>A Duchenne smile involves contraction of both the zygomatic major muscle (which raises the corners of the mouth) and the orbicularis oculi muscle, which raises the cheeks and forms crow's feet around the eyes. A non-Duchenne smile involves only the zygomatic major muscle. The PanAm smile is the name given to a fake smile, in which only the zygomatic major muscle is voluntarily contracted to show politeness. It is named after the airline Pan American World Airways, which went out of business in 1991, whose flight attendants would flash every jet-setter the same perfunctory smile (from: <http://en.wikipedia.org/wiki/Smile>)

thoughts (Urry et al., 2004). Another piece of evidence invisible to the human eye is that individuals' happiness self reports are inversely correlated with their cortisol levels – a hormone released in response to stress that is related to the risk of obesity, hypertension and autoimmune conditions (Steptoe et al., 2005).<sup>8</sup>

“Even a clock can be a useful device for measuring happiness, because startled people tend to blink more slowly when they are feeling happy than when they are feeling fearful or anxious” (Gilbert, 2009, p. 123). So, there seem to be many ways to measure happiness, and some of them appear to be much more rigorous, scientific, and objective than a person's own claims. However Gilbert remind us that “of all the flawed measures of subjective experience that we can take, the honest, real-time report of the attentive individual is the least flawed. [...] After all, the only reason why we take any of these bodily events – from muscle movement to cerebral blood flow – as indices of happiness is that people tell us they are. If everyone claimed to feel raging anger or thick, black depression when their zygomatic muscle contracted, their eyeblink slowed, and the left anterior brain region filled with blood, then we would have to revise our interpretations of these physiological changes and take them as indices of unhappiness instead. If we want to know how a person feels, we must begin by acknowledging the fact that there is one and only one observer stationed at the critical point of view. She may not always remember what she felt before, and she may not always be aware of what she is feeling right now. We may be puzzled by her reports, skeptical of her memory, and worried about her ability to use language as we do. But when all our hand wringing is over, we must admit that she is the only person who has even the slightest chance of describing *the view from in here*, which is why her claims serve as the gold standard against which all other measures are measured” (Gilbert, 2009, p. 122-124)

Feeling good has consequences, which offers further support in favour of the validity of self reports. For instance, in one experiment, individuals were exposed to a cold virus and researchers observed that those that had reported a higher level of life satisfaction at baseline were not only less likely to come down with a cold, but they also recover faster if they do become ill (Cohen et al., 2003). Similar findings have been found by Kiecolt-Glaser et al. (2002) with controlled wounds, where individuals that were more satisfied with their lives at the baseline healed more quickly. Other interesting studies, although using non-experimental evidence, are Danner et al. (2001) and Harker and Keltner (2001). Danner et al. (2001) found a relationship (most likely a causal one) between the expression of positive emotions in early life of nuns – measured by rating the autobiographies of catholic nuns before starting a nun's life, at around 20 years of age – and compared with their survival many years later. In a similar vein, Harker and Keltner

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<sup>8</sup>Other articles that discuss the validity of global self reports are Diener et al. (1999), Frey and Stutzer (2002) (chapter 2 in particular), Larsen and Fredrickson (1999), Diener (1984), Diener et al. (2006), Kahneman and Krueger (2006), and Van Praag and Ferrer-i Carbonell (2008) among others.

(2001) assessed positive emotions through facial recognition techniques exploring the photos of many young women taken from their college yearbook, and observed that there was a strong relationship between the expression of emotion and several life outcomes across adulthood up to 30 years later.

A measure is reliable if it produces similar results in different measurements. Measurements of people's height and weight are good examples of very reliable measures, because height or weight are unlikely to vary a lot from one measurement to another. SWB measures are less reliable than the former but they are reliable enough. For example, Krueger and Schkade (2008), with a sample of 229 working women, analysed the reliability of various subjective well-being questions over a two-week period. They found that both life satisfaction self reports, and affective experience measures had test-retest correlations between .50 and .70. Reliability increases with a succession of questions rather than a single item. For example, Lucas et al. (1996) found a test-retest correlation of 0.77 over four weeks for a measure of life satisfaction that resulted from averaging a battery of life satisfaction questions. "While lower than the reliability ratios typically found for education, income and many other common micro economic variables, they are probably sufficiently high to yield informative estimates for much of the research undertaken on subjective well-being, particularly in cases where group means are being compared (e.g. rich vs poor, employed vs unemployed) and the benefits of statistical aggregation apply" (Krueger and Schkade, 2008, p. 1). Besides, the noise produced by context, mood, or recent events, are likely to average out in representative population samples. See also (Gilbert, 2009, p. 125-7).

Unlike affect scales, it is highly controversial whether happiness and life satisfaction responses can be compared across countries due to the fact that culture has an effect on the way in which people respond to these questions. If for instance Americans tend to overstate their happiness and Russians understate it, happiness self-reports between these two countries will not be comparable. In other words, individuals in different countries could enjoy the same objective life conditions and still report different happiness levels due to cultural 'optimism', 'pessimism' or some other factor. Differences in self reports can also be the result of actual differences in SWB – as the result of differences in objective life circumstances – but we cannot know in which of the two situations we are when faced with differences in levels across countries. Therefore, cross-country comparisons of happiness or life satisfaction self-reports are still problematic.

Besides, culture's influence in responses could not only affect levels but also affect the distribution of responses, invalidating the comparison of measures of inequality across countries (such as standard deviations of happiness or life satisfaction). For example, if it is true that the Japanese tend to present themselves as average and prefer the middle category of response scales (Iijima, 1982), then, *ceteris paribus*, in Japan differences in self-reports will tend to be smaller than in other countries. This would invalidate the

comparison of the Japanese distances – as a measure of SWB inequality – with that of any other country where no such tendency exists. Furthermore, even when culture does not affect the distribution of responses in such a clear way, the fact is that the distribution of life satisfaction self-reports is limited and most responses are quite concentrated on just a few positive values. This allows for greater differences among individuals of countries where SWB levels are lower. Thus, countries that are more pessimistic will tend to see, *ceteris paribus*, larger differences in SWB between the upper and the lower class, than countries where people report higher levels of SWB. In this case too, the distribution of answers is affected by culture and therefore the comparison of differences across countries is doubtful. So, until we know more about this, cross-country comparisons of life satisfaction and happiness will remain highly controversial. This is not the case however with measures of affects, especially negative affect, which has been well established to have cross-national comparability (e.g. Van de Velde et al., 2010).<sup>9</sup>

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<sup>9</sup>This will be discussed in greater detail in Chapter 3

## 1.3 INTRODUCTION TO THE MAIN SUBJECTIVE WELL-BEING THEORIES

### 1.3.1 Need theories, relative theories and goal theories

Here, I will briefly review some the main SWB theories that are found in the literature. These are essentially the following: need theories, relativistic judgements or comparison theories, goal theories and cultural approaches. In a nutshell, need theories hold that SWB depends on the satisfaction of universal needs while relativistic theories emphasise the relative nature of needs. It is argued that SWB is not only a function of one's resources but one's resources in relation to some standard of comparison. Goal theories, on the other hand, put the emphasis on people's goals or desires, and cultural approaches discuss the effects of culture on SWB (however cultural approaches will not be discussed here because they are less relevant to the chapters in this thesis).

These theories are to a degree compatible. Need theories have received support when very basic needs are at stake, but the evidence is less clear beyond a certain threshold due to the lack of conceptual precision. I believe that evolutionary theory can be very helpful in defining what basic needs are and this is why the last part of this subsection is dedicated to presenting what evolutionary theory and biology have to offer to the study of happiness. Relativistic theories on the other hand have received less support, but it is not entirely clear to what extent this is due to the invalidity of the theory or to empirical difficulties such as the definition of the group of reference for the individual. This review is by no means exhaustive. I only aim at providing a very brief introduction to the explanations often found in the happiness literature, and in particular to those most relevant for the following chapters. Besides, as each of the chapters contains a section reviewing the relevant theories there is no need to make this introduction too long. Need theories claim that SWB is related to need satisfaction. Need theorists usually refer to basic needs that derive from our biology. They predict that people will experience feelings of SWB to the extent that these basic needs are met. 'Livability theories' (Veenhoven and Ehrhardt, 1995) are an example of such theories. In this context, objective conditions of the country determine SWB and explain world differences in SWB. Note that although the satisfaction of needs is partly an individual matter, society establishes the context in which the individual lives and, by doing so, facilitates or impedes the satisfaction of needs. Societies can be more or less effective in that respect, which could explain SWB differences around the world.

The evidence available has given support to the idea that there are some basic needs that when met raise SWB (e.g. Diener et al., 1995; Tay and Diener, 2011; Veenhoven, 1991, among others). Since wealthy countries are more likely to meet the basic needs of their citizens, many studies have looked at the relationship between economic resources and SWB in order to assess the validity of need theories (e.g. Diener et al., 1995, 1993).



The former studies have found a strong correlation at low levels of income that loses strength at higher levels, becoming flat after a certain point. This has been interpreted as giving support to the basic needs approach because, it has been argued, when income is devoted to basic needs fulfilment SWB rises but it ceases to do so after basic needs have been met. However one problem with those studies is that they do not specify much what basic needs are and simply assume per capita GDP to be a good proxy of need satisfaction. This is not necessarily the case.

Some studies have attempted at a more rigorous measurement of need satisfaction by selecting some non-controversial needs. For example, Diener et al. (1995) looked at safe drinking water, infant mortality, life expectancy, calories available per capita, and sanitary toilet facilities. These five variables were thought to capture whether the people in each nation could meet their basic health, safety, and survival needs. In fact there was a correlation between those and SWB, however they also found that after those needs were being met, mean income of the nation still had an effect. Is this evidence against need theories? Or is it simply that some important needs were left out? Or, are human needs unlimited as some authors seem to suggest (e.g. Stevenson and Wolfers, 2008)

Other studies have used other indicators in an attempt to measure basic needs but similar problems emerge. Veenhoven and Ehrhardt (1995) reviewed supportive evidence for the ‘livability theories’, and they concluded that societies differ in SWB, and that a substantial amount of the variance can be accounted for by objective conditions. Factors such as income, nutrition, equality, freedom, and education can account for 77 per cent of the variance in national happiness (Veenhoven, 1993). One might wonder whether equality is a basic need, which highlights again the importance of defining basic needs more precisely. Not doing so makes it impossible to test its validity.

Diener et al. (1995) found that after what they considered basic needs were met, the mean income of the nation still had an effect on SWB, but that after a certain point the curve flattened out. While this evidence has been interpreted by some as giving support to the basic needs story – note that basic needs in that case are defined as those that are being fulfilled until income stops having an effect, relative theories have interpreted it as lending support to relativistic theories. Relativistic theories (Michalos, 1985), or comparison theories, claim that SWB is the result of the evaluation of your situation with respect to some standard. In other words, this theory assumes that the evaluation of life, SWB is based on a mental calculation, in which perceptions of life-as-it-is are weighed against standards of how-life-should-be. In this context, the relativistic model suggest that SWB depends not on one’s absolute level of resources but on how one’s resources compare to the relevant comparison standards such as one’s past levels or the level of others or our expectations for the future. Unlike need theories, similar objective conditions lead to very different SWB and the other way round. In a way, what this theory is saying is that needs may be relative.

For example, Richard Easterlin claimed that the flat relationship or no relationship between income and happiness after a certain income level was the result of social comparisons (Easterlin, 1974), or to raising expectations Easterlin (2001). Something similar has happened with the debate applied to within countries. In almost every country, individuals in the upper part of the income distribution do report higher SWB levels than less well-off individuals. While needs theorists would explain this as being the result of different needs satisfaction – richer individuals can fulfil more needs than poorer individuals and therefore be happier – relative theories have resorted to social comparisons to explain this same outcome. In essence, the idea is that those who have more feel better than those who have less – who feel deprived. Put differently, needs are relative. According to relative theories, needs increase in line with rises in mean income (needs are relative), and therefore, those with more resources will always be more capable of satisfying more needs than those with less. Need theories would claim that wealthy individuals are simply more capable of satisfying their needs – which are absolute – than less wealthy individuals, and that is how they explain the SWB gap within each country. This is credible in some countries but may be less so in already very rich countries where we believe everyone’s needs are being met.

Although the laboratory evidence is positive about the effects of social comparisons on SWB when individuals are asked to focus on a certain target (Strack et al., 1993), it is not clear whether those generalise in a natural setting. The evidence about social comparison is mixed and inconsistent, and this may be due to the fact that in a natural setting social comparisons do not work as simply as they do in the lab, where the researcher somehow directs and influences the way in which the comparison is to be made. In reality this process is much more flexible, to the extent that it makes no sense to assume that that relative position automatically leads to a certain SWB level (this will be discussed in greater detail in Chapter 2), and therefore that happiness may not be a zero-sum game. On the contrary, evidence on networks effects seems to point in the opposite direction: to happiness being contagious due to reasons other than social comparisons (Fowler and Christakis, 2008).<sup>10</sup>

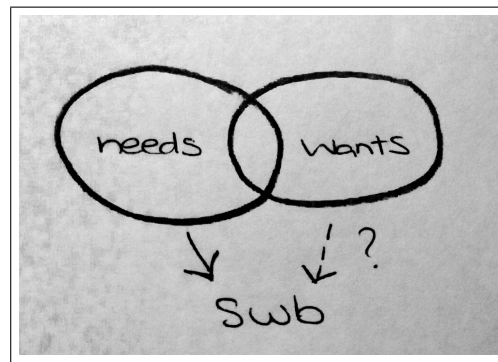
So far, the main difference that we have seen between need and relative theories is that in the first case, the needs whose satisfaction leads to SWB are limited – even if we do not know what they are – whereas in the latter case, those would be unlimited, we can desire anything that we know exists. There is yet another important difference, need satisfaction produces SWB regardless of whether the individual is aware of it. Relative theories require the attention of the individual and the exercise of a comparison in order to produce an effect on SWB. Thus, relative theories are about the satisfaction of wants or desires. Although we are not sure what the basic need or needs are, it seems clear than needs and desires are different things. We can all agree on that. From a biological

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<sup>10</sup>A more general discussion of networks effects is found in Christakis and Fowler (2009).

viewpoint, a need would be something that is necessary for organisms to live a healthy life, whereas a want or desire is something that we are ready to strive for but that is not essential to our survival. Thus, needs are distinguished from wants because a deficiency would cause a clear negative outcome, such as dysfunction or death. It is less clear whether the satisfaction (or not) of desires would cause harm.

Figure 1.5: Needs, wants, and SWB



As Figure 1.5 shows, there may be some overlap between needs and wants, but they are not the same. The satisfaction of wants may or may not lead to SWB. On the other hand there may be things leading to SWB that we may not desire or pursue consciously (part of the grey circle that does not intersect with the empty circle). The remaining part may be things that lead to SWB without us being aware of them (Brunstein et al., 1998). And this is precisely where goal theories step in, since goal theories claim that people have goals and that SWB is linked to the degree of achievement of those (Emmons, 1986). In other words, they are concerned with the connection between the empty circle and SWB because they form the link between wants or desires and SWB. Generally, progress towards goals was correlated with pleasant affect and failing to reach one's goals was correlated with negative affect (Emmons, 1986); but certain types of goals were more or less beneficial for SWB. For example, Kasser and Ryan (1993), argued that goals that are not compatible with intrinsic human needs could be detrimental to SWB (e.g. they found that those who rated financial success as an important goal reported lower SWB than those who endorsed self-acceptance, community feeling, and affiliation goals, even when participants were making progress towards materialistic goals). In a similar vein Brunstein et al. (1998), argued that progress toward motive-congruent goals (motives related to basic needs) were related to SWB, but goals that conflict should not. He further claimed that 'individuals have motives that they may or may not consciously recognise. Note that he was referring to the part of the grey circle that is not intersected with the white one.

Thus, goal theories seem to support the idea that not all desires, or their satisfaction, lead to SWB. Only some do, and those that do seem to be strongly related to our human nature, meaning that biology probably has a lot to say in this. So goal theories seem to

be more in line with need theories than with relative theories. In this context, the study of happiness should benefit from an understanding of the character of the relevant genetic influence, where evolutionary theory can explain a lot. This is what we will review next, to close this section.

### 1.3.2 The biology of happiness

There are two main links between the natural sciences and the study of happiness: the evolutionary perspective and the neurological approach. What follows concentrates on the evolutionary perspective and is mostly based on Grinde's work Grinde (2002a,b, 2005). This approach suggests that happiness is simply a tool of evolution to direct our behaviour rather than an end in itself. We are not 'designed' to be happy but to survive and reproduce (Camerer, 2007; Camerer et al., 2004; Rayo and Becker, 2007) – all cited in (Frey, 2008, p. 5), and the brain plays an important role in this by creating emotions that direct or influence our behaviour. Therefore, a better understanding of our evolutionary history may be useful to individuals and societies in their pursuit of happiness, as well as helping us to improve society.

Applying an evolutionary perspective to the social sciences is somewhat controversial. One relevant concern is that this perspective suggests an overly deterministic model. It is important to keep in mind that biology concerns the average person, and therefore the principles suggested by behavioural human biology may be more appropriate for a society than for any given individual members of that society because a particular individual is not only shaped by universal human inborn tendencies, and his particular set of genes, but also by general culture and proximate individual environment (Grinde, 2005) This also means that the evolutionary approach may be of limited value in providing specific advice on how to study happiness (for the time being at least); nevertheless, it can offer a useful conceptual framework (Buss, 1998; Palmer and Palmer, 2001).

Two aspects of our evolutionary legacy seem particularly relevant when thinking about SWB. One of them is the existence of discrepancies between the environment in which modern humans live, and the environment of evolutionary adaptation – the conditions to which the genes are adapted, the way of life of Palaeolithic tribes can be a good approximation. The second is the existence of feelings that influence our behaviour (Grinde, 1996; Barkow, 1997; Buss, 2000).

The disparities between how we live and what our genes are adapted to have been referred to as 'mismatches'. The term 'discord' is used for the cases where mismatches have detrimental effects (note that mismatches can also be beneficial – e.g., sleeping on a mattress versus on the floor). SWB is expected to correlate inversely with the presence of discords. In many ways, people live in much greater comfort than their ancestors. Sleeping on a mattress rather than on the floor is one simple difference between how

we live and how our ancestors did. This difference is clearly not problematic. In fact, it is beneficial. However not all differences between the modern environment and the environment of evolutionary adaptation are beneficial, for instance, experts seem to agree on the fact that the main source of discords are related to social issues. Humans evolved in the context of small groups, of between 50 and 200 individuals (Dunbar, 1993), whereas nowadays many individual live in large cities. This affects all our interactions, from the number of strangers we meet in the street to mating behaviour, who we help and who we are helped by, among others. These are very different social environments and it seems likely that it is the source of many psychological problems that seem to have emerged with modern living, e.g. the relative anonymity and isolated nuclear families make it more difficult to get the social support that would have characterised ancestral social conditions (Nesse & Williams, 1994, p. 221). Buss (2000) suggests increasing the closeness of extended kin, as well as the development of deep friendships to close the gap between the environment of evolutionary adaptation and current environments; Tooby and Cosmides (1996) make similar claims.<sup>11</sup>

Another example of an often-damaging mismatch that has recently been brought to our attention is exposure to light. The exposure to light that most people experience today, differs enormously from that of our ancestors and the conditions in which we evolved. While being able to read late at night with the help of a lamp may be seen as an improvement, this also has drawbacks because in essence we are exposed to too little light during the day and too much during the night. Light is one of the factors telling the organism when to be awake and when to sleep and this strange pattern of exposure to light confuses our bodies. This is very nicely explained by the chronobiologist Till Roenneberg in a recent book, *“Internal Time: Chronotypes, Social Jet Lag, and Why You’re So Tired”* (Roenneberg, 2012).

Human beings have very varied and complex feelings that drive us to do what is best for our genes (and their reproduction). Most likely humans have more complex set of feelings than other vertebrates because we are also the animals with most intelligence and free will. High intelligence and free will made it more likely for our ancestors to survive and solve challenges, but it also made possible that we took actions that went against our genes. Strong feelings acted like a counterweight. Reward circuits – positive emotions – are presumably designed as incitement, while penalising feelings – negative emotions – function as discouragement (Fredrickson, 2001; Grinde, 2002a). For example, the positive sensation induced by sugar ensured that we ate things with sugar when we had a chance. Looking at rewards does again point at our social life for explaining differences in SWB. The most important dispensers of rewards and punishment are presumably associated

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<sup>11</sup> Another example of discord or mismatch would be the long hours in the office coupled with feelings of disconnection from the fruits of labour, which have a negative impact on SWB (Maslach, Schaufeli, & Leiter, 2001, cited in Hill and Buss: 2008: 68).

with the requirements for procreation and sustaining life: sex, food, shelter, and health. If these basic needs are satisfied, the most significant external factor appears to be our social life, i.e., how we socialise, bearing in mind that we need other human beings for our survival, from the obvious fact of reproducing to getting food through hunting in groups (Grinde, 2002a).

## 1.4 THE STRUCTURE OF THE THESIS: INTRODUCTION TO THE CHAPTERS

The remaining parts of the thesis are organised in three main chapters followed by a concluding chapter. What the three main chapters have in common is subjective well-being, that is, SWB is always the dependent variable, and each of the chapters addresses it in one way or another. But, for the rest, they are quite different. This thesis tries to provide some sociological insight in this field since it deals with three key concepts in sociology such as reference groups (Merton and Lazarsfeld, 1950; Veblen, 1899), social class (Marx and Engels, 1848, Weber, E.O. Wright), and time (Gershuny, 1983, 2000; Szalai et al., 1972). Each chapter is, however, essentially a stand-alone paper and can therefore be read in any order. I hope that clarifying this will make the thesis easier to read. In the following paragraphs I will briefly explain what to expect from each chapter.

The next chapter, Chapter 2, tries to challenge relative theories, in particular it tries to question the widespread idea that relative standing affects our SWB. To do so it uses the British Household panel survey and looks at the effects of changes in relative position on life satisfaction and negative emotions. The results of this chapter do not support the idea that relative income affects our SWB. Happiness, or SWB more generally, does not seem to be a zero-sum game. Although this chapter may seem somewhat disappointing, in that it does not actually tell us what makes people happy, given the incredibly widespread and deeply rooted beliefs of this idea that happiness is, partly, a zero-sum game, and given the huge policy implications that this fact would have, I felt it was worth trying to prove them wrong, or that testing the hypothesis in a better way is not a fruitless endeavour.

Chapter 3 aims at understanding differences in positive and negative emotions across social classes. It does so using data from several European countries that took part in the third and sixth round of the European Social Survey, where a special module on SWB was included. This module consisted of a battery of questions that permit the production of measures of positive and negative affect that are comparable across countries. This allowed the interesting comparison of levels and gaps of SWB across countries, as well as the very interesting comparison of emotions before and after – or during – the economic crisis that has affected so many countries. The latter is not only very interesting in itself but also allows the making of stronger causal claims. This chapter seems to suggest that differences across countries and across classes in negative emotions mostly, are due to differences in economic hardship, unemployment and health. Once individual level variables are taken into account, income inequality (nor per capita GDP or any of the other macro variables) plays no role in explaining emotions, therefore challenging relative theories and giving support to livability theories.

The last substantive chapter of the thesis, Chapter 4, is very different to the other two, which use more or less conventional surveys with one or more measures of SWB per respondent. This final chapter uses time use data linked to enjoyment rates, as well as

many other SWB outcomes – from the last French time use survey, to investigate the issue of work-life balance. Not only is this type of SWB data very special and somewhat unique, but time diary data also allow an in-depth investigation of people’s lives that is unparalleled by conventional surveys (therefore making the possibility of making a contribution easier). In particular, I used several SWB measures as the benchmark against which to assess the consequences that different working hours had on SWB. In particular I explore the effects of working hours on enjoyment, time crunch and satisfaction measures, to identify the optimal number of hours of work to maximise well-being. I was very interested in seeing eventual trade-offs and in particular in seeing whether these optimal points occurred at larger number of hours for individuals that really enjoy their jobs.

The final chapter closes the thesis by drawing some conclusions and highlighting some limitations and ideas for future research. It should be warned that Chapter 4 is more explorative and unconventional than the earlier chapters. Hence, in the conclusion I will discuss the different routes that could be explored based on the initial findings of this latter chapter.





# Chapter 2

## Who cares about the Joneses!

### Relative income and subjective well-being using the BHPS

#### 2.1 INTRODUCTION

There are two major theories of subjective well-being (SWB): livability and comparison theories. Livability theories (Veenhoven and Ehrhardt, 1995) hold that SWB depends on the satisfaction of universal needs. By contrast, comparison theories, or theories of relative utility (Lance et al., 1995), hold that people assess the adequacy of their situation in relation to variable standards such as other people. Although these theories are not mutually incompatible, their policy implications can be quite distinct. If, as need theories – or absolute utility theories – claim, SWB is about what the individual has, regardless of others' situation, then everyone can be made happier at the same time. Yet if comparison theories are correct, raising everyone's SWB becomes, to some extent, impossible.

When poor and rich countries are compared, it becomes clear that the relation between the wealth of a nation and average SWB is positive (Diener et al., 1995; Veenhoven, 1991), which supports absolute formulations of utility. However this relationship loses strength as countries grow richer. In the last decades, many countries have experienced unprecedented economic growth without any rise in SWB (Diener and Oishi, 2000; Diener and Suh, 1997; Easterlin, 1974; Oswald, 1997). Richard Easterlin (1974) used social comparisons to reconcile the time-series results with the cross-sectional evidence that showed that within every country the rich are happier than the poor. In such a context, raising the incomes of all in tandem would leave happiness unaffected, which is why Richard Layard (2005), among others, has been pushing for a reduction in income inequality as a way to increase happiness in wealthy countries.

Solnick and Hemenway (1998) carried out a survey in which they asked respondents to choose between a world in which they have more of a good than others, and one in which everyone's endowment of the good is higher, but the respondent has less than others. Half of the respondents preferred to have 50% less real income but high relative

income. This shows that people care about relative position and, therefore, it is likely that relative concerns drive behaviour – as Veblen (1899), and many others after him have suggested.<sup>1</sup> However, the fact that people do care and do try to keep up with the Joneses does not mean that doing so will make them happier. Preferences and utility may not be the same thing. Caring about relative standing and being affected by it may be rather different. This chapter is concerned with the latter.

The first section reviews the existing empirical evidence on the effects of relative income on SWB, and it also reviews the literature on social comparison processes, highlighting the simplistic approach taken by most of the existing literature, which has simply assumed that a contrast in incomes has consequences for SWB. Social comparisons are complex processes where the individual plays an important role; he needs to choose the object of the comparison, and who to compare with, among others. Besides, most people do not compare their income with that of others when judging their lives. In light of this, it becomes less surprising that researchers have found such weak evidence in support of the relative income hypothesis. The remaining sections of the chapter are devoted to carrying out an empirical analysis using the British Household Panel Survey and exploring the effects of changes in relative income on two different SWB outcomes: life satisfaction and mental distress. Section 2.3 presents the dataset and describes the analysis carried out. The results of these regressions question the idea that relative income matters for SWB because changes in relative income are not followed by changes in life satisfaction, nor for mental distress.

These results are quite robust because not only are two different SWB outcomes considered, but in order to build the reference groups two different income variables are looked at: personal earnings and per capita household income, and several reference groups are used (see section 2.4.1). In addition the remaining sections conduct a series of robustness checks that reinforce the credibility of the main results. Sections 2.4.2 and 2.4.3 for instance, try to address the possible endogeneity of changes in relative income. Section 2.4.2 compares the distribution of personality across individuals that change their relative position to different degrees. Section 2.4.3 explores separately the effects of changes in relative income driven by own income to those driven by the income of the reference group – since the latter should be more exogenous than the first. In the remaining sections some more robustness checks are carried out to make sure that the ‘no effects’ found are not the result of group differences that cancel each other out. Section 2.4.4 explores whether the effects of changes in relative position vary with the sign of the change (positive or negative), and Section 2.4.5, takes personality into account. Finally, Section 2.4.6 explores the effects of relative income on possible mediators between relative income and SWB. In particular, the effects of relative income are explored on financial

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<sup>1</sup>Other experiments that show that people care about relative position are: Alpizar et al. (2005); Carlsson et al. (2007); Johansson-Stenman et al. (2002); Zizzo and Oswald (2001).

satisfaction, since this is one of the candidates to be channeling the effects between relative income and SWB. The final section discusses the findings.

## 2.2 THE RELATIVE INCOME HYPOTHESIS

### 2.2.1 The empirical evidence

According to the relative income hypothesis, having an income below that of your reference group reduces SWB, while having an income above that of the reference group raises SWB. In this context, an individual's SWB depends not only on what he or she has, but also on what those with whom he or she compares have. Many researchers have long defended the use of relative utility functions to account for this fact. Luttmer (2005) and Clark and Oswald (1996) provide good reviews of this literature.

Defining the income of reference is difficult because we need to specify who individuals compare themselves with. However, the fact that many reference groups have been used in the literature and that they have all yielded similar results has given support to the relative income idea. Ferrer-i Carbonell (2005) for instance, calculates comparison income using a combination of sex, age and education. McBride (2001) uses the individual's cohort as a reference point. Blanchflower and Oswald (2004), Luttmer (2005), and Knight et al. (2009) take a geographic approach.<sup>2</sup>

Table 2.1 shows some of the evidence in favour of the relative income hypothesis. It includes some of the most cited papers that came out of a search with the terms: 'relative income', 'relative income hypothesis', 'comparison income', and 'Easterlin paradox'. Assuming that the coefficients of these papers could be given a causal interpretation, it should be noted that its size is small, so much so that it should make us question to what extent it can be concluded that relative income matters for SWB. In my view, most of the literature in this area suffers from an excessive 'cult of statistical significance' (Ziliak and McCloskey, 2008). Other authors have claimed that these 'effects' are not that small if one takes into account that life satisfaction and happiness do not change much. Life satisfaction is certainly more stable than other variables, but it does change. For instance, for individuals in the British Household Panel Survey life satisfaction changes by approximately 12% from one year to the next. This is much more than all the coefficients in Table 2.1.

Most of the evidence relies on cross-sectional data, and therefore, making a causal interpretation of the coefficients is doubtful. Unobserved characteristics may make some individuals more likely to be well positioned in relative terms, as well as to enjoy higher SWB. If this were so, the coefficient of relative income would be biased upwards. For instance, Easterlin (1974), using data for the 1960s, found that in the US, individuals of higher socioeconomic status had 1.1 points higher in self-reported happiness than individuals from lower socio-economic status (on a scale from 0 to 10). The coefficient would also be biased upwards in the presence of reverse causality. There is evidence showing

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<sup>2</sup>Clark et al. (2008) provides a very comprehensive review of this literature.

Table 2.1: Some of the evidence on the relative income hypothesis

Paper & N. of citations	Empirical Strategy	Findings
Easterlin (1974), <i>Does Economic Growth Improve the Human Lot? Some Empirical Evidence.</i> [3,025]	SWB: happiness; Y*: position in the income distribution; DATA: cross-sectional for several countries	In the US, individuals of higher socio-economic status had 1.1 points higher in self-reported happiness than individuals from lower socio-economic status (on a scale from 0 to 10).
Clark and Oswald (1996), <i>Satisfaction and comparison income.</i> [1,848]	SWB: job satisfaction, Y*: predicted earnings, DATA: cross-sectional for 5,000 British workers	A reduction of 2 standard deviations in earnings was associated with a 5% reduction in job satisfaction.
McBride (2001), <i>Relative-income effects on subjective well-being in the cross-section.</i> [451]	SWB: happiness, Y*: average earnings of people in the same region and cohort, DATA: cross-sectional US data	The probability of answering being ‘very happy’ decreases by 7.9% when log(average income) increases by 1.
Ferrer-i Carbonell (2005), <i>Income and well-being: an empirical analysis of the comparison income effect.</i> [725]	SWB: life satisfaction, Y*: average earnings of those with the same age, education and region, DATA: panel data for Germany	The respondent’s SWB depends on how his income compares with the income of persons in his reference group. Marginal effects are not provided.
Luttmer (2005), <i>Neighbours as negatives: relative earnings and well-being.</i> [1,071]	SWB: happiness and mental distress, Y*: earnings of the individuals living in the same region, DATA: panel data for the US	an increase in log(neighbours earnings) of 1 unit would reduce happiness by 4.13% for married individuals. No effects on mental distress were found.
The number in brackets, after the paper title captures the number of citations received by November, the 10th, 2013. ‘SWB’ refers to the subjective well being measure used, and ‘Y*’ specifies the income of reference.		

that happiness significantly affects many life outcomes because of the many benefits of positive emotions (Fredrickson, 2001). Lyubomirsky et al. (2005), for instance, showed that happier individuals were more successful in many life realms, including income. In this context, the coefficients from the regression with cross-sectional data would also be biased upwards. Therefore panel data is preferred.

The little evidence on the effects of relative income using panel data is mixed. Luttmer (2005) finds that an increase in neighbours’ income is associated with a decrease in SWB, although the effect is rather small, and it only applies to married individuals. He finds no effects on mental distress.<sup>3</sup> Senik (2004), however, finds that the reference group’s income exerts a positive influence on individual satisfaction, which contrasts with other studies on the subject. She interprets this as a ‘tunnel effect’ following Hirschman and

<sup>3</sup>In addition, he does not find an effect of neighbours’ earnings on financial satisfaction, which should be the mechanism linking neighbours’ earnings and happiness

Rothschild (1973).<sup>4</sup> A similar interpretation is made by Knies (2010) for East Germany.<sup>5</sup>

## 2.2.2 Social comparison processes and subjective well-being

The literature just discussed has generally assumed that relative income affects SWB through the mechanism of social comparisons in a more or less automatic manner (i.e. having more than others makes you happy and having less reduces your happiness). However, psychologists have shown that social comparisons do not take place in such a simplistic way, social comparison processes are more complex, allowing for variation in the type of information that is used in comparison as well as the way that the information is used (Diener et al., 1999). For instance, the choice of a comparison target and a reference group is a flexible process and is not determined solely by proximity. Besides, even when individuals make a similar comparison the consequences may be different depending on how they decide to use this information (Buunk and Van Yperen, 1991; Dunning et al., 1989). For example, others' success might be seen with envy, or as a source of inspiration.<sup>6</sup>

In sum, all the relevant parameters of a social comparison: the choice of comparison target, a reference group and the directionality of effects on SWB, are flexible processes that are very much up to the individual. In fact, it has been shown that people often do use social comparisons in a self-serving way (Brown and Dutton, 1995; Diener and Fujita, 1997). In this context, a mere contrast in income does not necessarily affect SWB. Individuals could simply choose wisely the reference groups so that they benefit from a comparison or simply avoid income comparisons altogether if their financial situation is bad. In fact, unlike need theories, which predict that need fulfilment automatically causes SWB, relative theories require that the individual actively engages in social comparisons – of income in this case. But does that happen?

The European Social Survey, in its third round (2006), asked individuals from 22 different countries about this. In one of the questions, individuals were asked whether *comparing one's income with that of other individuals was or was not important*. The answers were measured on a 7-point scale that ranged from 0 'not at all important' to 6 'very important'. The most popular category in all countries was 'not at all important', even though after aggregating some of the categories to build Figure 2.1, the 'not important' category appears as the most popular. The answers vary slightly across countries but the main story remains: more than half of the people think that comparing one's

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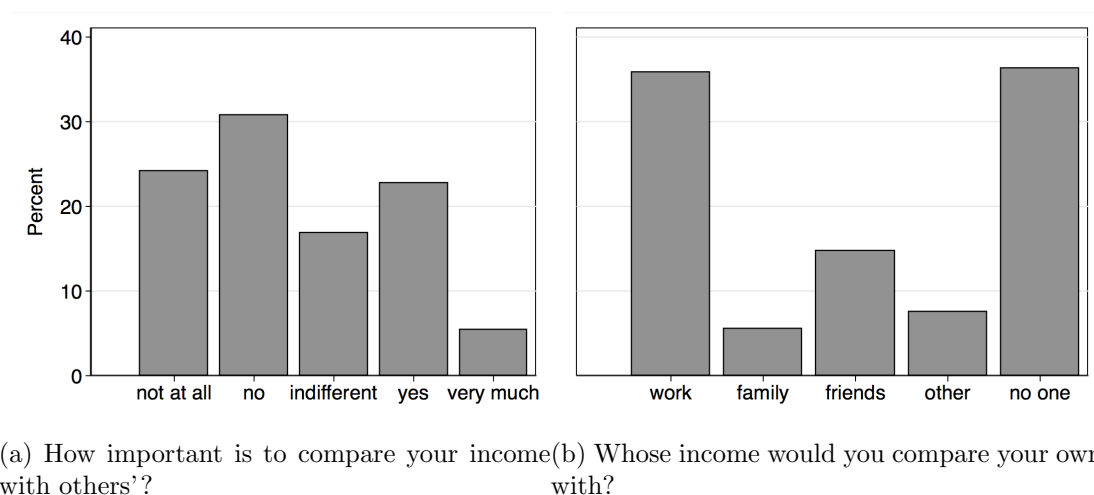
<sup>4</sup>The Tunnel Effect refers to the relief experienced when even though you are stuck in a tunnel, the lane next to you starts to move. Initially you feel better, even though you are still stuck, because this signals to you that the jam has ended and your own lane will soon start moving too. In terms of relative income, this would mean that when you see a neighbour with more income, you could interpret it as a prediction of what will happen to you soon.

<sup>5</sup>It seems as if researchers' desire to find an effect of relative income made them too hasty in accepting the evidence they found, even when it meant readjusting the hypothesis substantially.

<sup>6</sup>Some recent studies have taken some of this into account (Budría and Ferrer-i Carbonell, 2012; Falk and Knell, 2004)

income with the income of others is not important, and this amount is, in most cases, twice that of those that claim that comparing one's own income is important. There was another question that aimed at finding out who *respondents compared themselves with*, the possible answers were: 'work colleagues', 'family', 'friends' and, 'no one'. Consistently with the previous question, most people report not making comparisons at all (36.3%). The next most popular response is comparing with work colleagues (35.9%), followed – by quite far – by 'friends', 'family' and finally, 'other'. There is some variation across countries but, in all of them, the two most popular groups by far are 'no one' and 'work colleagues'.

Figure 2.1: Social comparisons in Europe in 2006



Source: The European Social Survey, third round of data. Countries included: Austria, Belgium, Bulgaria, Switzerland, Cyprus, Germany, Denmark, Estonia, Spain, Finland, France, UK, Hungary, Ireland, Netherlands, Norway, Poland, Portugal, Russia, Sweden, Slovenia, Slovakia, and Ukraine.

If these reports were true, they would undermine the relative income hypothesis as it is laid out in most of the papers mentioned so far. A mere contrast in income cannot affect SWB via social comparisons if people do not engage in social comparisons (leaving aside the fact that social comparisons may not actually occur in the simplistic way proposed). Social desirability could be, for sure, influencing these reports. For instance, if they think that comparing with others is not acceptable – as seems to be the case – then people could be under-reporting the use of social comparisons. However, precisely because most people think that comparing their income with others' is not important, this could influence them in not making social comparison when judging their lives. In fact, according to Schimmack et al. (2002) less than 10% of individuals use social comparison when reporting their life satisfaction. Schimmack et al. (2002) asked 150 individuals to report their life-satisfaction and immediately after they were asked to report their thoughts during the life-satisfaction judgments. Respondents quite often thought about family, romantic life or relationships with friends, whereas financial situation was mentioned less frequently (9% of the cases)



and social comparisons just 6% of the time. In the light of these findings, the authors conclude that it is unlikely that individual differences in income influence life-satisfaction judgments. In the light of these studies, assuming that people make income comparisons when judging their lives seems to be a very strong assumption.

Yet, social comparisons probably do take place, at some point everyone engages in a social comparison, and doing so will likely provoke an emotional response. However, that social comparisons elicit some feelings at the time they occur does not imply that those will leave a permanent or significant trace in us. Social comparisons could have an effect on transient emotions, but not affect measures of SWB that involve judgment and evaluation, such as life satisfaction or happiness.<sup>7</sup> The former evidence casts serious doubts on the idea that a mere contrast in incomes automatically leads to social comparisons, and that those in turn affect SWB. This could explain the weak evidence presented in Table 2.1.

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<sup>7</sup>As discussed in the first chapter, SWB has three distinct components: life satisfaction, positive affect, and negative affect. Self reported happiness or life-satisfaction results from the evaluative beliefs about one's life. In contrast, positive and negative affect reflect the amount of pleasant and unpleasant feelings that people experience in their lives (Schimmack, 2008). Making a social comparison can produce unpleasant – or pleasant – feelings at the moment in which the comparison is made, but it may not have any effect on life satisfaction or general happiness.

## 2.3 DATA & EMPIRICAL STRATEGY

### 2.3.1 Data

The dataset used in this chapter is the British Household Panel Survey (BHPS), where the same representative sample of individuals is followed over a period of years. The BHPS was carried out by the Institute for Social and Economic Research at the University of Essex from 1991-2009 (Waves 1-18). The main objective of the survey was to further understanding of social and economic change at the individual and household level in Britain (and in the UK from Wave 11 onwards).<sup>8</sup> Thus, the BHPS includes a wide range of information about individuals and households, SWB questions are also part of the survey. In particular, individuals are asked about their life satisfaction and mental distress. Since the aim of this chapter is to measure the effects of relative income on SWB, understood as broadly as possible, both measures will be used. Life Satisfaction is measured with the following question: “All things considered, how satisfied or dissatisfied are you with your life as a whole?”, from 1 “not satisfied at all”, to 7 “completely satisfied”. The second dependent variable is a measure of mental distress that is obtained from the answers to the General Health Questionnaire (Goldberg and Williams, 1988). This is a form of valuation that has been used in psychiatry for some time and was incorporated into the BHPS from the very beginning. The mental distress measure ranges from 0-36, where a higher number means more distress. For comparability purposes, both measures have been rescaled so as to take values from 0-10. Figure 2.2 shows the distribution of the two SWB variables. It can be seen that most people are satisfied with their lives and experience low levels of mental distress because the distribution of life-satisfaction is negatively skewed and the distribution of distress is positively skewed.

The BHPS started in 1991 and concluded in 2008, it has 18 waves in total. All waves available will be used for the current analysis but it should be noted that while mental distress is available in all waves, life satisfaction is not, and therefore sample size will be somewhat smaller when life satisfaction is the dependent variable. The life satisfaction question is present in waves 6 to 10 and 12 to 18. However it should be noted that sample size is large enough in all cases to get precise estimates.

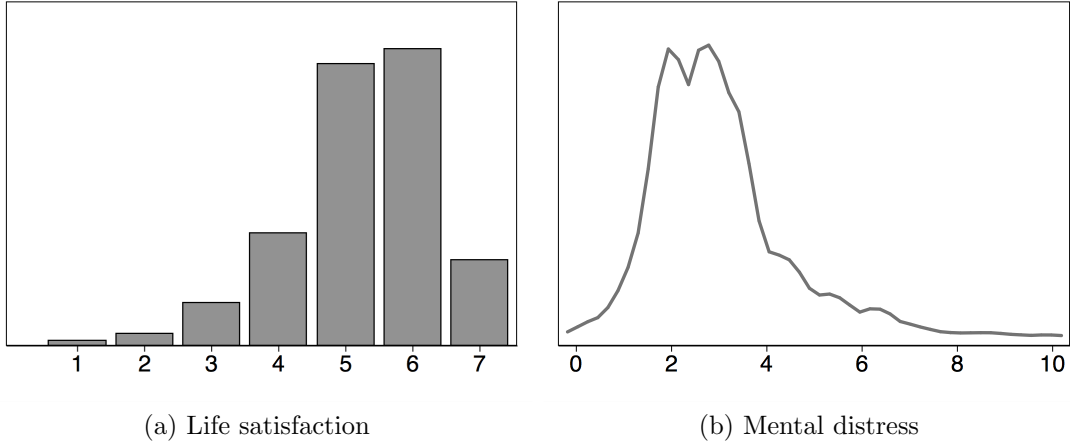
Relative income ( $ri$ ) is defined in equation (2.1), where  $ri$  stands for relative income, ( $y$ ) is the income of the individual, and ( $y^*$ ) the income of the reference group. By taking logs we give more weight to changes in  $ri$  that occur closer to  $y^*$ . This makes sense since changes around the reference point should be more salient to the individual, and therefore have a greater effect on SWB. Two measures of income will be used: usual net payment per month and a measure of per capita household income.<sup>9</sup> The purpose of using

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<sup>8</sup>From Wave 19, the BHPS became part of a new longitudinal study called Understanding Society, but this analysis is restricted to the BHPS.

<sup>9</sup>The latter will be obtained by dividing annual household income by the equivalent household size

Figure 2.2: The distribution of subjective well being in the UK in 2002.



Source: The British Household Panel Survey, 12th round (2002). For building this graph, the original life-satisfaction variable was used (ranging from 1-7).

two measures of income is twofold. On the one hand using two measures will make the results more robust, and on the other hand – and more importantly – these two measures do capture slightly different things. While the measure of per capita household income captures access to resources, the personal income measure does measure what you earn, which may or may not coincide with what you have access to, but it could be argued that individuals make comparisons based on what they make rather than on what remains for them after dividing with the other household members.<sup>10</sup>

$$ri = \log(y/y^*) \quad (2.1)$$

Defining the income of reference ( $y^*$ ) is very difficult and is probably the most controversial part of this and all other research that tries to assess the effects of relative income on SWB. In consequence a variety of reference groups have been used in the literature. Since the former is precisely the literature that this paper wants to challenge, a variety of reference groups will be used here as well. I consider the following groups: individuals in the same region, individuals with the same education level, in the same occupation, in the same ethnic group and, a combination of the former. Table 2.2 shows all the relative income variables as well as the variables used to build them together with its categories.

The income of reference ( $y^*$ ) for a given individual is simply the average income in that

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according to McClements scale (McClements, 1977), which simply corrects household size to take into account that different types of household members do have different needs. This allows making income comparisons across different types of households. This variable is provided by the BHPS.

<sup>10</sup>The population under study will vary depending on the income variable used, with personal income allowing us to study the effects of relative income on employed people only; whereas per capita household income extends the analysis to a much larger part of the population. The sample under study will also depend on the SWB measure used because although the General Health Questionnaire appears from the very first wave (1991), the life satisfaction question appears only in 1996 and from then is available for all years with the exception of 2001.

Table 2.2: The variables used to create the reference income

ri variable	Variable defining the reference groups
ri_region19	<i>region19</i> (19): Inner London, Outer London, R. of South East, South West, East Anglia, East Midlands, West Midlands Conurb, R. of West Midlands, Greater Manchester, Merseyside, R. of North West, South Yorkshire, West Yorkshire, R. of Yorks & Humber, Tyne & Wear, R. of North, Wales, Scotland, Northern Ireland.
ri_region133	<i>region133</i> (133); divides respondents into 133 areas corresponding to NUTS3, Nomenclature of Territorial Units for Statistics suggested by the Eurostat with the aim of having comparable territorial units across Europe.
ri_ethnicity	<i>ethnicity</i> (3): white, black and Indian origin
ri_educ	<i>education</i> (3); higher, medium and lower education level.
ri_occup	<i>occupation</i> (9); managers and senior official; professionals; associate professionals and technicians; administrative and secretarial; skilled trades; personal service; sales and customer service; process, plant and machinery operatives; elementary occupations.
ri_predicted	$y^*$ is the predicted wage for an individual living in the same region, of the same age and gender, and, with the same education level.
$ri = \log(y/y^*)$ , where $y$ is own income, and $y^*$ is the average of the income of individuals in the same reference group.	

group, obtained from the sample using cross-sectional weights. There are two exceptions to the former, *ri\_region133* and *ri\_predicted*. In the first, the  $y^*$  for each region is the estimated Gross Disposable Household Income (GDHI) that the UK Office for National Statistics calculates every year since 1995. In this particular case, getting  $y^*$  from the sample would be problematic since most of the NUTS3 regions are represented by a few panel members only. With regards to *ri\_predicted*,  $y^*$  is the predicted wage for an individual of the same gender, age, region, and education.

Geographically based reference groups are very popular in the literature (e.g. Luttmer, 2005), and closer reference groups are in principle more interesting, since people are more likely to make comparisons with those closer to them, and this is much more likely to be captured by smaller regional areas and this is why region 133 is in principle more interesting than *region\_19*. *ri\_occup* and *ri\_wage* are particularly relevant because according to the European Social Survey, work colleagues were the group with whom individuals would compare.

### 2.3.2 Empirical strategy

This paper uses longitudinal data in order to exploit the within individual variation in relative position, and by doing so time-constant unobserved heterogeneity is eliminated. Besides, by looking at yearly changes, reverse causality becomes less likely. If happier individuals can earn more income, changes in SWB could drive changes in relative income,

however, in a year period such effects become unlikely because the benefits of positive emotions take longer to occur. Therefore, if we see that yearly changes in relative income are associated with yearly changes in SWB, causation will most likely be running from relative income to SWB.

Since relative income is defined as a function of own income and income of the reference group –  $ri = \log(y/y^*)$  –, changes in relative position go hand in hand with changes in own income. With more income, one’s relative position can improve – provided that others’ positions remain the same – but so does one’s absolute income level. Since absolute income could have an effect of its own on SWB (Diener et al., 1995; Stevenson and Wolfers, 2008; Veenhoven, 1991), we should control for it. To do so individuals are divided into five groups according to the income quintile to which they belong at the time they experience the change in relative income, and separate fixed effects regressions are estimated for each. If relative income does have an effect on SWB, one would expect the relative income coefficient to be statistically as well as economically significant at all income levels. However, if the ‘effect’ of changes in relative income became smaller as higher income levels are considered, it would suggest that relative income does not have an effect on SWB and, instead, that absolute income was driving the effect. Some summary statistics of the income quintiles can be found in the appendix, see Table A1.<sup>11</sup>

The effects of relative income on SWB will be estimated using fixed effects for each income quintile separately. The dependent variables will be life-satisfaction and mental distress, and relative income will be the only variable on the right-hand side. This will be repeated several times given that we have six reference groups and two income variables. The results of these regressions question the idea that relative income matters for SWB because changes in relative income are not followed by changes in life satisfaction or mental distress. These results are shown in section 2.4.1. Several robustness checks are carried out and will be described next. It should be noted, nevertheless, that the baseline results constitute a robust result given that they use six different reference group variables, two income variables and two different SWB outcomes.<sup>12</sup>

Sections 2.4.2 and 2.4.3 try to assess the possible endogeneity of changes in relative income. In particular, section 2.4.2 explores the possible self-selection into change in relative income by comparing the distribution of personality traits among individuals that experience changes in relative income to different degrees. Section 2.4.3 looks separately at the effects of changes in relative income driven by own income ( $y$ ), and to those driven by the income of the reference group ( $y^*$ ), since the latter should be more exogenous than the first. Section 2.4.5 explores the effects of changes in relative position for different types

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<sup>11</sup>Note that by doing OLS one is implicitly assuming that the answers to the life satisfaction question are cardinal and thus comparable across respondents. Ferrer-i Carbonell and Frijters (2004) show that it makes virtually no difference whether one assumes ordinality or cardinality of SWB answers.

<sup>12</sup>Several controls were tried out but the coefficients for relative income did not change and therefore we opted for the most parsimonious model.

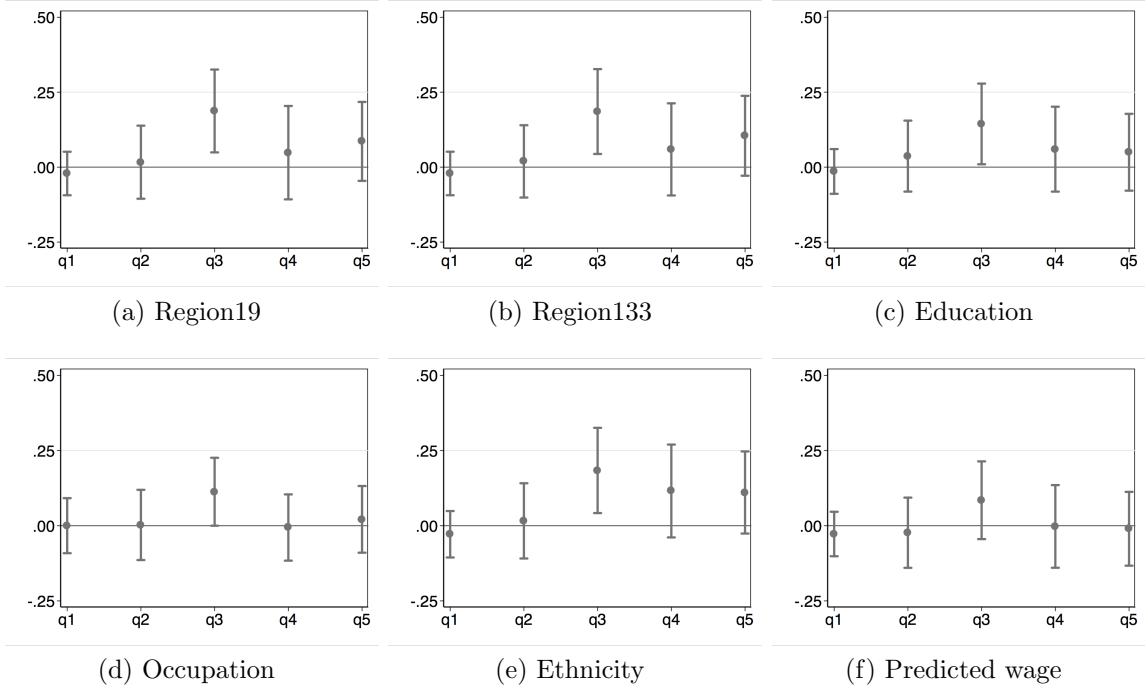
of individual – different personality types – to make sure that the no effects of the baseline results are not hiding important group differences. Section 2.4.4 sees whether positive and negative changes may have different effects on SWB. Finally, section 2.4.6 explores the effects of relative income on variables that could be channelling the connection between relative income and SWB.

## 2.4 RESULTS

### 2.4.1 Main results

Figures 2.3 to 2.6 show the baseline results of the effects of changes in relative position on SWB. In particular, Figures 2.3 and 2.4 show the effects of relative income on life satisfaction using earnings and per capita household income respectively, while Figures 2.5 and 2.6 show the effects of relative income on mental distress. Within each figure there are several graphs, one for each relative income variable; and within each graph there are five estimates together with the confidence intervals. As usual, the estimates capture the effect of a unit change in relative income on SWB – life-satisfaction or mental distress – for the income quintile in question.

Figure 2.3: Marginal effect of relative income –using earnings– on life satisfaction

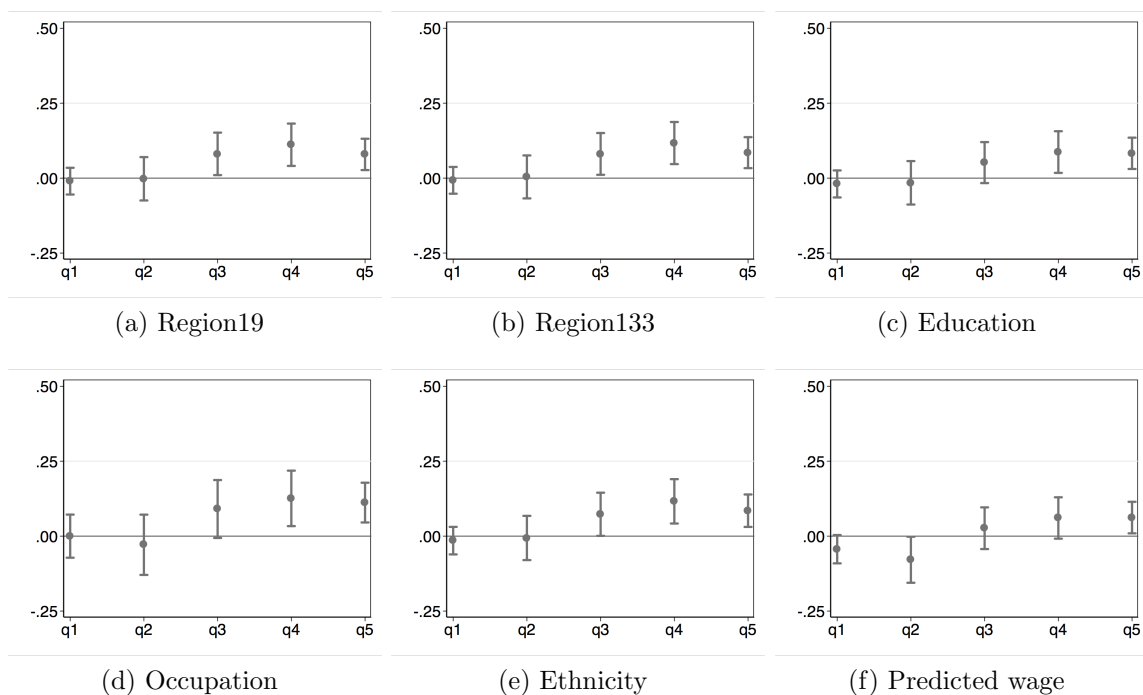


On the horizontal axis we find the 1st, 2nd, 3rd, 4th and 5th income quintile. On the vertical axis we find the  $\beta_{ri}$  resulting from the fixed effects regressions, that is, the expected change in life satisfaction when relative income changes by one unit. Life satisfaction ranges from 0 to 10 but in these graphs the Y-axis range from -0.25 to 0.5 so that we can appreciate the small variation. The regression table can be found on Table 2.3 on page 41.

The main message provided by figures 2.3 to 2.6 is that changes in relative position are not associated with changes in SWB. Changes in relative income do not seem to affect either life satisfaction or mental distress, and the results are very similar when we use the relative income variables constructed with earnings and with household income. Although there are some coefficients that are statistically different from zero, in most cases they have no practical significance. Besides, in order to assess the effects of relative income we should focus on the coefficients obtained for the top quintiles. The largest of those are found

when we look at the effects on life satisfaction using per capita household income (Figure 2.4), and they are always below 0.1. This is a small change if one takes into account that life satisfaction ranges from 0 to 10 and, that for that change to occur on SWB, and assuming that at  $t_0$  his income was equal to that of his reference group, his income would have to multiply by 2.7 between  $t_0$  and  $t_1$  (assuming that  $y^*$  remains unchanged). For instance if one considers an individual belonging to a household in the 3rd quintile with an income equal to the average level in that quintile (1,001 pounds), and his income increases by 20% (up to 1,200 pounds), and assuming that the income of reference (individuals in the same region) remains unchanged at 1,000 pounds, the individual should experience an increase in life satisfaction of 0.018 (recall that life satisfaction goes from 0 to 10). See estimate for the third quintile in Figure 2.4a. Bear in mind that an increase of almost 20% is the average positive change in relative income that individuals experience (see Table 2.7).

Figure 2.4: Marginal effect of relative income – using household income – on life satisfaction.



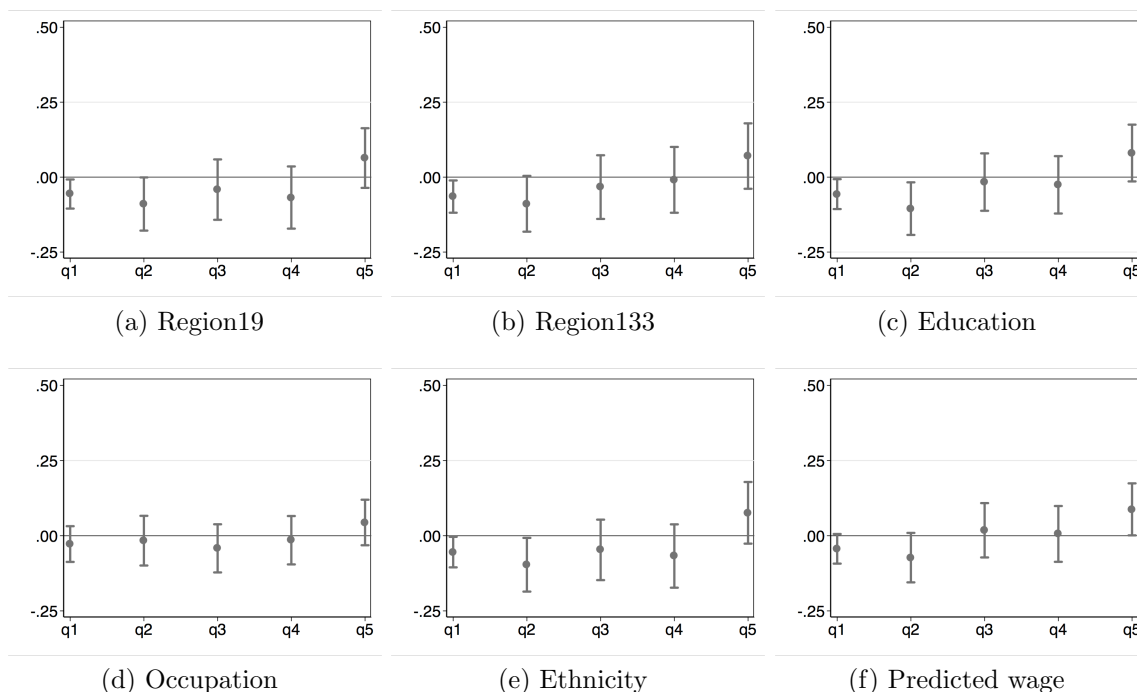
On the horizontal axis we find the 1st, 2nd, 3rd, 4th and 5th income quintile. On the vertical axis we find the  $\beta_{ri}$  resulting from the fixed effects regressions, that is, the expected change in life satisfaction when relative income changes by one unit. Life satisfaction ranges from 0 to 10 but in these graphs the Y-axis range from -0.25 to 0.5 so that we can appreciate the small variation. The regression table can be found on Table 2.4 on page 42.

Figures 2.3 and 2.4 show the coefficients of relative income in the life satisfaction regressions. One would expect to find a decreasing effect of relative income as higher income levels were considered, driven by absolute income effects. However, what we find instead is that only changes in the 3rd quintile are associated with a change in life satis-



faction, while there is no effect (or the effect is smaller) for lower and top quintiles. The former is definitely surprising but does not contradict the main hypothesis put forward in this chapter, that is, that relative income does not affect SWB.

Figure 2.5: Marginal effect of relative income – using earnings – on mental distress.



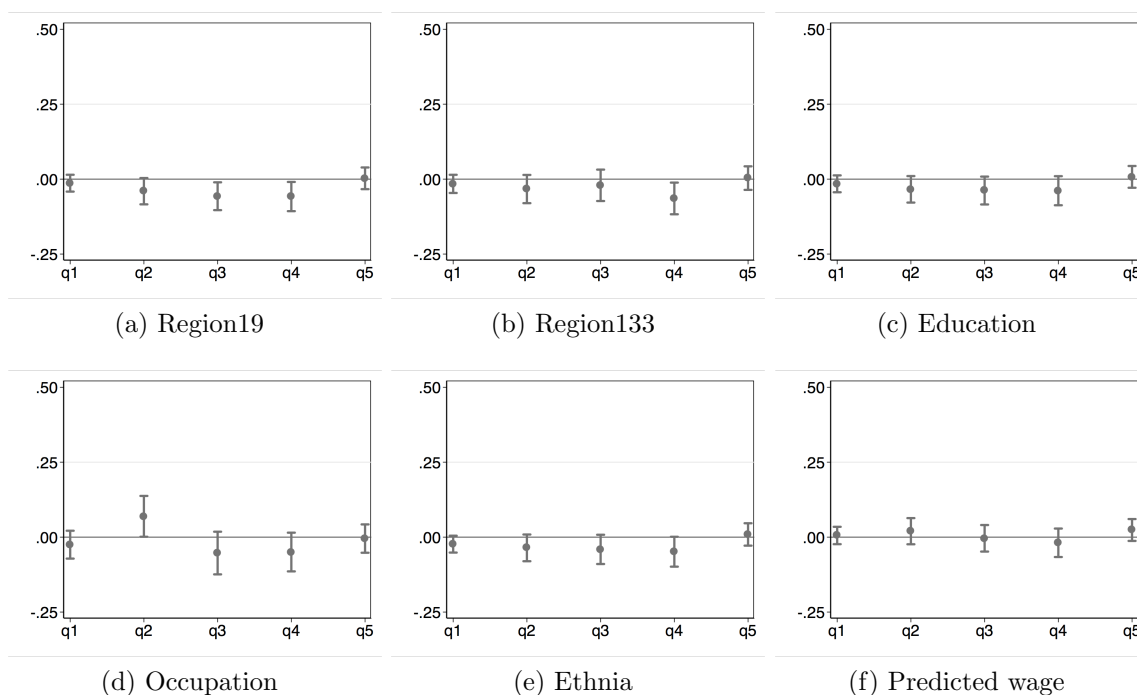
On the horizontal axis we find the 1st, 2nd, 3rd, 4th and 5th income quintile. On the vertical axis we find the  $\beta_{ri}$  resulting from the fixed effects regressions, that is, the expected change in mental distress when relative income changes by one unit. Mental distress ranges from 0 to 10 but in these graphs the Y-axis range from -0.25 to 0.5 so that we can appreciate the small variation. The regression table can be found on Table 2.5 on page 42.

Figure 2.4 shows the effects of changes in relative income on life satisfaction using per capita household income rather than earnings. The sample size is much larger in this case because we include all individuals, not only those in employment, which is probably why the confidence intervals narrow. The pattern here is similar, the coefficients are always quite close to zero but are slightly higher for middle-income groups than for the lowest and top quintiles. It should be noted, however, that while there is statistical significance for quintiles 4 and 5, the size of the coefficients is rather small – around 0.1. It is interesting to note that there are not important variations across reference groups. This is also interesting because the reference groups selected differ in their degree of endogeneity. Reference groups defined by occupation are in principle more endogenous than those defined geographically, and in any case they are simply different reference groups.

When we look at the effects of changes in relative income on mental distress we arrive at the same conclusion because changes in relative position are not associated with changes in mental distress regardless of whether relative income is calculated using earn-

ings (Figure 2.5) or per capita household income (Figure 2.6). In all cases the confidence intervals cross the zero line and in all cases the point estimates are very close to zero. This is very clear when per capita household income is used, whereas when personal income is used we see the expected trend of diminishing effect as income rises that could be produced by the diminishing effects of absolute income and a no effect of relative income. The positive slope in Figure 2.5 is what we would expect because mental distress is a negative measure of well-being – a greater number means less well-being.

Figure 2.6: Marginal effect of relative income –using household income– on mental distress



On the horizontal axis we find the 1st, 2nd, 3rd, 4th and 5th income quintile. On the vertical axis we find the  $\beta_{ri}$  resulting from the fixed effects regressions, that is, the expected change in mental distress when relative income changes by one unit. Mental distress ranges from 0 to 10 but in these graphs the Y-axis range from -0.25 to 0.5 so that we can appreciate the small variation. The regression table can be found on Table 2.6 on page 43.

This trend is more obvious for some reference groups than for others, but it is present in all cases: in the lowest income quintiles, changes in relative income reduce mental distress, while this is no longer the case for the top quintiles. Changes in relative position using household income do not seem to be associated with mental distress for any income quintile. It is worth noting that these results for mental distress are similar to those obtained by Luttmer (2005). While he could find some effect of neighbours' income on happiness self-reports, he found no effect on mental distress. The fact that neighbours' earnings do not affect mental distress is quite problematic because it is usually distress, or negative consequences on SWB in general, that supporters of the relative income hypothesis refer to when they argue that relative position affects well-being. In other words, the negative consequences of not keeping up with the Joneses are more often

discussed than the happiness derived from surpassing them.

#### 2.4.1.1 The regression tables of the main results

Table 2.3: Marginal effect of relative income – using earnings – on life satisfaction

	Q1	Q2	Q3	Q4	Q5
	Coef./(s.e.)	Coef./(s.e.)	Coef./(s.e.)	Coef./(s.e.)	Coef./(s.e.)
Region19	-0.021 (0.037)	0.016 (0.062)	0.187** (0.071)	0.048 (0.079)	0.086 (0.067)
Region133	-0.021 (0.037)	0.019 (0.062)	0.185* (0.072)	0.059 (0.078)	0.105 (0.068)
Education	-0.014 (0.038)	0.037 (0.060)	0.144* (0.069)	0.060 (0.072)	0.050 (0.065)
Occupation	0.000 (0.047)	0.003 (0.060)	0.113 (0.058)	-0.006 (0.056)	0.021 (0.057)
Ethnicity	-0.028 (0.039)	0.016 (0.064)	0.184* (0.072)	0.115 (0.079)	0.110 (0.070)
Pr. wage	-0.028 (0.038)	-0.023 (0.060)	0.085 (0.066)	-0.002 (0.070)	-0.010 (0.063)
N	11,608	12,759	12,989	12,595	11,796

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Q1 to Q5 refer to Income quintiles 1 to 5 respectively.

Table 2.4: Marginal effect of relative income – using household income – on life satisfaction.

	Q1	Q2	Q3	Q4	Q5
	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)
Region19	-0.010 (0.023)	-0.002 (0.037)	0.081* (0.036)	0.111** (0.036)	0.079** (0.027)
Region133	-0.007 (0.023)	0.004 (0.037)	0.081* (0.036)	0.117** (0.036)	0.085** (0.026)
Education	-0.019 (0.023)	-0.016 (0.037)	0.052 (0.035)	0.087* (0.035)	0.083** (0.027)
Ethnicity	-0.015 (0.023)	-0.006 (0.038)	0.073* (0.037)	0.116** (0.038)	0.085** (0.028)
Pr. wage	-0.044 (0.024)	-0.079* (0.039)	0.026 (0.035)	0.061 (0.035)	0.062* (0.027)
N	27,022	26,608	25,557	25,330	24,811

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Q1 to Q5 refer to Income quintiles 1 to 5 respectively.

Table 2.5: Marginal effect of relative income – using earnings – on mental distress.

	Q1	Q2	Q3	Q4	Q5
	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)
Region19	-0.056* (0.025)	-0.090* (0.045)	-0.042 (0.051)	-0.068 (0.053)	0.064 (0.051)
Region133	-0.065* (0.027)	-0.089 (0.047)	-0.033 (0.054)	-0.009 (0.056)	0.070 (0.056)
Education	-0.057* (0.025)	-0.105* (0.045)	-0.017 (0.049)	-0.026 (0.049)	0.080 (0.048)
Occupation	-0.028 (0.030)	-0.017 (0.042)	-0.042 (0.041)	-0.015 (0.041)	0.044 (0.039)
Ethnicity	-0.055* (0.026)	-0.097* (0.046)	-0.047 (0.051)	-0.068 (0.054)	0.076 (0.052)
Pr. wage	-0.044 (0.025)	-0.073 (0.042)	0.018 (0.046)	0.006 (0.047)	0.088* (0.044)
N	15,520	17,163	17,351	17,214	16,102

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Q1 to Q5 refer to Income quintiles 1 to 5 respectively.

Table 2.6: Marginal effect of relative income – using household income – on mental distress.

	Q1	Q2	Q3	Q4	Q5
	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)	Coef./ (s.e.)
Region19	-0.014 (0.014)	-0.040 (0.022)	-0.057* (0.024)	-0.058* (0.025)	0.003 (0.018)
Region133	-0.016 (0.015)	-0.033 (0.024)	-0.021 (0.027)	-0.064* (0.027)	0.003 (0.020)
Education	-0.016 (0.014)	-0.034 (0.023)	-0.038 (0.024)	-0.039 (0.025)	0.007 (0.019)
Ethnicity	-0.023 (0.014)	-0.036 (0.023)	-0.041 (0.025)	-0.049 (0.025)	0.009 (0.019)
Pr. Wage	0.005 (0.015)	0.020 (0.022)	-0.004 (0.023)	-0.019 (0.024)	0.024 (0.019)
N	35,376	35,480	34,653	34,595	34,146

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Q1 to Q5 refer to Income quintiles 1 to 5 respectively.

## 2.4.2 Assessing self-selection into change in relative income

Because relative position is not randomly assigned, panel data is preferred to cross-sectional data. However, changes in relative income are not random either. Individuals experiencing greater changes in relative position may not necessarily be similar to those experiencing no changes, or to those experiencing negative changes. This could be a problem for the estimation of the parameter, and it should be a greater concern the less widespread the changes in relative income are across the population. Table 2.7, shows some summary statistics of change in relative income. It can be seen that most individuals experience a change in relative position during their time in the panel, note that average life-change is almost 1. Approximately 57% experience an improvement and 43% experience a worsening. As expected, yearly change is much lower than life change; nevertheless, there is change in relative income from one year to the next too.

Although both life and yearly change in relative income are experienced by a large part of the sample, the distribution of change in relative income is not homogeneous. Some individuals do experience greater changes in relative income than others and, if the reason for this bears some relation to SWB, the estimates could be biased. One such factor could be the individual's personality. Psychologists studying personality distinguish five main personality traits: extraversion, conscientiousness, agreeableness, openness and neuroticism, and the BHPS includes them in one of its waves. The left-hand side graph in Figure 2.7 compares the distribution of neuroticism (emotional stability) –

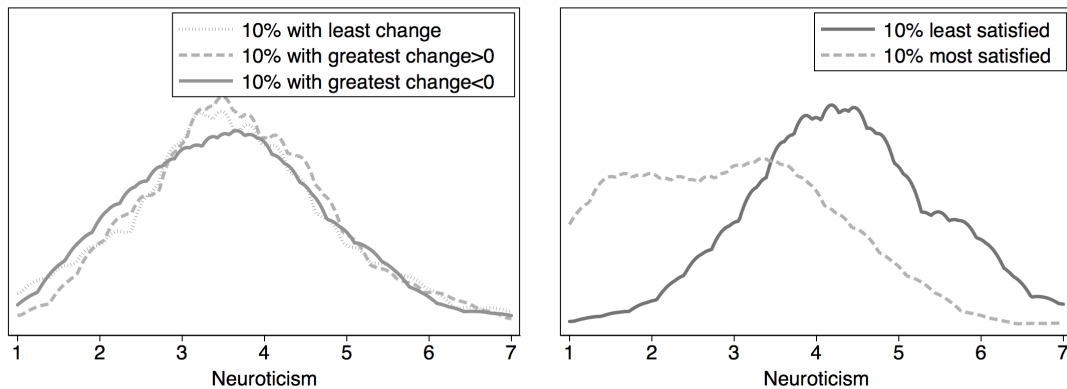
Table 2.7: The distribution of change in relative income

	Mean	Std. Dev.	N
Positive life change	0.981	0.558	2,416
Negative life change	-0.991	0.612	1,784
Positive yearly change	0.181	0.112	4,200
Negative yearly change	-0.668	0.458	1,841

This figure is obtained using earnings as the income variable, and ‘occupation’ as the reference group, but that using any other would not change the results much. Remember that  $ri = \log(y/y^*)$ . Assuming that at  $t_0$   $y = y^*$ , a change of 0.98 comes about if for instance the income of reference remains constant while own income almost doubles. Such change could also come about if the income of the individual goes up by 50% and that of the reference group decreases by 25%. Life change is the difference between the maximum and the minimum value of relative income for a given individual during their time in the panel. Yearly change is simply the average change in relative income from one year to the next. To avoid distortion in the life-change summary, individuals that appear in less than 10 waves have been excluded. Total N=4,200.

the personality trait that has, by far, the strongest correlation with both life satisfaction and mental distress – for the following three groups: (1) the 10% of the sample that experiences the largest positive changes in life-change in relative income, (2) the 10% that experiences the largest negative changes, and, (3) the 10% that experience the least change in relative income.

Figure 2.7: Distribution of neuroticism across life-change in relative income



(a) Type of life-change in relative income

(b) Life satisfaction

These figures are calculated using only individuals that appear in at least 10 waves, and for whom we have personality information, this amounts to 3,788. This division of individuals into groups by amount of life-change have been done using `ri_occup`, but using other relative income would not affect the results much.

The results are encouraging because they show a very similar distribution of neuroticism across life-change in relative income. In other words, individuals experiencing the

largest positive change in relative income seem to be very similar in terms of personality to individuals with little change in relative income, and to those with the largest negative change. To make clear how similar the curves for the different groups are, the second graph in Figure 2.7 shows the distribution of neuroticism for individuals that are very satisfied with their lives, versus the individuals that are least satisfied with their lives. Although there can of course be some confounding factors: other than neuroticism, I would say that personality is an important one. Hence, these results give credibility to the baseline results provided in section 2.4.1.<sup>13</sup>

### 2.4.3 Changes in relative income driven by own income versus reference income

Changes in relative position can come from either changes in own income ( $y$ ) or changes in the others' income ( $y^*$ ), or both. When changes in relative income are driven by changes in own income, the individual may be playing a very active role in this change, making them endogenous. However, correlation between relative income and the error term is less clear when changes in relative income come from changes in the income of reference. In other words, changes driven by the income of reference are more exogenous, and therefore, looking at them separately is interesting. However, there may also be advantages in looking at the effects of changes in relative position driven by own income. On the one hand, most of the change in relative income is of this type, therefore ignoring it would be a shame. On the other hand, a considerable change in own income should improve one's relative position regardless of the reference group. Note that even after having constructed a wide variety of reference groups, we cannot be sure that these are the actual groups with whom the individual compares, but, if he does compare himself with someone, it is likely that a large change in his own income improves his relative standing – regardless of his reference group.<sup>14</sup>

Tables 2.8 and 2.9 show, respectively, the relative income coefficients of fixed effects regressions like those of the previous section but separately for changes driven by own income, and changes in the income of the reference group, for life satisfaction and mental distress.

In each table, the first three columns refer to relative income using earnings and the last three use per capita household income. The first column of each block is included for reference and runs the regression with all observations. Since no big differences were

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<sup>13</sup>We have replicated this with the other four personality traits and the results were exactly the same, each of personality traits was very similarly distributed across change in relative position.

<sup>14</sup>There is one additional interesting reason for looking at the effects of these two different types of changes in relative income, they are in nature different events and just for that reason they could have different effects. It could be argued that improving one's relative standing is more gratifying when it is due to one's actions – a change in own income – than to others' actions – a change in the income of the reference group.

Table 2.8: The effects of relative income on life satisfaction by type of change in relative income.

	Earnings			Per capita HH. Income		
	All	ch(y)>ch(y*)	ch(y*)>ch(y)	All	ch(y)>ch(y*)	ch(y*)>ch(y)
ri_region19	0.008 (0.017)	0.016 (0.018)	-0.001 (0.051)	0.064*** (0.010)	0.069*** (0.011)	0.073 (0.044)
ri_region133	0.011 (0.017)	0.022 (0.018)	0.040 (0.053)	0.069*** (0.010)	0.068*** (0.011)	0.180* (0.072)
ri_educ	0.022 (0.017)	0.028 (0.018)	0.012 (0.055)	0.059*** (0.010)	0.064*** (0.011)	0.050 (0.042)
ri_occup	0.023 (0.019)	0.038 (0.023)	0.006 (0.038)	0.065*** (0.015)	0.069*** (0.016)	0.019 (0.040)
ri_ethnicity	0.015 (0.017)	0.025 (0.019)	-0.012 (0.049)	0.065*** (0.011)	0.072*** (0.012)	0.047 (0.045)
ri_predicted	-0.010 (0.017)	-0.005 (0.018)	0.018 (0.069)	0.034** (0.011)	0.033** (0.011)	0.032 (0.192)
N	84,013	63,941	20,072	156,323	126,000	30,323

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Since no big differences were observed across quintiles in the baseline regressions, for this part we pool together the observations from all quintiles.

observed across quintiles in the baseline regressions, for this part, the regression for changes coming from a change in own income is done by pooling together the observations from all quintiles. Regarding changes driven by changes in others' income, it should be highlighted that changes in own income are kept more or less constant because in those cases own income hardly changes at all.

In a nutshell, Tables 2.8 and 2.9 show again that relative income does not seem to have any effect on SWB because changes in relative income variables are not associated with changes in SWB regardless of the origin of the change. As with the baseline regressions, some of the coefficients are statistically significant but those are mostly insignificant in practical terms. For example, none of the coefficients in the table with the life satisfaction regressions (Table 2.8) has any practical significance. For instance, take the largest coefficient in Table 2.8, this is the coefficient of *ri\_ethnicity* when per capita household income is used and when change in relative income is driven by a change in own income. In this case  $\beta = 0.072$ . Assuming that at  $t_0$   $y = y^*$ , and if the income of reference remains constant while own income increases by almost 20% (average yearly change), life satisfaction would only change by 0.01. It should be highlighted the effects of changes in relative position driven by the reference income are always statistically, as well as practically, insignificant – with just one exception, the coefficient of *ri\_region133* that is



Table 2.9: The effects of relative income on mental distress by type of change in relative income.

	Earnings			Per capita HH. Income		
	All	$ch(y) > ch(y^*)$	$ch(y^*) > ch(y)$	All	$ch(y) > ch(y^*)$	$ch(y^*) > ch(y)$
ri_region19	0.020 (0.010)	0.023* (0.011)	0.014 (0.032)	-0.026*** (0.007)	-0.023** (0.007)	-0.047 (0.024)
ri_region133	0.011 (0.012)	0.007 (0.013)	0.004 (0.042)	-0.018* (0.007)	-0.017* (0.008)	-0.032 (0.044)
ri_educ	0.018 (0.011)	0.022 (0.011)	0.022 (0.036)	-0.023*** (0.007)	-0.025*** (0.007)	-0.001 (0.026)
ri_occup	0.015 (0.013)	0.010 (0.015)	0.023 (0.027)	-0.009 (0.010)	-0.009 (0.011)	0.009 (0.024)
ri_ethnicity	0.021 (0.011)	0.020 (0.011)	0.041 (0.032)	-0.027*** (0.007)	-0.026*** (0.007)	-0.054* (0.026)
ri_predicted	0.039*** (0.010)	0.046*** (0.011)	0.016 (0.041)	0.008 (0.007)	0.008 (0.007)	0.049 (0.095)
N	116,581	89,766	26,815	217,987	176,202	41,785

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Since no big differences were observed across quintiles in the baseline regressions, for this part we pool together the observations from all quintiles.

almost 0.18 but with very little statistical significance. The mental distress table tells us the same thing: changes in the reference income affecting our relative position do not have any influence on mental distress.

It may be worth mentioning that most of the change in relative income is driven by changes in own income, that is why there are many more observations in the columns referring to that type of change. This is also why the coefficients in the *all* column are very similar to those in the  $ch(y) > ch(y^*)$  column. Note also that in those two columns we do not control in any way for changes in absolute position and therefore any significant coefficient in any of those columns should not be interpreted as evidence against the relative income hypothesis. The most interesting columns of these two tables are the  $ch(y^*) > ch(y)$  columns, which have a much lower number of cases but still enough to get ‘effects’ if there were any. The fact that there is no association between a change in relative income when the change in relative income is driven by a change in the income of the reference group is problematic because there is in principle no reason why this should be the case if the relative income hypothesis is true. There is yet one more reason why this estimate is interesting. This type of change in relative position is less subject to measurement error – than a change in own income – and therefore less vulnerable to attenuation bias. There is likely to be measurement error in personal income, and

this could produce attenuation bias in the estimates obtained for changes driven by own income. The income of reference, however, should have much less measurement error because it is the average of many individuals. Thus, this attenuation bias should not be less present when the effects in changes in relative income come mostly from changes in others' income, since the latter are much less subject to be measured with error.<sup>15</sup>

#### **2.4.4 Positive versus negative changes in relative income**

The aim of this subsection is to see if the 'no effects' found so far could be hiding important asymmetries in the effects of relative income depending on the sign of the change. That could be the case if, for instance, only negative changes in relative income had an effect but improvements in relative position did not, which would be consistent with the loss aversion hypothesis put forward by prospect theory (Kahneman and Tversky, 1979). To see if that is the case, a separate fixed effect regression was run for positive and negative changes. The results are shown in Tables 2.10 and 2.11. These two tables have a very similar structure to those of the previous section and thus there is no need to describe this structure again. Both tables suggest that there are no clear differences on the effects of relative income depending on the sign of the change, especially not in the direction that one would have expected. This can be easily appreciated by comparing the columns with the positive and negative changes, which are very similar.

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<sup>15</sup>I thank John Ermisch for making me aware of this.

Table 2.10: The effects of relative income on life-satisfaction by sign of change.

	Earnings			Per capita HH. Income		
	<i>all</i>	$ch(ri) > 0$	$ch(ri) < 0$	<i>all</i>	$ch(ri) > 0$	$ch(ri) < 0$
ri_region19	0.008 (0.017)	-0.003 (0.020)	0.001 (0.031)	0.064*** (0.010)	0.046** (0.017)	0.063*** (0.016)
ri_region133	0.011 (0.017)	-0.005 (0.021)	0.015 (0.031)	0.069*** (0.010)	0.049** (0.017)	0.064*** (0.016)
ri_educ	0.022 (0.017)	0.006 (0.021)	0.024 (0.032)	0.059*** (0.010)	0.046** (0.017)	0.059*** (0.016)
ri_occup	0.023 (0.019)	0.016 (0.026)	-0.001 (0.034)	0.065*** (0.015)	0.058** (0.020)	0.054* (0.024)
ri_ethnicity	0.015 (0.017)	0.016 (0.022)	0.008 (0.031)	0.065*** (0.011)	0.047** (0.017)	0.070*** (0.016)
ri_predicted	-0.010 (0.017)	-0.012 (0.020)	-0.013 (0.034)	0.034** (0.011)	0.009 (0.016)	0.041* (0.017)
N	84013	51588	32425	156323	87848	68475

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Columns ‘all’ contain all individuals, and the other columns, ‘ $ch(ri) > 0$ ’ and ‘ $ch(ri) < 0$ ’ contains regression with positive and negative changes in relative income respectively.

Table 2.11: The effects of relative income on mental distress by sign of change.

	Earnings			Per capita HH. Income		
	<i>all</i>	$ch(ri) > 0$	$ch(ri) < 0$	<i>all</i>	$ch(ri) > 0$	$ch(ri) < 0$
ri_region19	0.020 (0.010)	0.031* (0.012)	0.046* (0.021)	-0.026*** (0.007)	0.007 (0.010)	-0.028** (0.011)
ri_region133	0.011 (0.012)	0.015 (0.015)	0.051* (0.024)	-0.018* (0.007)	0.008 (0.010)	-0.021 (0.012)
ri_educ	0.018 (0.011)	0.033** (0.013)	0.047* (0.021)	-0.023*** (0.007)	0.003 (0.010)	-0.023* (0.011)
ri_occup	0.015 (0.013)	0.028 (0.016)	0.069** (0.023)	-0.009 (0.010)	0.025 (0.013)	-0.037* (0.016)
ri_ethnicity	0.021 (0.011)	0.029* (0.013)	0.044* (0.021)	-0.027*** (0.007)	0.004 (0.010)	-0.029** (0.011)
ri_predicted	0.039*** (0.010)	0.055*** (0.012)	0.054* (0.022)	0.008 (0.007)	0.047*** (0.009)	-0.014 (0.011)
N	116581	74062	42519	217987	126644	91343

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , Columns ‘all’ contain all individuals, and the other columns, ‘ $ch(ri) > 0$ ’ and ‘ $ch(ri) < 0$ ’ contains regression with positive and negative changes in relative income respectively.

### 2.4.5 The effects of relative income on different types of individuals

When studying the relationship between income and SWB many researchers have understood that the former may be mediated by the personality of the individual (in addition to personality having an effect of its own on SWB) (Proto & Rustichini (2015), Boyce & Wood (2011)). For instance, Proto & Rustichini (2015), argue that neuroticism increases the concavity of the relationship between income and life satisfaction. In other words, it reduces the elasticity between income and life satisfaction at higher income levels but increases it at low income levels. Given the former one would expect the relationship between relative income – a function of income in relation to others’ income – also to be subject to the personality of the individuals. In addition, the effect between relative income and SWB may depend on the individual’s personality for one more direct reason, social comparisons are not just the result of a contrast in income, but the individual’s personality also plays an important role.

Psychologists have shown the importance that individual personality plays in social comparison processes (see section 2.2.2). In essence, all the relevant parameters in a social comparison are strongly influenced by the personality of the individual. Consequently, some researchers have argued that the effects of relative position on SWB could be highly dependent on the individual’s personality. For instance, Budría and Ferrer-i Carbonell (2012) claim that individuals that are more neurotic and extroverted are more sensitive to their position on the economic ladder, whereas other individuals are insensitive to it. If this is true then it could be the case that the no effects that we observe when we consider all individuals together are hiding important differences across personality types. This section tries to establish if that is the case.

Tables 2.12 and 2.13 show the relative income coefficients for fixed effects regressions on life satisfaction and mental distress respectively. In order to see whether personality matters, individuals are divided into two groups: individuals below the average in terms of neuroticism, and individuals above the average.<sup>16</sup> Note that the number of observations is significantly lower than in the previous sections, this is because personality information was included in just one wave of the BHPS (because, presumably, personality remains quite stable throughout life). Nonetheless, the number of observations is high enough to obtain precise estimates.

Within each table there are two groups of estimates, ones using earnings to build the relative income variable and another using per capita household income. On the whole there are no clear differences between more and less neurotic individuals. For instance, when personal earnings are used to build relative income, no differences exist between in-

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<sup>16</sup>Neuroticism is the personality trait that is more strongly linked with SWB, this is why I have decided to pick this personality trait.

Table 2.12: The effects of relative income on life satisfaction by neuroticism level.

	Earnings			Per capita HH. Income		
	<i>all</i>	<i>N &lt; mean</i>	<i>N &gt; mean</i>	<i>all</i>	<i>N &lt; mean</i>	<i>N &gt; mean</i>
ri_region19	0.015 (0.018)	-0.010 (0.025)	0.034 (0.026)	0.070*** (0.012)	0.043** (0.016)	0.093*** (0.016)
ri_region133	0.019 (0.018)	-0.009 (0.025)	0.040 (0.025)	0.074*** (0.011)	0.043** (0.016)	0.100*** (0.016)
ri_educ	0.027 (0.018)	0.002 (0.026)	0.047 (0.026)	0.063*** (0.011)	0.033* (0.016)	0.089*** (0.016)
ri_occup	0.016 (0.021)	0.002 (0.028)	0.027 (0.031)	0.061*** (0.016)	0.008 (0.022)	0.111*** (0.022)
ri_ethnicity	0.021 (0.019)	-0.001 (0.026)	0.039 (0.027)	0.071*** (0.012)	0.038* (0.017)	0.099*** (0.017)
ri_predicted	-0.005 (0.018)	-0.029 (0.025)	0.014 (0.026)	0.041*** (0.012)	0.020 (0.016)	0.059*** (0.017)
N	67,228	30,778	36,450	120,829	56,044	64,785

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Columns ‘all’ contain all individuals, and the other columns ‘ $N < mean$ ’ and ‘ $N > mean$ ’ contain individuals below and above average in terms of neuroticism respectively.

dividuals above and below the median in terms of neuroticism in the relationship between relative income and life satisfaction, nor mental distress. In both cases, the coefficients are of no practical or statistical significance for both individuals above and below the mean in terms of neuroticism. When per capita household income is used, some of the coefficients appear to be statistically significant in the life satisfaction regressions, (although of little practical significance) and some difference, albeit small, can be found between individuals above and below the median in terms of neuroticism (see Table 2.12). The differences found suggest that more neurotic individuals would be more sensitive to changes in relative position, however it should be recalled that the practical significance is small. In the mental distress regressions, there is also a difference between types of individuals but this time the coefficients are so small that not even for individuals with above average neuroticism is the coefficient worth reporting (below 0.04 in all cases!). To sum up, some effect has been found, albeit very small for individuals with above average neuroticism when relative income is built using household income, not with earnings and only for life satisfaction.

Thus only in one of the four sets of regressions is there any difference worth highlighting, and still the practical significance is doubtful. Note that in the life satisfaction regressions, the coefficients for neurotic individuals are around 0.1., remember that life satisfaction ranges from 0 to 10 and that for a change of 0.1 to occur, the income of the

Table 2.13: The effects of relative income on mental distress by neuroticism levels.

	Earnings			Per capita HH. Income		
	<i>all</i>	<i>N &lt; mean</i>	<i>N &gt; mean</i>	<i>all</i>	<i>N &lt; mean</i>	<i>N &gt; mean</i>
ri_region19	0.027* (0.012)	0.020 (0.016)	0.032 (0.017)	-0.024** (0.008)	-0.008 (0.010)	-0.038** (0.012)
ri_region133	0.020 (0.013)	0.014 (0.017)	0.025 (0.019)	-0.021* (0.008)	-0.003 (0.010)	-0.036** (0.012)
ri_educ	0.028* (0.012)	0.029 (0.016)	0.028 (0.017)	-0.021** (0.008)	-0.004 (0.010)	-0.036** (0.012)
ri_occup	0.022 (0.014)	0.023 (0.019)	0.022 (0.021)	-0.005 (0.011)	0.011 (0.013)	-0.021 (0.017)
ri_ethnicity	0.029* (0.012)	0.023 (0.016)	0.034 (0.018)	-0.022** (0.008)	-0.006 (0.010)	-0.036** (0.012)
ri_predicted	0.049*** (0.012)	0.033* (0.016)	0.060*** (0.017)	0.008 (0.008)	0.004 (0.010)	0.011 (0.012)
N	88,382	40,695	47,687	156,830	73,116	83,714

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Columns ‘all’ contain all individuals, and the other columns ‘ $N < mean$ ’ and ‘ $N > mean$ ’ contain individuals below and above average in terms of neuroticism respectively.

individual would have to almost triple while that of the reference remains stable. This reminds us that absolute income effects could be behind such change in life satisfaction as well and would be consistent with differences in marginal income effects across personality discussed by Proto & Rustichini (2015). Hence, the main conclusions of the paper so far remain: changes in relative position do not bring changes in SWB, mental distress, or life satisfaction.

## 2.4.6 The effects of changes in relative income on financial satisfaction, house satisfaction and spending

Luttmer (2005) argues – and I agree – that “if neighbours’ consumption patterns shape one’s aspirations, one might have expected that higher neighbours’ earnings would significantly reduce one’s satisfaction with material outcomes such as one’s financial situation or one’s home (Luttmer, 2005, p. 985).” If there is a connection between relative income and SWB through social comparisons, financial satisfaction – or material satisfaction more generally – should be channelling this connection. In other words, it would be hard to believe that if neighbours’ income rises, and such rise affects happiness via social comparisons, that it does so leaving financial satisfaction unaffected. Put differently, changes in financial satisfaction are a necessary, but not sufficient, condition for a relationship

Table 2.14: The effects of relative income on financial satisfaction, house satisfaction and spending.

	Earnings			Per capita HH. Income		
	Financial stf.	House stf.	log(spending)	Financial stf.	House stf.	log(spending)
ri_region19	0.263*** (0.074)	-0.043 (0.068)	0.293*** (0.027)	0.708*** (0.068)	0.031 (0.049)	0.166*** (0.022)
ri_region133	0.311*** (0.077)	-0.076 (0.074)	0.276*** (0.028)	0.575*** (0.128)	0.153 (0.080)	0.086** (0.030)
ri_educ	0.225** (0.074)	-0.042 (0.070)	0.282*** (0.028)	0.580*** (0.069)	0.095 (0.052)	0.133*** (0.022)
ri_occup	0.296*** (0.049)	0.028 (0.047)	0.109*** (0.018)	0.265*** (0.060)	0.142** (0.051)	0.048** (0.019)
ri_ethnicity	0.307*** (0.070)	-0.088 (0.065)	0.289*** (0.026)	0.694*** (0.074)	0.070 (0.050)	0.175*** (0.025)
ri_wage	0.248** (0.090)	0.124 (0.087)	0.224*** (0.033)	0.306* (0.155)	-0.266 (0.156)	0.001 (0.068)
N	20119	20115	20600	30441	30437	28443

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

between relative income and SWB to exist. It is not, I believe, a sufficient condition because there could be a relationship between changes in others' income and one's financial satisfaction and still that such situation might not affect general life satisfaction.

Luttmer (2005) tested this but failed to find evidence of a connection between neighbours' earnings and financial satisfaction, or satisfaction with one's home. He explains the lack of a relationship as the result of people giving up leisure time to work more and in that way be able to mimic the living standards of their neighbours. However, I think this makes it hard to believe that the relationship he finds between neighbours earnings and SWB is capturing relative deprivation. Following Luttmer (2005), in this section we look at whether changes in the relative income affect financial satisfaction, satisfaction with one's home, or spending. We also explore the effects of such changes on personal spending to see if there is some process of emulation or 'keeping up with the Joneses' going on. Since changes in own income could clearly have an effect on the former on its own, here we will only consider changes in relative income coming from changes in the income of reference so that absolute income level is kept more or less constant. The aim of this section is then to see if there is a relationship between relative income on possible mediators between relative income and SWB such as financial satisfaction, hoping to rule out the relationship between RI and SWB in case no relationship was found.

Financial satisfaction and house satisfaction were captured with the following ques-

tions: “How dissatisfied or satisfied are you with the income of your household?”, and “How dissatisfied or satisfied are you with your house or flat?” (answers ranged from 1-7 but as with the life-satisfaction question, the answers were rescaled to range from 0-10). The variable measuring spending is the log of the sum of two variables that measure different spending concepts: the amount of money spent eating out and the amount spent on leisure, per month.<sup>17</sup>

Table 2.14 shows the relative income coefficients of fixed effects regressions where the independent variable is change in relative income coming from the reference group, and the dependent variables are financial satisfaction, satisfaction with one’s home, and spending. There are two columns for each of the dependent variables because, as usual, the results for the two relative income variables are given, i.e., using earnings and per capita household income. Unlike Luttmer (2005) I do find an association between changes in others’ earnings and financial satisfaction, and it has the expected sign, positive, meaning that improving relative position makes us more satisfied with the income of the household. Or, to be more precise, as the income of neighbours goes up, our relative position goes down and we feel less satisfied with our income (most change in the income of reference is positive). The size of the coefficients varies somewhat depending on whether earnings or household income is used to build relative income, but the same patterns emerge. For instance, if in  $t_0$   $y = y^*$ , and in  $t_1$  the income of those living in the same region (*region19*) goes up by 50% (and own income remains unchanged), financial satisfaction goes down by 0.28, in a scale from 0 to 10. It makes sense that the individual’s satisfaction with own income goes down when he or she sees the income of the neighbours go up, however, that does not guarantee that SWB is affected.

With regards to spending, it does not seem that emulation is taking place because the coefficients of spending are positive. Since the analysis is restricted to changes driven by the reference income, which are mostly positive, the coefficients obtained tell us that when the income of the reference group goes up (and relative income goes down), we cut down our spending. In sum, what we seem to find is that if the income of those around us goes up – keeping our income constant– we feel less satisfied with our own financial situation and we spend less. But this lower consumption, neither the lower financial satisfaction resulting from improvement in the situation of other’s seems to pass to SWB, as the previous sections have shown.

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<sup>17</sup>The question wording was as follows: “How much do you personally spend in an average month on eating out, or buying take-away food from a restaurant, pub or cafe, including school meals or meals at work?”, “how much you personally spend in an average month on leisure activities, and entertainment and hobbies, other than eating out?” The answers are limited to 12 possible spending brackets. I have created a continuous variable taking the middle point of each spending bracket.



## 2.5 CONCLUSION

The idea that relative position affects happiness, or SWB more generally, is very widespread and this chapter has tried to challenge this view in several ways. It began by showing how weak the existing evidence is, and, bringing in the literature on social comparisons has helped us understand why this may be so. Social comparisons are complex and flexible processes in which the individual plays an important role, and therefore, assuming that a contrast in incomes will produce a given effect seems unreasonable. In addition, most people do not compare their income with that of others when judging their lives, which make us further question why relative income should have an effect on SWB.

At the empirical level, the chapter takes the BHPS, a longitudinal household survey to explore the effects of changes in relative position on two different SWB outcomes: life satisfaction and mental distress. The results of these regressions question the idea that relative income matters for SWB because changes in relative income are not followed by changes in life satisfaction, or on mental distress. These results are quite robust because they do not vary depending on whether earnings or per capita household income is used, or with the reference group. In order to tackle the issue of potential endogeneity of changes in relative income, the paper compares the distribution of personality across individuals that change their relative position to different degrees, showing that there are virtually no differences. We have also looked separately at the effects of changes in relative income driven by the income of the reference group, since those should be more exogenous than changes in relative income driven by changes in own income, finding no relevant differences.

Other robustness checks were carried out that supported the main results. Section 2.4.4 explores separately the effects of positive versus negative changes to make sure that the ‘no effects’ found in the main regressions are not the result of different effects that cancel each other out. Section 2.4.5, compares the effects of relative income for individuals above and below the mean in terms of neuroticism. Both give support to the main results. The last Section explores the effects of relative income on possible mediators between relative income and SWB such as financial satisfaction, with the aim of ruling out the relationship between RI and SWB in case no relationship was found. However this is not done because the data show that relative position does indeed affect financial satisfaction and personal spending, yet, it should be made clear that while this does not support our hypothesis of RI not having an effect on SWB, it does not conform evidence against it either, since I believe the existence of a relationship between RI and financial satisfaction to be a necessary but not sufficient condition for the relationship between relative income and SWB to exist.

The evidence provided here cast doubts on the relative income hypothesis. If the findings presented in this chapter were further replicated and confirmed by future research,

the policy implications would be quite clear: everyone can be made happier at the same time. Happiness is not a zero-sum game – at least not regarding income. This is, I believe, very positive because it means that everyone can enjoy higher SWB without doing so at the expense of others. Given that there is income inequality, and probably always will be, knowing that this need not prevent anyone from being happier is good news. The findings of this chapter might also make us question whether the use of relative poverty lines really makes sense.

Although it is not the first research to question the idea that relative income matters for SWB, it is, to my knowledge, the first one that explicitly attempts to make that point empirically. Many researchers have, in fact, found no effects, but they have not been very open to interpreting their findings as contradicting the relative income hypothesis. Publication bias towards ‘effects’ rather than ‘no effects’ may have had something to do with this, but I also think that the reason the relatively weak evidence was so quickly accepted as giving support to the idea that relative income matters for SWB is that the coefficients obtained in most studies – even if not of practical importance in most cases – were very much in line with deeply rooted ideas about the importance of relative standing.

The idea that people care about relative position is nothing new and many authors have dealt with this issue throughout history (e.g. Smith, 1759; Veblen, 1899). Recently several experiments have made it clear that individuals care a lot about relative position (Solnick and Hemenway, 1998), and many researchers have cited them as evidence in support of the relative income idea, when what this evidence really does is show that we care about relative position (it may even affect satisfaction with our financial situation), but not that we are affected by it. I think that researchers have confused preferences and utility. That we care about the Joneses is clear, but that surpassing them will make us any happier is not.



# Chapter 3

## Financial crisis and emotional disaster (across Europe?)

A comparative analysis of class and emotions

(with Fabrizio Bernardi)

### 3.1 INTRODUCTION

Sociologists have worked extensively at understanding objective differences in well-being between the most and the least privileged members of society. They have studied how the lives of lower-class individuals differ from the upper class in terms of health and labour market outcomes, among others (Rose and Harrison, 2012). However, very little is known about how their feelings differ. This chapter hopes to fill this void by exploring and trying to explain the differences in positive and negative emotions between the most and the least privileged members of society in several European countries.

SWB is a very broad concept; it refers to how people experience the quality of their lives and includes both emotional reactions and cognitive judgements. In other words, it is a combination of satisfaction with life and the relative frequency of positive and negative affect (Diener, 1984). The European Social Survey (ESS) has been collecting information on life satisfaction and happiness since its first round in 2002. But in the third round (2006) a special module was included that aimed at measuring SWB more comprehensively. A battery of questions was included that permitted building good measures of positive and negative affect, and which could be compared across countries (unlike life satisfaction self reports whose comparability is very controversial, as was explained in the first chapter). An initial look at the data reveals that in almost every country, individuals in the upper class systematically enjoy higher subjective well-being than individuals in the lower class, regardless of the measure used. That is, upper-class

people report higher life satisfaction and happiness than lower-class people, but they also experience positive emotions more often, and negative ones less often. For instance, in Germany, average life satisfaction is 7.3 for the upper class and 6.2 for lower-class individuals, also in Germany, 15% of the upper class experience depression versus 26 in lower class (ESS my computation). Although there is a lot of cross-country variation, the differences between upper, middle and lower class are often of non-negligible size.

In order to understand why this is the case we will focus on five groups of factors that previous research has proven to be relevant to SWB. These are: health, feelings of safety, social life, financial difficulties, and employment. To the extent that the former are dependent on class position, they can also be interpreted as mediating variables for the observed class gap in positive and negative emotions. We estimate a multilevel model with individuals nested in countries, which will explain positive and negative affect as a function of social class and the former potential mediators. Moreover, a decomposition is performed in order to establish which part of the observed country differences in the emotional class gap are due to composition effects (i.e. difference incidence of the mediating variables) or to slopes effect (i.e. differential effects of the mediating variables) in the various countries.

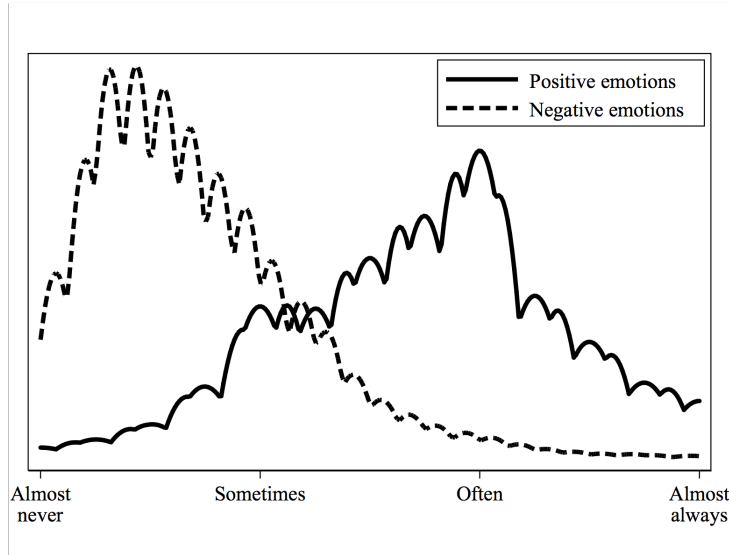
Fortunately for us, the SWB module that was introduced in the ESS in 2006 was replicated in 2012, right at a time when many countries were suffering the worst consequences of the financial crisis. Not only does this allow a very interesting description in itself of what has happened to individuals' emotions with the crisis, but it also allows making stronger causal claims. The analysis seems to suggest that differences across countries and across classes in negative emotions are due to differences in economic hardship and unemployment, as well as to health differences. Social life and feelings of safety, while important for negative affect are much more equally distributed across classes. Differences in positive affect are poorly explained, and neither income inequality, GDP per capita, nor GDP growth seem to have any effect once individual level variables are controlled for.

SWB is an important life outcome that is unequally distributed over the population. To the extent that inequality in the distribution of SWB is class based, public policy may be able to do something about it. However, before it can do that, an understanding of how those differences are produced is required. This is, to our knowledge, the first attempt to do so. Since the study of emotions is still quite novel within sociology, the chapter will start by presenting the dependent variables and some facts about the distribution of positive and negative affect. The second section will briefly review the existing literature on the relationship between the mediating variables and SWB. The third section presents the dataset and empirical strategy, and finally, the last two sections present the results and draw some conclusions.

### 3.2 EMOTIONS AND THE CLASS-BASED EMOTIONAL GAP

In the 3rd and 6th round of the ESS, individuals were asked about the frequency with which they experience positive and negative states such as loneliness, anxiety, or happiness. The measures of positive and negative emotions displayed here and used throughout this chapter are simply an average of those items. This is the standard procedure for their analysis, as will be explained in detail in the data section (Section 3.4). As one may expect, individuals experience positive emotions with far more frequency than negative ones, and Figure 3.1 shows this clearly. Figure 3.1 has been produced by pooling individuals from all countries, but we would observe something similar if we looked at any particular country, similar in the sense of positive emotions (PA) being more frequently experienced than negative emotions (NA),<sup>1</sup> but as we will see there is actually some variation in the shape of the distributions across countries, which is, in fact, the object of study of this chapter.

Figure 3.1: The distribution of positive and negative emotions in Europe



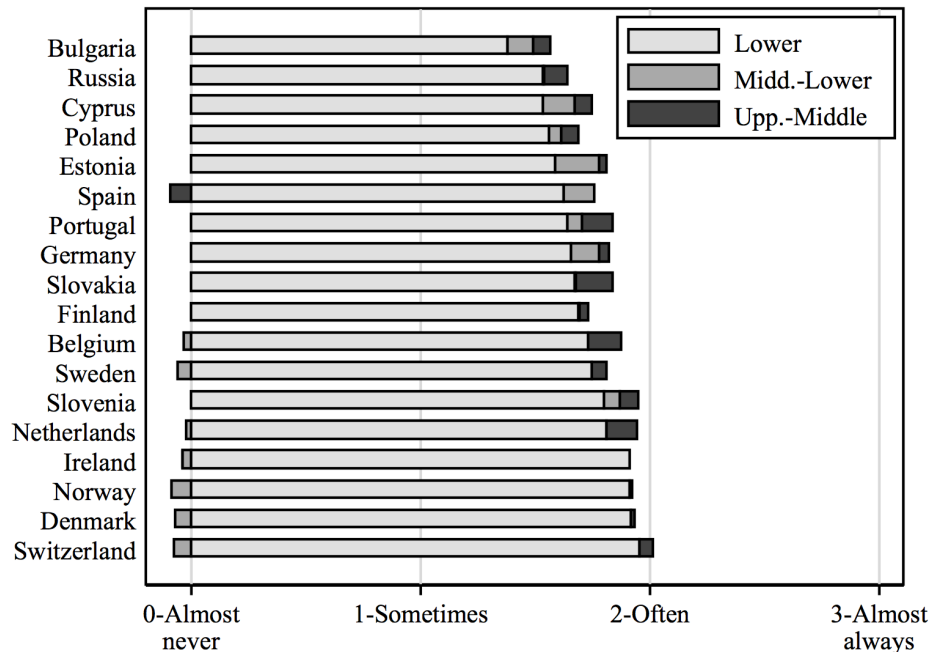
Source: The European Social Survey, 3rd round. All countries that participated in that round have been included. Includes individuals aged 30 to 60. Weights are used at the country level only. Hence, this is not representative of the European population.

Next, some figures on positive and negative emotions across countries, as well as the differences in emotions across classes, will be presented, to which we may refer as the ‘emotional gap’ or simply the ‘class gap’. Class has been defined using the EGP schema (Erickson et al., 1979), grouping several categories in a very uncontroversial way: upper class, middle class, and lower class. The upper class will contain classes I + II (higher and lower service class). The lower class = V + VI + VIIa + VIIb (manual supervisors,

<sup>1</sup>We may refer to both positive emotions or positive affect (from which PA comes from), the same applies to negative emotions, also referred to as NA).

skilled and unskilled workers and farm labourers). The rest are middle class. This is a good way of capturing differences in SWB between the most and least privileged people in each country.<sup>2</sup>

Figure 3.2: Experience of positive emotions across Europe and across classes



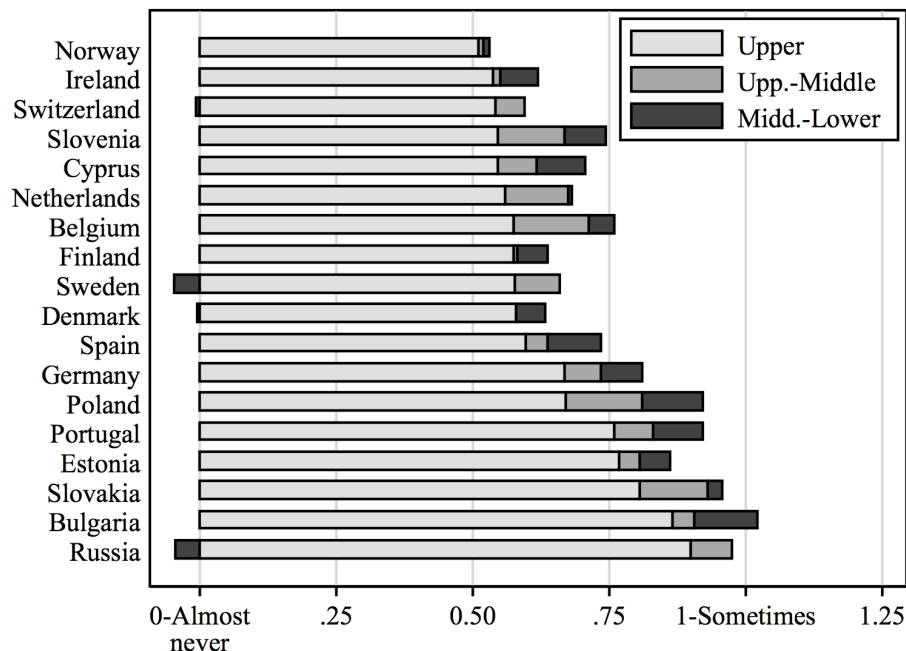
Source: The European Social Survey, third round of data. Only the 19 countries appearing in rounds 3 and 6 have been included. The length of the bars shows the average level of the positive emotions score for each social class. The longest bars show the level of the lower class and the shorter ones indicate how much more do the middle and the upper class and the lower class experience positive emotions compared to the lower class.

Figure 3.2 shows the average level of positive emotions (PA) for the lower class as well as the gap between lower and middle class, and between middle class and upper class. The total length of the bars is, then, the level of positive emotions for the upper class. Note also that the sum of the two gaps summarises the differences in emotions between the upper and the lower class. Countries are ordered according to the lower class level of PA. It is easy to see that there are substantive differences in the levels of PA across countries as well as across classes. For example, the average level of positive emotions for the lower class varies notably across countries, from 1.4 in Bulgaria to almost 2 in Switzerland, with the mean being 1.71 and the standard deviation 0.14. Variation within the upper class is also large but smaller, from 1.6 in Slovenia to 2 in Bulgaria (with a mean and standard deviation of 1.8 and 0.1 respectively). Average levels of negative

<sup>2</sup>The former may not seem entirely true since people that have never had a job are excluded from this study. However, as will be shown later, they are in almost every county very few. A more important limitation is the fact that we exclude the most disadvantaged members of society: individuals who have no homes and therefore do not take part in surveys.

emotions also vary significantly across countries, and across classes, and they seem to vary even more than positive emotions, as Figure 3.3 shows.

Figure 3.3: Experience of negative emotions across Europe and across classes



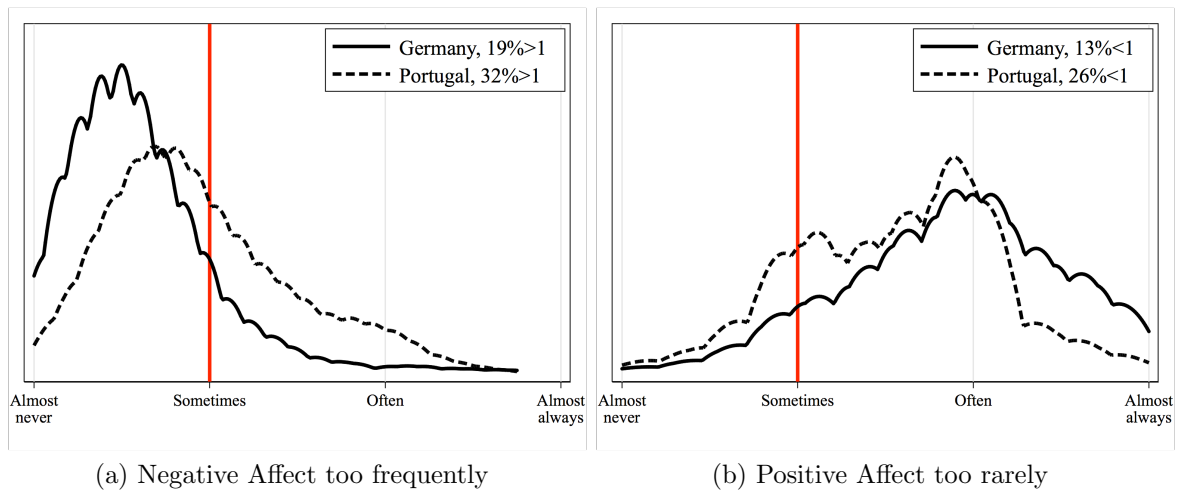
Source: The European Social Survey, third round of data. Only the 19 countries appearing in rounds 3 and 6 have been included. The length of the bars shows the average level of the negative emotions score for the upper class, and the shorter bars indicate how much more do the middle class and the lower class experience negative emotions compared to the upper class.

Figure 3.2 also shows the differences across classes in the experience of PA. In almost every country individuals in the upper class experience positive emotions more often than the lower class, and negative emotions less often. For example, in Scandinavian countries, class is a much less relevant predictor of SWB than in Eastern European countries, such as Hungary or Bulgaria. This result is hardly surprising since the former have long been recognised as the worldwide equality champions, where class-based inequality for outcomes such as income and educational attainment is at the lowest level. However, the ranking of other countries is more mixed and less easily interpretable. For instance, Germany, with a high GDP and relatively low level of income inequality when compared to the majority of EU countries, ranks quite badly in terms of PA gap.

From Figure 3.3 – which shows NA levels and gaps – it is very easy to appreciate that the class gap in negative emotions is much larger than the class gap in positive emotions. There is also more variation in NA across countries that there was in PA. The ranking of countries in terms of levels and gaps varies. This is another confirmation of the relative independence of positive and negative emotions that was discussed in the introductory chapter (Huppert et al., 2009; Huppert and Whittington, 2003).



Figure 3.4: Differences in emotions across countries matter!



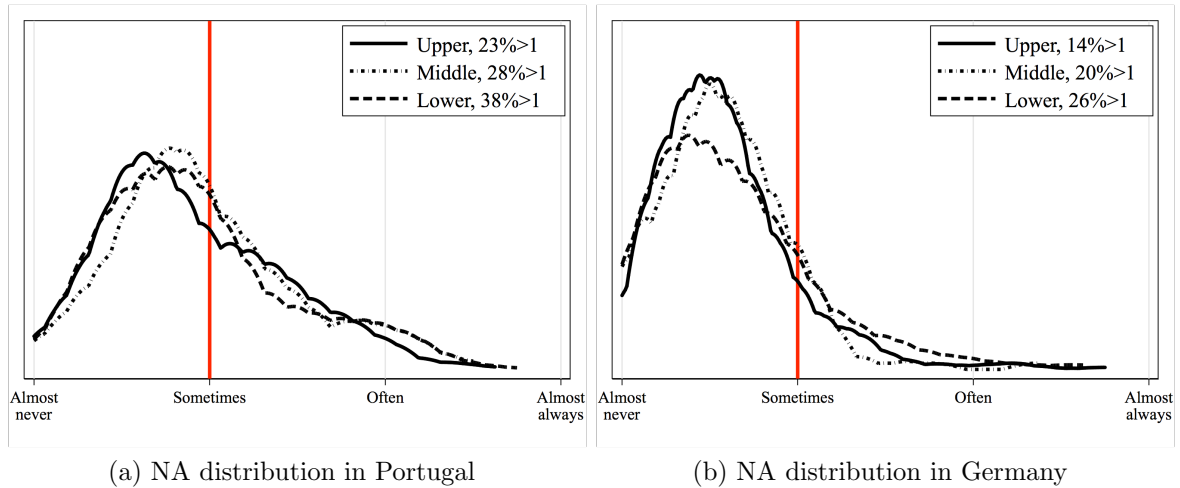
Source: The European Social Survey, third round of data. The vertical line at ‘sometimes’ marks the threshold that divides normal levels of positive and negative affect from undesirable ones. Specialists on the subject have agreed that if the NA score is above 1 (‘sometimes’), the individual experiences negative states more than would be desirable. Similarly PA below 1 means that you experience positive emotions too rarely.

However, looking at these graphs one might ask whether these emotional gaps, or whether the differences in emotions across countries, are really large. They are. Note that the average class gap in positive emotions is approximately 0.3, which is 1 standard deviation of the variation across countries in PA. One way to see this even more clearly is to translate these scores in terms of depression rates, that is, to focus on the proportion of individuals within a country or within a social class that experiences negative states ‘too often’ or positive ones ‘too seldom’. Specialists on the subject have agreed that negative emotions reach worrying levels – the point at which one may want to seek help from a professional – when they cross the threshold of 1 (on a scale of 0-3), that corresponds with ‘sometimes’. Thus, if the NA score is above 1, this means that you experience negative states more than would be desirable. With regards to PA the same criteria is followed, a PA below 1 means that you experience positive emotions too rarely.<sup>3</sup>

When we explore the distributions of negative and positive emotions, we see that in fact the gaps observed in Figures 3.2 and 3.3 do actually correspond to substantive differences in depression rates. For instance, Figure 3.4 shows that two countries that ‘apparently’ did not differ that much in terms of PA and NA scores, such as Germany and Portugal, do actually differ substantially in terms of the proportion of the population with depressive symptoms and too low PA. In Germany, for example, 19% of the sample has depressive symptoms while this percentage goes up to 32% in Portugal. Even larger

<sup>3</sup>Note that while being depressed according to your NA, that is, having a NA above 1 means that you show depressive symptomatology, this does not necessarily mean that you will experience clinical depression, however the proportion that do after scoring positive in this test is quite high, around 85% according to the Centre for Epidemiologic studies of depression.

Figure 3.5: Differences in emotions within countries matter!



Source: The European Social Survey, third round of data. The vertical line at ‘sometimes’ marks the threshold that divides normal levels of negative affect from undesirable ones. Specialists on the subject have agreed that if the NA score is above 1 (‘sometimes’), the individual experiences negative states more than would be desirable.

differences are found in these two countries in terms of ‘too low’ PA.

The aim of Figure 3.5 is to show the same, but this time applied to differences among classes within each country. Figure 3.5 shows the differences in depression among the upper, middle, and lower classes for both Germany and Portugal. While the differences seem somewhat larger in Portugal than in Germany, they are relevant in both cases. In Germany, for example, depression is almost twice as prevalent among the lower class than among upper-class individuals (26% versus 14%), while middle-class individuals lie in the middle. In Portugal similar patterns are observed but at higher levels. In the appendix we provide the calculations of depression for all countries and for all classes, see Table A8 on page 185.<sup>4</sup>

<sup>4</sup>For those interested in the scores, they are also available for all countries and social classes in Tables A35 and A7, on pages 218 and 184.

### 3.3 LITERATURE REVIEW

Argyle (1999) reviewed the literature on the relationship between social class and SWB and concluded that there is a statistical association of a non-negligible size between the two. He argued that the “upper classes have better jobs, better housing and access to these services, better relationships, and leisure”. This is how he explained that the upper class had higher SWB than the lower class. This chapter tries to shed light on the exact same question, and in order to do so it will focus on five groups of variables, which are actually related to those pointed out by Argyle (1999). In this section, the existing evidence between those factors and subjective well-being is reviewed. Those factors are physical health, safety, social life, unemployment and financial strain. To the extent that the former are dependent on the class position, they can also be interpreted as mediating variables for the observed class gap in emotions.

#### 3.3.1 Physical health, mental health, and subjective well-being

The importance of physical health for mental health is quite intuitive and, as expected, has found wide empirical support – although the amount of evidence showing that the lack of physical health leads to mental illness is even greater. Okun et al. (1984) carried out a meta-analysis of the relationship between health and SWB that confirms the link between the two. Gerdtham and Johannesson (2001), using Swedish microdata show that happiness increases with health, and Oswald and Powdthavee (2008) show that happiness decreases with the lack of health, such as disability. The evidence of the effects of a lack of physical health on mental health is very wide, although, as we will see next, the relationship between physical health and mental health is quite complex, with causality running in both directions.

There are several reasons why subjective well-being may affect physical health, for a review on the mechanisms see Veenhoven (2008a). For example, stress can, in the long run, cause hypertension and lead to heart disease, and constant or even irregular exposure to stress hormones can eventually induce illnesses by weakening the body’s immune system (McEwen, 2000; McEwen and Stellar, 1993). Untreated depression is a cause of much unnecessary suffering, and effective treatment has been shown to decrease disability, prolong survival, and increase quality of life (Goldberg, 2010). It is worth noting that not only does the lack of mental health cause physical problems, but there is also evidence of high mental well-being helping to cure diseases (e.g. see Cohen et al., 2003; Kiecolt-Glaser et al., 2002).

While there is evidence showing that mental health (or the lack of it) can affect physical health, the evidence showing the reverse causal link is even more abundant, and the effects found were very substantive (see Goldberg, 2010, for a review). For instance, it is well known that the incidence of depression is much higher in those with physical

illness, e.g. in patients with a chronic disease depression is almost three times higher than normal (Egede, 2007; Moussavi et al., 2007). In fact some studies have observed depression following diseases that are quite exogenous, giving credibility to the causal connection between physical illness and mental illness (Egede, 2007; Moussavi et al., 2007). Moussavi et al. (2007) for instance found that patients with two or more chronic physical disorders experienced a prevalence of depression of 23%, whereas healthy controls only reported depression in 3.2% of cases (see also Scott et al., 2007).

Two population-based studies found that physical illness was a risk factor for the later development of depression (Patten, 2001; Smit et al., 2004). Both studies took large samples of individuals who had been free of depression at baseline. After 1 or 2 years, around 3% of them did experience depression, and this development was well predicted by a wide range of physical illnesses, such as hypertension, asthma, arthritis and rheumatism, back pain, diabetes, heart disease and chronic bronchitis, migraine, respiratory or abdominal problems. Similar results have been found in clinical populations the year after the diagnosis of cancer (Burgess et al., 2005) and after first hospitalisation with a heart attack (Dickens et al., 2004). Both are associated with a particularly high rate of new onset of depression or anxiety of approximately 20%. There is also consistent evidence for depression being a consequence of coronary heart disease, stroke, and HIV/AIDS (Prince et al., 2007).

Some of the reasons why chronic physical disease causes depression is due to the effects of pain and the risk – and probably fear – of disability. For instance, Dworkin et al. (1990) and Korff and Simon (1996) show that the amount of pain is directly proportional to the prevalence of depression. Prince et al. (1998) and Ormel et al. (1997) show that chronic physical illness carries the risk of disability, which can be very depressing for healthy adults. In other cases, the link between physical health and depression is more direct and unnoticeable for the individual, like left-sided cerebral ischaemia resulting from stroke (Rittner et al., 2003).

### **3.3.2 Feeling safe and happy**

The importance of feeling safe, i.e., not at risk, for feeling well, also seems quite obvious however, and probably because not feeling safe is rare in many countries, there is less empirical evidence of this connection than there is about the connection between health and SWB. The link between safety and happiness becomes very obvious when one thinks about the EEA – Environment of Evolutionary of Adaptation – where being alert and preventing risks, feeling safe in other words, determined survival. For this reason we have been ‘designed’ to experience negative emotions if we feel at risk (Fredrickson, 2001). This is why we expect to find a strong relationship between feeling safe and SWB, perhaps with more connection to negative affect than with positive affect.

Welsch (2008), for instance, explores the consequences of civil conflict on happiness using cross-national data. The paper finds that the number of conflict victims and their change over time significantly affect subjective well-being directly through health but also through psychic effects. At the micro level we also find evidence of safety and SWB being connected. Gilbert et al. (2008) used a sample of 203 students in order to shed light on the ‘types’ of positive affect and they found that one of these types was related to safety feelings, and it was precisely this one that had the highest negative correlations with depression, anxiety and stress, self-criticism, and insecure attachment. Helliwell and Wang (2010) present new evidence linking trust and subjective well-being, based primarily on data from the Gallup World Poll and cycle 17 of the Canadian General Social Survey. Their results reveal strong linkages between trust and well-being. While ‘trust’ is not exactly the same as feeling safe, there is no doubt that the two are strongly related.

### **3.3.3 Unemployment, financial strain and subjective well-being**

Another group of variables that we will consider are variables that measure the labour market situation and financial situation of the individual. It is reasonable to expect that jobs foster SWB because they provide wages and an opportunity for feeling useful. Not surprisingly, the effects of unemployment – and its duration – on SWB have been well established in the literature (Burchell, 1990; Clark, 2006; Clark et al., 2001; Clark and Oswald, 1994; Eggers et al., 2006; Fryer and Payne, 1986; Gerlach and Stephan, 1996; Korpi, 1997; Murphy and Athanasou, 1999, are just some examples). Not only does unemployment lower well-being but it may do so to the point of causing depression. There is both cross-sectional and longitudinal evidence pointing at causality from unemployment to depression. Unemployed workers are twice as likely as their employed counterparts to experience psychological problems such as depression, anxiety, psychosomatic symptoms, low subjective well-being, and poor self-esteem (Paul and Moser, 2009). Bromberger and Matthews (1996) explored depressive symptoms in a sample of 541 middle-aged women. At baseline, non-employed women reported higher levels of depressive symptoms than employed women, but those decreased among non-employed women if they were employed at the later test.

Another set of studies that have given credibility to the effects of unemployment on SWB is provided by studies where self-selection plays a much smaller role because in those studies the cause of job loss was a great recession. An example of this for the US is found in Zuckin et al. (2011), and Deaton (2012), that found the economic crises has had only a small and relatively short-lived effect on life satisfaction. In Europe, there are two studies that do something similar, one is Russell et al. (2013), which explores the effects of the recent economic crisis on life satisfaction using the ESS data. The other is Walsh (2011),

using Eurobarometer data, which found that mean life-satisfaction declined across the 29 countries. Perhaps the severity of the crisis in Europe – especially in some countries – compared to that experienced in the US could explain why the effects on life satisfaction for the US were milder.

Thus, to sum up, the link between unemployment and reduced SWB has been demonstrated repeatedly in both longitudinal and cross-sectional frameworks (see McKee-Ryan et al., 2005; Paul and Moser, 2009, for recent reviews). Some of this literature suggests that the primary role in the distress experienced by the unemployed is financial strain (Gallie et al., 1994; Russell et al., 2013; Whelan, 1994), although there seem to be other factors. Many studies have consistently found the incidence and persistence of depression to be higher among persons with low incomes (e.g. Bartley, 1994; Dooley et al., 1996; Janlert, 1997), but causal mechanisms for this relationship are not well understood. Zimmerman and Katon (2005), using longitudinal data, show that that employment status and financial strain are causally related to depression, but income is not. In other words, income matters for negative emotions to the extent that it means that individuals experience economic strain but having more income than necessary does not. Whelan and McGinnity (2000) also found that measures of material deprivation and financial strain are more strongly associated with well-being than income, and Kahneman and Deaton (2010) found, for the US, that high incomes do not affect emotional well-being (although it does seem to affect life satisfaction).

### **3.3.4 Social life and subjective well-being**

The importance of social needs may be, in principle, less intuitive than that of health or safety; but, we are social animals and we do need social interaction with other human beings. Evolutionary psychology makes clear why this is so. In a nutshell, human beings need to cooperate with other human beings in order to survive and reproduce and probably for this reason we have been ‘designed’ to enjoy social contacts (Grinde, 2002a). Therefore, it does not come as a surprise that researchers have found that social relations or social contacts of different kinds are related to SWB (see Helliwell et al., 2004, for a review), and the lack of them or the lack of successful social contacts brings problems (Tooby and Cosmides, 1996; Williams and Nesse, 1994, both cited in Hill and Buss 2008).

It has been well known since the 1970s that one of the specific mechanisms by which social contacts or social support prevent mental problems is because they act as moderators of negative life events. This is known as the ‘stress-buffering hypothesis’ and was proposed simultaneously by Cassel (1976) and Cobb (1976) in the late 1970s. Many studies have given support to this theory since then (Cohen and Wills, 1985; Leavy, 1983; Schwarzer and Leppin, 1991, among others). See also Umberson et al. (1996), Kessler et al. (1988) and more recently McKee-Ryan et al. (2005). Although most of the litera-

ture, such as that on the stress-buffering hypothesis, has focused on the effects of social support moderating the negative consequences of negative life events, social life seems to have an even greater relationship with positive affect than with negative affect – at least in more or less healthy individuals (Schimmack, 2008). Some examples of this are studies that have looked at the beneficial effects of having a partner (Coombs, 1991; Gerdtham and Johannesson, 2001; Kalmijn, 2010; Kohler et al., 2005; Stack and Eshleman, 1998; Zimmermann and Easterlin, 2006).

## 3.4 DATA

### 3.4.1 The subjective well-being measures

SWB is a combination of life satisfaction and the relative frequency of positive and negative affect (Diener, 1984). It is very controversial whether the responses to the life satisfaction questions can be compared across countries because they are very vulnerable to cultural influences.<sup>5</sup> This is why this chapter will focus on positive and negative emotions. The data used in this analysis comes from the European Social Survey (ESS), a repeated cross-sectional survey conducted in more than 30 countries between 2002 and 2012. The ESS conducts face-to-face interviews that aim at being representative of the residential population aged 15 years and above. For the current analysis we will only consider people between 30 and 60 years old that have a job or had one in the past since social class is the key independent variable and it settles at age 30 (Erikson and Goldthorpe, 1992). This means that people that never entered the labour market will be excluded from the analysis. This could be a limitation since people that never entered the labour market are probably among the most disadvantaged members of society. However, as we will see shortly, they are much less prevalent than one might expect.

The ESS has been collecting information on life satisfaction and happiness since its first round in 2002. But in the third round – in 2006 – a special module was introduced to measure SWB comprehensively and with greater reliability. The module was repeated in 2012, retaining many of the key features of the module’s design, hence, allowing for a very interesting comparison between the two time periods. The questions of the module that most interest us here are described in detail below.<sup>6</sup>

The items of the questionnaire measuring positive and negative emotions are in essence the Center for Epidemiologic Studies Depression Scale (CES-D), in particular the 8-item depression measure developed by Radloff in the late 1970s (Radloff, 1977), plus some additional items. The CES-D scale is a short self-report scale designed to measure depressive symptomatology in the general population, and, hence, it focuses on negative states. The extra items added tried to capture other aspects – mostly positive – that were absent in Radloff’s scale, such as the degree of arousal experienced – and not just direction of affect – as well as extent of vitality, and thus they provide a broader picture of emotional experiences (see European Social Survey, 2013). The CES-D questionnaire has been used widely (e.g. Huppert et al., 2009) and its validity and reliability extensively assessed. The most recent study in this regard is Van de Velde et al. (2010), which assessed the factorial invariance of these items cross nationally using the 2006 SWB module of the ESS, and

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<sup>5</sup>For a more extended discussion on this see the introductory chapter.

<sup>6</sup>For more details see the module proposal of the repeated module European Social Survey (2013), available at: [http://www.europeansocialsurvey.org/methodology/questionnaire/ESS6\\_rotating\\_modules.html](http://www.europeansocialsurvey.org/methodology/questionnaire/ESS6_rotating_modules.html)



Figure 3.6: Positive and negative emotions questions in the 3rd and 6th round of the ESS

*I will now read out a list of the ways in which you might have felt or behaved in the past week. Please tell me now how much of the time during the past week*

1. ... you felt depressed
2. ... you felt that everything you did was an effort
3. ... your sleep was restless
4. ... you were happy
5. ... you felt lonely
6. ... you enjoyed life
7. ... you felt sad
8. ... you could not get going
9. ... you had a lot of energy
10. ... you felt anxious
11. ... you felt calm and peaceful

Response code: 0-none or almost none of the time, to 3-all or almost all of the time.

concluded that CES-D scores can be compared across countries. Although the different items have a different weight in the score in different countries, meaning that separate items cannot be used to compare negative emotions across countries, the summary score can be compared.<sup>7</sup>

Figure 3.6 shows the questions that individuals were asked in both the 3rd and 6th round of the ESS. The first 8 items are the short version of the CES-D questionnaire and the other items (9 to 11) were added by the research team that developed this module. Using these questions, this chapter will build two measures of emotions, one positive and one negative. The measure of negative emotions is just the CES-D score, and the measure of positive emotions is obtained by averaging the answers to the items that capture positive states. While the validity, reliability and comparability of the measure of negative emotions – the CES-D score – is well established, it is yet to be seen whether the average of the positive emotions items can be compared across countries – although some have already used it without major concerns (for example Huppert et al., 2009). However, we believe it is an interesting measure and worth looking at as well.<sup>8</sup> The main analysis

<sup>7</sup>We are extremely grateful to Piet Bracke for his clarifications on the comparability of CES-D scores.

<sup>8</sup>Note that while the PA score only contains questions that ask about the frequency of positive emotions, the CES-D score includes 2 items that ask about positive states. In principle we would just use the items that ask about negative states to capture NA but we will stick to the CES-D score for two reasons. First, the results do not change when we build the NA measure using only the 7 negative items, and second, and more importantly, because the validity of the CES-D score is very well established,

will treat these two scores of positive and negative emotions as continuous variables. However, we are also interested in capturing changes around the relevant thresholds that depict depression. An individual is considered to have depressive symptomatology if he or she, has a CES-D score  $> 1$ , or a PA score  $< 1$  (Huppert et al., 2009; Van de Velde et al., 2010).

Table 3.1: Summary statistics of positive and negative affect

Variable	Mean	Std. Dev.	Min.	Max.	N
Positive Affect (PA)	1.79	0.64	0	3	42,987
Negative Affect (CES-D)	0.71	0.50	0	3	43,071
CES-D $> 1$ (%)	20.8	40.6	0	100	43,071
PA $< 1$ (%)	17.0	37.5	0	100	42,987

Source: The European Social Survey, 3rd round of data. Country weights have been used.

Only individuals with a valid answer in most of the items were considered in the analysis. This meant individuals with a maximum of 1 missing value, out of 4, in the positive affect questions, and a maximum of 2, out of 8, for the negative affect questions. This way of dealing with missing values is standard in the literature (Van de Velde et al., 2010). Table 3.1 shows some summary statistics of the two dependent variables of this paper, PA and CES-D score, as well as for depression using the former two scores. If the reader is interested in seeing those for each country and social class, see Table A35 in the appendix, on page 218.<sup>9</sup>

This paper considers only individuals that have a social class, that is, people that either work at the time of the interview or that have worked at some time in the past. Given the purpose of this study we may be concerned about the individuals that we exclude by doing so. This is a concern for two reasons. One the one hand, because those excluded may be the most disadvantaged and therefore interesting for us. On the other hand, because if they are many and the proportion varies a lot across countries, the cross-country comparison becomes less interesting. However, the proportion of individuals in that age range (30-60) that did not have a social class is below 5% in all countries with the exception of Cyprus (7%), Spain (5.4%), Israel (5.2%), Portugal (5.5), and Kosovo (almost 40%). Excluded individuals are in most cases women with a low level of education, whereas that of the average of the negative items is not. Again, we thank Piet Bracke for his advice on this.

<sup>9</sup>If only individuals with no missing values at all were considered in countries like Russia, Bulgaria, Estonia, Ukraine, Czech Republic, Kosovo or Hungary, the proportion of missing values would reach 10%. In this way we reduce the proportion of missing values, which goes down in the former countries to below 5% in all cases with the exception of Russia for PA in 2006, where the proportion of missing cases is 6.2%. In Hungary, one of the PA items was not asked, and therefore requiring that all questions are answered would automatically exclude Hungary from the PA analysis.

although this is more the case in some countries than others. In any case I think there is no reason for concern since, with the exception of Kosovo (which is excluded from the analysis), the proportion of individuals without social class is very low.

### 3.4.2 The explanatory variables

The key independent variable is social class, which is measured with three dummies: *upper*, *middle* and *lower*. Table 3.2 shows how the EGP categories have been aggregated. In the regression, the dummies *upper* and *middle* are included, and the lower class is the reference category. Therefore the coefficient of *upper* captures the difference in emotions – positive or negative – between the upper and the lower class, and the coefficient of *middle* captures the differences between the middle and the lower class. Table A4 in the appendix (page 181), shows the size of each class for all countries included in the analysis.

Table 3.2: EGP Social Class Scheme (1979)

Upper class	Higher controllers
	Lower controllers
Middle class	Routine non-manual
	Self-employed with employees
	Self-employed with no employees
	Self-employed farmer
Lower class	Manual supervisors
	Skilled manual
	Semi-unskilled manual
	Farm labour

The other independent variables try to capture the following five domains: health, safety, social life, employment, and financial hardship. The variables that have been used to measure each are described next briefly. Health is measured using two variables: self-reported health and how hampered the individual is. Self-reported health takes on 5 possible values: ‘very good’, ‘good’, ‘fair’, ‘bad’ and ‘very bad’ (the dummy *fair* will be the reference category). *Hampered* tells us whether the individual is hampered ‘to some extent’ or ‘a lot’, or ‘not at all’ in their daily activities. Safety will be measured with two variables. The first one measures how safe the individual feels walking alone in their local area after dark. There are 4 possible answers ‘very safe’, ‘safe’ (the reference category), ‘unsafe’, and ‘very unsafe’. The other variable is *Assault*, a dummy variable equal to 1 if the individual was assaulted during the last 5 years, and 0 otherwise.

In order to measure the quantity and quality of social life, the following variables are used. *Partner* is a binary variable equal to 1 if the individual lives with a partner.

*Intimate* is a dummy variable equally to 1 if the individual reports having someone to discuss intimate and personal matters with. There is another variable that measures the frequency of social meetings. There are four possible answers: ‘less than once a month’, ‘once a week’, ‘several times a week’ (the reference category), and ‘almost every day’. The labour force situation of the individual is measured with two dummies, *unemployed* and *out of the labour force* (the reference category are employed individuals). There is a variable that measures the duration of past unemployment spells. It will be used to proxy security of employment. Two dummies have been created: *unem\_short*, equal to 1 if the individual spent between 3 and 12 months in unemployment at some point in the past, and *unem\_long* if the individual spent more than 12 months. The reference category is individuals that have experienced unemployment for less than 3 months (individuals that have not experienced unemployment are included here). Finally, financial hardship is measured with a variable that captures feelings about household income. The possible answers are: ‘comfortably’, ‘coping’ (the reference category), ‘with difficulty’, and ‘with great difficulty’. The distribution of all these variables can be found in the appendix in Tables A10 to A15, on pages 187 to 192.

### 3.5 EMPIRICAL STRATEGY

Guided by livability theories (Grinde, 2002a; Veenhoven and Ehrhardt, 1995), several groups of variables whose relationship to SWB is supported by existing research (as it shown the literature review section) have been selected. Those factors are physical health, safety, social life and unemployment and financial struggle. To the extent that the former are dependent on class position, they can also be interpreted as mediating variables for the observed class gap in emotions. In order to understand where the class-based SWB comes from, a multilevel model is run so that positive and negative emotions at the individual level are explained by the former individual level variables.

In particular, in the model individuals will be nested in countries where the dependent variable will be the PA score and the CES-D score, and the independent variables social class, and the ones just described. We will estimate the model with random slopes for social class since we want to allow the difference between upper and lower class to vary across countries. Then the other variables that may be mediating the ‘effect’ of social class on SWB will be added, and we will observe what happens to the coefficient of class when we do so. Moreover, we perform a decomposition in order to establish which part of the observed country differences in the SWB class gap are due to composition effects (i.e. difference incidence of the mediating variables) or to slopes effect (i.e. differential effects of the mediating variables) in the various countries.

Many things changed for many individuals in that period, and to the extent that the rise in unemployment and in financial hardship can be considered exogenous, we are able to draw more credible conclusions about the effects of those variables on emotions. We will also describe how the crisis has affected different countries, how depression rates have gone up in some countries but not in others. We will also explore how the emotional costs of the crisis have distributed across social classes.<sup>10</sup>

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<sup>10</sup>Initially, regressors at the country level were also included, such as GDP per capita or the Gini index of rates of economic growth. Since none of them had any effect once individual level variables were included, they were eventually abandoned.

## 3.6 RESULTS

The results section will start by first showing that there is indeed a difference in health, safety, social life, employment, and economic situation by class; and second, the existence of an strong correlation between the former and positive and negative emotions. After showing this, we will proceed to the regression results and see what has happens to the ‘effect’ of class when the selected regressors are included in the model. Afterwards, a decomposition analysis is carried out in order to understand clearly the contribution to the gap that each group of variables make. The results section concludes the discussion of the likelihood of making a causal interpretation of the estimates by describing the changes in emotions between 2006 and 2012.

### 3.6.1 Exploratory analysis

Table 3.3 shows two things. One the one hand (the left-hand side), that class correlates with health, safety, social life, employment and income, and on the other hand (right-hand side), that the former variables also correlate with SWB since there is a higher prevalence of depression among individuals that do not have, or have less of the former things. The first 3 columns show that the distribution of  $X_i$  depends, in a non-negligible way, on social class. In other words, there is an important correlation between social class and social life, employment, health and so on. The last two columns show that health, social life, etc. are strongly correlated with the experience of negative emotions. For instance, the first row for *haves* captures the proportion of depressed individuals among individuals that have a partner, and the *have nots* column gives the proportion of depressed individuals among individuals that do not have a partner. This is why the total of *haves* and *have nots* is not 100.

It is clear from looking at Table 3.3 that in all five domains, lower-class individuals are less successful than the upper class, and middle-class individuals lie somewhere in between the other two. For instance, 83.7% of upper-class people have a partner versus 79.4% and 75.6% of middle and lower class respectively. With regards to safety feelings, 83.1% of upper-class people felt safe versus 78.0% of lower class. Similar patterns are observed for health, employment, and feelings about household income. It is worth highlighting, however, that although there are differences across classes in all five domains, those are larger, or rather take place at higher levels, for some needs than for others. For instance, although there is a gap in terms of friendship between upper- and lower-class individuals, lower-class individuals (as well as middle-class people) enjoy a relatively high level of social life (note that 91.8% of lower-class individuals have social meetings at least once a week). Whereas regarding income difficulties, almost 40% of lower class people report experiencing difficulties to live on their present income.

The right part of the table shows that all these variables that are unequally distributed

Table 3.3:  $Class \rightarrow X_i \rightarrow SWB$ 

$X_i$	Proportion(%)			Depression(%)	
	Upper	Middle	Lower	Haves	Have nots
Partner	83.7	79.4	75.6	16.5	30.9
Intimate	74.2	73.7	70.5	19.0	42.1
Friends	96.3	94.7	91.8	17.5	31.6
Safety	83.1	77.0	78.0	16.9	33.8
Trust	68.7	53.4	44.7	13.4	29.6
Health	95.5	92.0	87.7	12.5	61.7
Hampered	17.5	20.3	25.2	38.3	15.6
Employed	86.9	78.1	70.8	16.5	34.8
Long term unem.	10.3	18.1	25.0	33.5	17.7
Financial strain	15.4	27.6	39.5	39.3	13.5

The first three columns show that the distribution of  $X_i$  across classes. The last two columns aim at showing that the  $X_i$  – health, social life, etc. – affect subjective well-being by showing the prevalence of depression for *haves* and *have nots* of each  $X_i$  – health, social life, etc.

across social class seem to have an important impact on well-being. In this case, we consider depression rates for ‘haves’ versus ‘have nots’. For instance, with regards to long-term unemployment, the ‘haves’ column shows the proportion of individuals with depressive symptoms among those that have experienced long-term unemployment, and the ‘have nots’ column gives the percentage among those that have not experienced long-term unemployment. As expected, depression is much more present among those that have experienced long term unemployment, 33% versus 17%. Similar patterns are found for the other variables. It is worth noting that the largest depression rates are found among individuals that report having bad health (above 60%!), among those that report being hampered to some extent in daily activities (38.3%), among those who do not have someone to discuss intimate matters with (42%), and among those that experience income difficulties. Looking at Table 3.3 it seems quite plausible that the differences in emotions among classes are explained by the differences in the former 5 domains.<sup>11</sup>

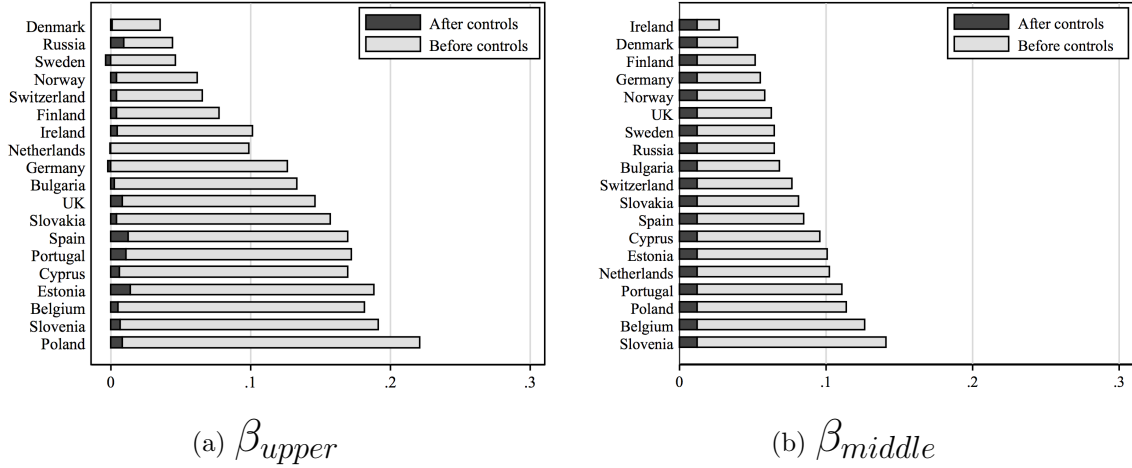
### 3.6.2 Regression analysis

The results of the regression analysis are presented next. Remember that the empirical strategy was to compare two models, one where social class is the only variable, on the right-hand side, and another one, where in addition to social class all the variables discussed so far are added, which we believe mediate the effect between class and SWB.

<sup>11</sup>There are also differences in the expected direction in terms of PA but for brevity they are not included here.

In both models we would allow the effects of social class –  $\beta_{upper}$  and  $\beta_{middle}$  – to vary across countries, and our expectation is that the class coefficients will converge towards zero in the full model. Table A27 in the appendix (page 193) shows the regression output, and Figures 3.7 and 3.8 displayed here show the –  $\beta_{upper}$  and  $\beta_{middle}$  – before and after controls for each country. Remember that the reference category is the lower class.<sup>12</sup>

Figure 3.7: The effect of class on negative emotions



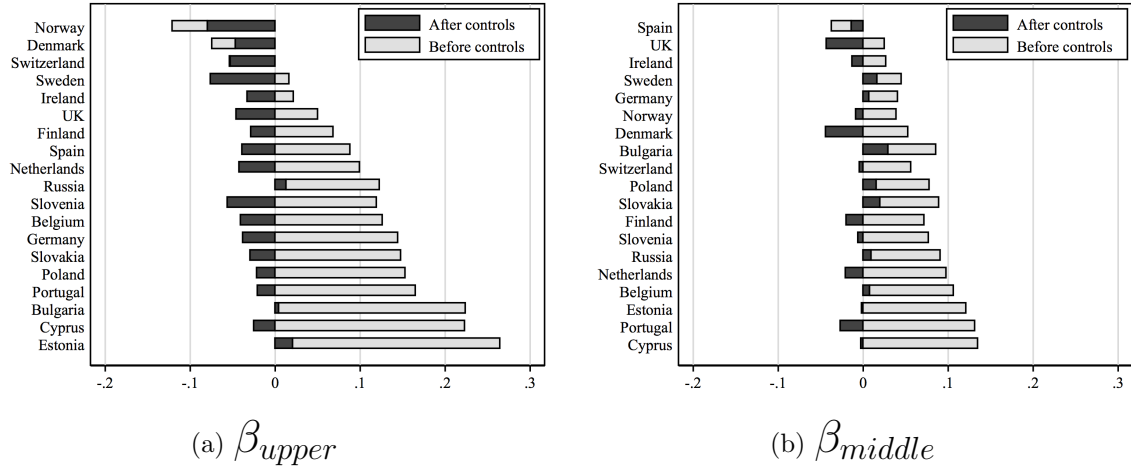
These graphs show the  $\beta_{upper}$  and  $\beta_{middle}$  from the regression model, where the reference category is the lower class. The gaps shown have been reversed to avoid negative values. In other words, the gaps shown in this Figure tell us how much more negative emotions do lower class people compared to upper class individuals (Figure 3.7a) and to middle class individuals 3.7b respectively.

The light grey bars capture the size of the differences in emotions between classes before controls, and the black bars show the class differences remaining after controls. For instance, in Spain the average gap in the CES-D score between the upper and lower class is approximately 0.16 (with the lower class having the larger score), and this gap goes down to practically zero after controls. Countries are ordered according to the size of the class effect before controls. In Figure 3.7 it can clearly be seen that once we control for health, safety, social, labour market and income variables, upper- and middle-class individuals do not seem to experience negative emotions any more frequently than lower-class individuals. Note that the black bars are practically zero in all countries, especially for the differences between the middle and lower class (Figure 3.7b). Differences between upper- and lower-class individuals in CES-D are also quite successfully explained, although not as well as  $\beta_{middle}$ , see Figure 3.7a. There are some countries where some effect remains, for example in the Czech Republic, Estonia and Spain some effect remains even after controls, although the size of the coefficient in those cases is too small (and statistically insignificant). In the regression table (Table A16, on page 193) we see that all the coefficients have the expected signs.

<sup>12</sup>Running separate models for each round was also attempted but since there were no differences between the two all the observations were pooled.



Figure 3.8: The effect of class on positive emotions



These graphs show the  $\beta_{upper}$  and  $\beta_{middle}$  from the regression model, where the reference category is the lower class.

It is worth mentioning that in some countries the ‘effect’ of being upper class – the  $\beta_{upper}$  – has a negative sign, suggesting that in those countries, after controls, lower-class individuals would experience less negative emotions than upper-class individuals. Although these differences do not happen to be statistically significant, and perhaps they would disappear if we added more regressors, I think it is also important to allow for the possibility of lower-class individuals being advantaged in some respects. For example, the jobs performed by the upper class are, in general, more stressful than those performed by the lower class. This could explain why lower-class individuals, after controls do experience less negative emotions than upper-class people. However the main message seems to be that, in most aspects, being lower class is a disadvantage (much more in some counties than in others). These results support the idea that the reason why lower- and middle-class individuals experience negative emotions more often than upper-class people is because they have worse health, less jobs, more financial hardship and so on.

The model is however much less successful in explaining differences in positive emotions across social classes (see Figure 3.8). The model explains some but not all variations. On some level this makes sense if we recall all the literature on the relative independence of positive and negative affect. If PA and NA are indeed independent we could never explain them both very successfully with the same variables, although the coefficients for the different explanatory variables are allowed to vary (and they do in fact vary, see Table A16), it makes sense to think that if these variables can explain NA very well, they will probably not explain PA that well. And this is in fact what seems to be happening. This means that we will need to work harder in the future to discover what makes up for those differences. However, I want to highlight once more the possibility that there may be aspects, in which the lower class is advantaged over the upper class. In fact, this is

what the large negative gaps found in Figure 3.8 seem to suggest.

### 3.6.3 How much does each group of variables explain?

So far we have seen that the five groups of variables explain the differences in negative emotions found across classes. One may wonder, however, how much each of these groups of variables is explaining. Table 3.4 tries to answer that by showing how the different domains contribute to the class-based gap in negative emotions. In particular the decomposition is carried out for negative emotions only since the gap in those is the one that this chapter seeks to explain. Note also that the decomposition has been made for the gap between the upper and the lower class.

Income and health explain most of the gap. Note that those two alone explain 76% in all countries on average. The next most important domain – although by some distance – is employment – which explains 14.3%. This is consistent with the literature that has argued that the primary role in the distress experienced by the unemployed is financial strain (Gallie et al., 1994; Russell et al., 2013; Whelan, 1994). The next most important factor in terms of average contribution to the gap is social life and then safety, which explain 7.0% and 2.6% respectively. There is some variation across countries but not much, note that the standard deviations that are quite low for the domains explaining most of the variation. This also means that in terms of health, income, and employment, the upper class is always doing better than the lower class whereas in other aspects such as safety, in some countries like Estonia, lower-class individuals do better than upper-class individuals.

Thus, to conclude we can say that differences in negative emotions across classes are mainly due to differences in health and financial strain (and employment, since this is probably the cause of financial strain). This is clear from looking at Table 3.4. However, what is less evident in that table is why social variables, for instance, play a smaller role. We can see that they are more equally distributed across classes, but what this table does not show is that those aspects are as important as the former for NA. To make that clear, we just need to look again at the second part of Table 3.3, at the beginning of this section, which showed clearly how all variables were strongly correlated with depression. Figure 3.9 tries to make that clear by summarising the level of ‘need satisfaction’ for each domain across classes.

Figure 3.9 shows that there is almost a 20 percentage points gap between upper and lower class in terms of health, financial situation, and employment. Whereas social life and safety feelings are much more equally distributed across classes and quite well satisfied for all. Note that the proportion of people with a good enough social life is above 90% for all classes. Safety needs, are somewhat less well satisfied – around 80% – but quite equally distributed across classes. These figures vary a bit across countries, for

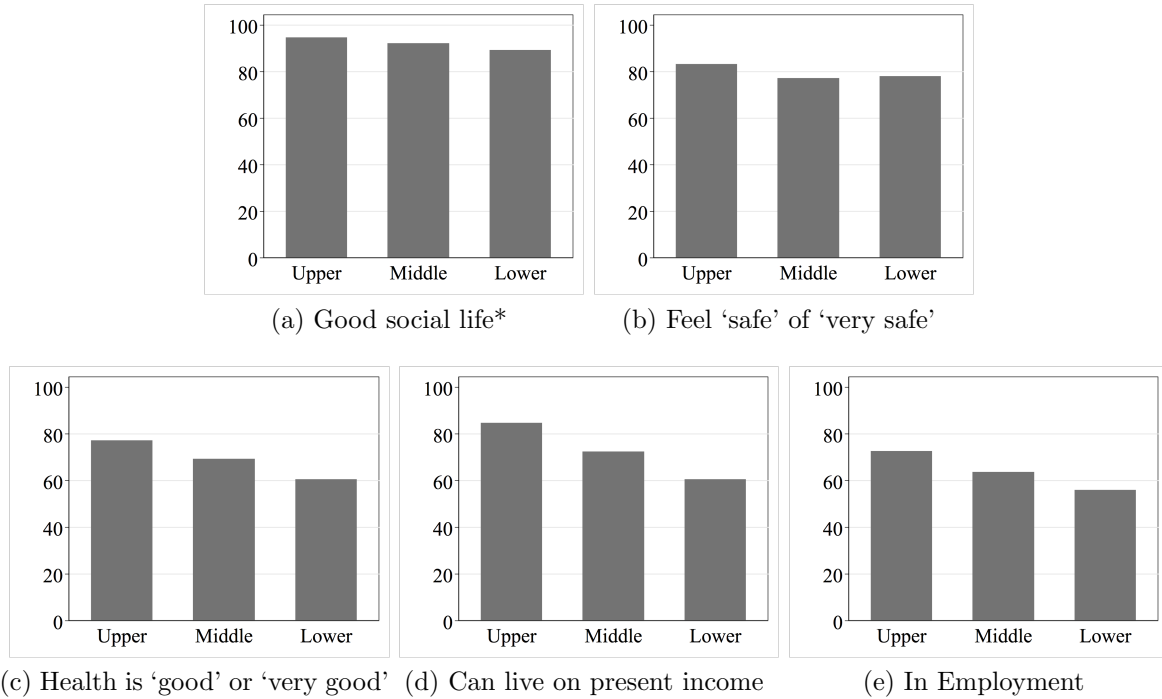
Table 3.4: Contribution of each group of variables to the class gap in negative emotions

Country	Contributions(%)					Total
	Social	Safety	Health	Labour	Income	
Belgium	6.3	1.8	31.8	14.7	45.4	100.0
Bulgaria	1.0	5.6	27.7	11.7	54.0	100.0
Cyprus	4.0	0.5	29.9	12.7	52.9	100.0
Denmark	7.0	10.6	37.2	10.0	35.2	100.0
Estonia	6.4	-8.0	36.1	15.1	50.5	100.0
Finland	6.2	4.1	37.0	14.4	38.2	100.0
Germany	8.4	17.4	27.6	10.7	36.0	100.0
Ireland	6.6	3.8	26.9	14.7	47.9	100.0
Netherlands	7.1	13.4	25.7	11.1	42.6	100.0
Norway	6.8	3.6	39.6	12.6	37.5	100.0
Poland	8.0	-2.4	31.0	16.9	46.5	100.0
Portugal	4.9	-5.1	30.2	13.5	56.5	100.0
Russia	7.6	-3.9	25.9	16.0	54.4	100.0
Slovakia	3.6	4.0	35.6	12.5	44.3	100.0
Slovenia	6.1	-0.3	36.3	12.1	45.8	100.0
Spain	4.9	-7.4	32.4	12.9	57.1	100.0
Sweden	6.3	20.2	25.8	10.1	37.7	100.0
Switzerland	6.6	3.4	29.1	12.3	48.6	100.0
UK	7.6	-2.0	29.7	14.8	49.9	100.0
Total	6.1	3.1	31.3	13.1	46.4	100.0
Mean	7.0	2.6	27.8	14.3	48.3	100.0
SD	10.8	7.3	12.6	3.7	12.6	0.0

Note: To approximate the contribution of each group of variables, we simply compare the upper class coefficient of two models: (1) the full model, and (2) the full model without the variables whose contribution we want to assess (call this A). We would do this 5 times, one for each group of variables. Then we add up the former differences (call this B). The contribution of each group of variables would then be equal to  $(A/B)*100$ .

instance, in the UK, there is a difference of 13.6 percentage points gap in health and a 10 points gap in financial strain between upper and lower class people, whereas the social and safety gap is below 5 percentage points. In Sweden however, the gap between upper and lower class individuals is around 5 points or below in all domains. In consequence, while in the UK there is a 12 point difference in depression between upper and lower class individuals, in Sweden is of just 4 points.

Figure 3.9: Class-inequality in health, safety, social life, income, employment.



Each bar within each Figure shows the proportion of individuals within each social class that have the need in question, sufficiently satisfied. For instance, health is considered to be satisfied when the individual reports a level of health that has a low level of expected depression associated to it. For instance, in the case of *social life*, 'Good social life' means that the individual has at least two of the following three items: a partner, someone to discuss intimate matters with, meets with his/her friends once a week or more. It turns out that having at least two of the former three items predicts a low level of negative emotions.

### 3.6.4 Financial crisis and the emotional gap

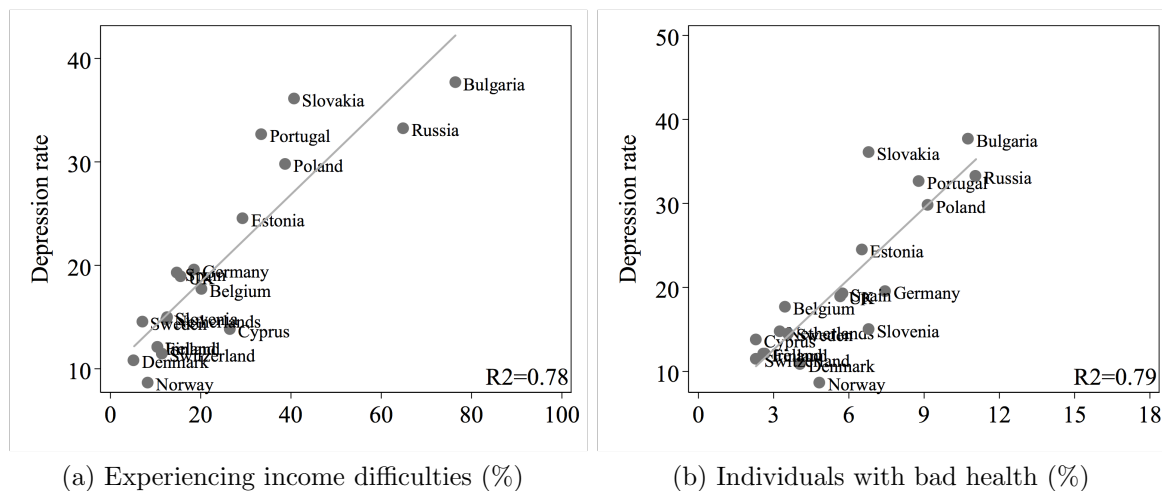
Negative emotions seem to be the result of social life, safety, health, employment and income. Hence, differences across nations, or individuals within a nation, in levels of NA are explained by how well the former domains are satisfied. For instance, the reason why in Norway or Finland the frequency of negative emotions is lower than that of Spain or Portugal is simply that, in the former, individuals score better in terms of health, social life, employment and so on.<sup>13</sup> The same explanation applies to explain class differences in the experience of negative emotions that are observed within countries. Can we conclude from the former that if governments want to reduce class-based inequality in negative emotions, they should focus on reducing health and income differences across classes?

The cross-sectional nature of our data obliges us to be cautious about causal statements. The credibility of our story relies on being able to make a causal interpretation of the coefficients. In other words, we need to assume that the effect obtained for unemployment or income difficulties on NA are capturing a causal relationship. In other words, being unemployed and or experiencing difficulties to live on present income do

<sup>13</sup>These can be seen in Tables A10 to A15 in the appendix.

indeed cause an increase in the frequency of negative emotions. While this may seem quite obvious to most people, it could also be argued that causality runs in the opposite direction or that there is some unobserved factor that makes some people both more likely to be unemployed and to have a high CES-D score.

Figure 3.10: Need satisfaction and depression

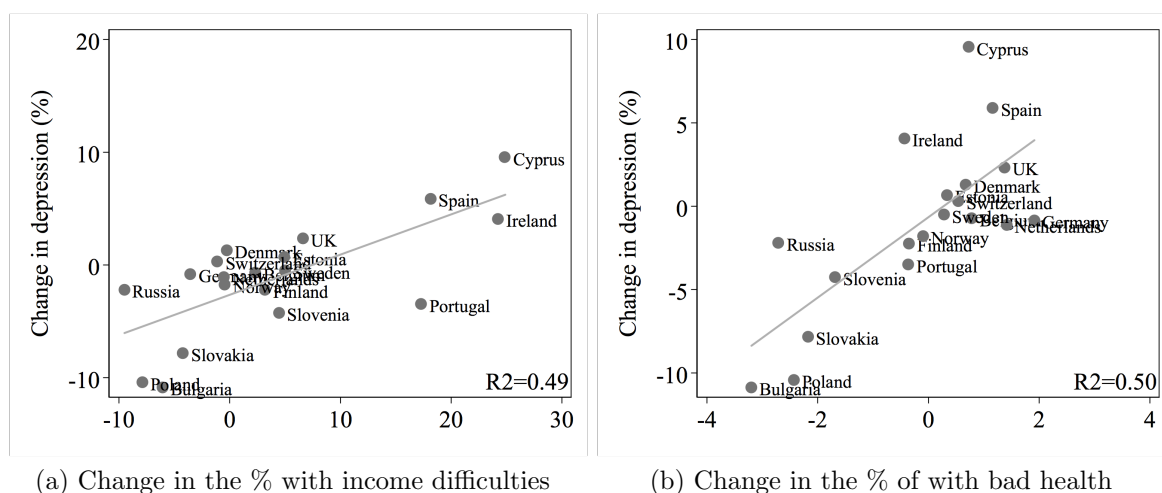


While this is possible, there are good reasons for giving some credibility to the story proposed in this chapter. These are essentially the following: (1) the existence of abundant research supporting the causal links between health and financial strain on SWB; (2) cross-country variation can be considered exogenous to individuals living in each country; and (3) the change in financial strain and unemployment produced by the economic crisis is also exogenous to individuals and produced the expected changes in emotion.

If we only had data for a single country, it would be hard to argue that unemployment or financial strain are causing higher CES-D scores. For instance, how can we ensure that Spanish people experiencing great income difficulties are not in that situation because they are somewhat problematic individuals and that makes them less likely to find good jobs and at the same time to have high levels of negative affect? We cannot be sure really. However, having several countries where the proportion of the population under financial pressure varies a great deal, would give greater credibility to the causal story between income difficulties and mental stress, since reverse causation is much less likely at the cross-country level. It does not make sense to argue, for instance, that the 30% unemployment level in Spain is due to the Spaniards being depressed.

This is in fact one of the strengths of this research. Using a multi-country dataset, in all countries we find the same: that individuals experiencing income difficulties experience negative emotions with greater frequency than individuals without such problems. In consequence, as Figure 3.10 shows, in countries with a higher proportion of individuals experiencing economic difficulties, depression rates are higher. See Figure 3.10a.

Figure 3.11: Changes in need satisfaction and changes in depression between 2006 and 2012.



Source: The European Social Survey, 3rd and 6th round of data. The countries included are the 19 countries that appear in both rounds.

Looking at Figure 3.10, it seems quite plausible that income difficulties really do have an effect on the experience of negative emotions. However, there is yet one more reason why this seems to be so, and that is that not only do we observe this effect when comparing countries with very different economic situations and backgrounds, but also those same countries at two points in times, specifically: right before and right after – or rather during – the financial crisis. Between 2006 and 2012 huge economic turmoil meant that in some countries, like Spain and Ireland, many jobs were lost and in consequence many more individuals and families than in 2006 experienced very serious financial difficulties. While this is very unfortunate, the period of economic downturn worked as a natural experiment that forced many people into economic pressures that they did not choose but that they experienced nonetheless. This offers an excellent opportunity for showing that the causal interpretation that we made seems to be correct.

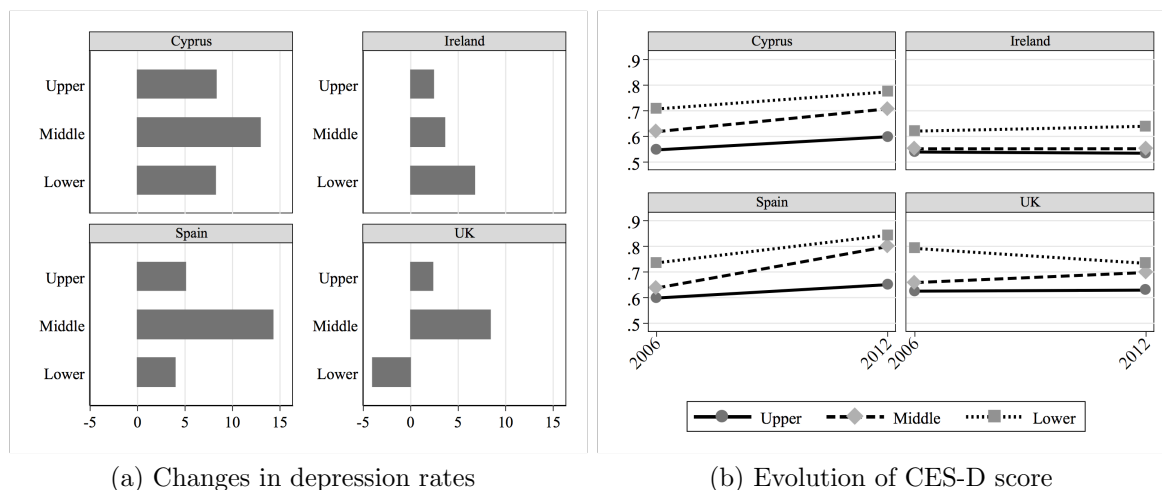
While Figure 3.10 shows the positive relationship between economic difficulties and depression, Figure 3.11, explores the relationship between changes in the former. Therefore we see that in those countries where income difficulties increased the most, so did depression rates (e.g. Spain, Cyprus and Ireland). For instance, in Spain, between 2006 and 2012 the proportion of people that experience difficulties went up by almost 20%, and depression went also up by 8% approximately (see Figure 3.11a). Similar stories occurred in Ireland and Cyprus (the same probably happened in Greece but unfortunately Greece did not take part in round 6 of the ESS). At the same time in places where the proportion of individuals facing financial strain went down, so did depression rates. This was the case of Poland and Bulgaria. Another point in favour of the causal story is that when separate models were run for 2006 and 2012, the data was pooled and just one model was run because there were no important changes in the coefficients. In particular, income

and unemployment seem to be equally strongly correlated with CES-D in 2006 – when there were many less individuals in unemployment, than in 2012 – when unemployment levels were much higher in some countries.

### 3.6.5 How has the crisis been distributed across classes?

In the previous section, a convincing case has hopefully been made for the causal interpretation of our results, that is, that class differences in negative emotions are mainly due to differences in health and financial strain. Now we will turn to how the changes in depression rates, and negative emotions more generally, that occurred between 2006 and 2012 have been distributed across classes. This brings us back to the initial question of this chapter, which was to study emotional gaps. We want to know whether those gaps have become wider or smaller as a result of the crisis and, as we will see, the answer is: it depends on the country we look at. To describe this, we focus on the 8 countries that have experienced the greatest emotional changes: the 4 that experience the greatest increase in depression – the ‘emotionally-unlucky’ countries, and the 4 that have experienced the largest decrease – the ‘emotionally-lucky’ countries. This exploration can be found in Figures 3.12 and 3.13. The remaining countries do not experience great changes overall, but for the interested reader, Table A17 in the appendix, on page 194 shows the distribution of changes in depression for all countries in the sample.

Figure 3.12: The consequences of the crisis among the ‘unlucky’ countries



The countries included in this figure are the ones that experienced the greatest increase in overall depression rates. In particular the increases were of 9.5 per cent in Cyprus, 5.8 in Spain, 4 in Ireland and 2.3 in the UK. For these countries we show in Figure 3.12b the increase in depression in each social class, and in Figure 3.12a the evolution of the CES-D score between 2006 and 2012.

If we order countries in terms of how much has depression increased among the population we find the following countries at the top: Cyprus (with a 10% increase approximately), Spain very close (around 6%), Ireland (4%), and the UK at some distance.

Figure 3.12a shows how the increase in depression has distributed across classes. Out of these four unlucky countries, Spain is the one where the increase in depression has been more unequally distributed across classes, with the middle class absorbing almost the whole increase (15% increase), followed by the upper class that experiences a 5% increase and the lower class, with a 4% increase. A similar pattern is observed in Cyprus, with the middle class absorbing the greatest part of the increase but this time, not so much more than the upper and lower class. In Ireland, however, the lower class is the one that has got worse, followed by the middle class, with the upper class experiencing the smallest increase. The UK is the strangest case because it is the only country of these four where one of the social classes – the lower class – has reduced depression rates in spite of the overall increase in the country. The middle class however bears most of the cost of the increase in depression, and the upper class experiences a much smaller increase.

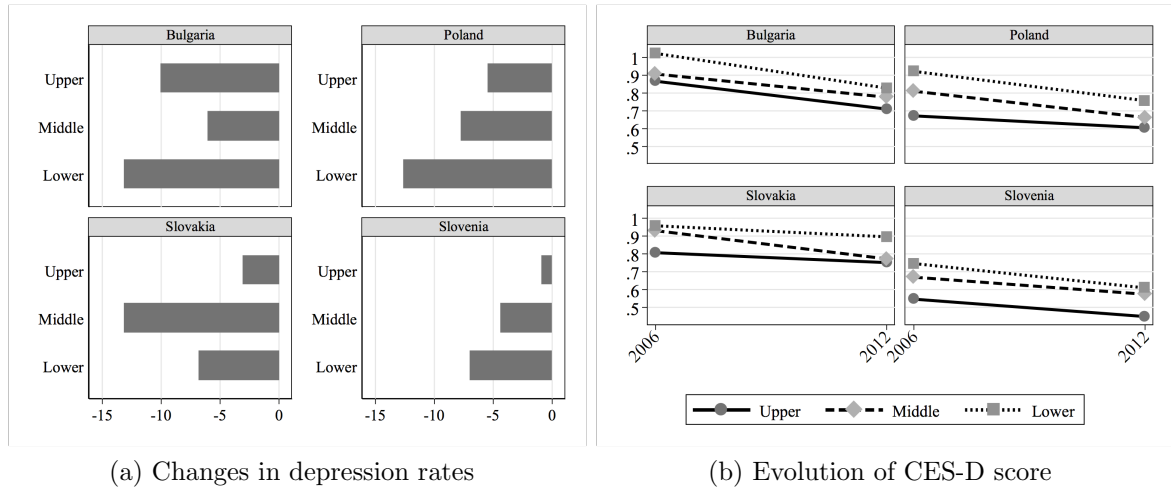
Figure 3.12b shows the same phenomena but looking at the evolution of levels in the CES-D score rather than depression rates. Note that the distance between the levels of each class are the emotional gaps. In an earlier version of this paper the analysis focused on the gap between the upper and lower class only. Ignoring the middle class was very unfortunate because, as we see, this is where most of the story takes place in countries like Spain or Cyprus.

Note that in Spain, for example, the levels of CES-D for the upper and lower class have both increased almost by the same amount and therefore the gap between those two would be almost the same as that in 2006. However, adding the middle class to the analysis explains why depression rates have gone up so much in Spain, because the middle class has increased NA so much that it has converged with the lower class. Something similar, although on a smaller scale, has occurred in Cyprus where the middle class has got close in levels of CES-D score to the lower class but not as close as in Spain. In Ireland the distance between the lower class and the middle and upper class has increased, whereas in the UK, the distances between classes have become smaller, although the middle class has got a bit worse and separated from the upper class, the improvement of the lower class has been substantive, almost reaching the levels of the middle class.

Among the countries that have become less depressed with the crisis, there is none where the upper class has experienced the greatest reduction (see Figure 3.13a). In fact, in Bulgaria for example, the lower class has experienced the greatest reduction in depression, followed by the upper class; and the middle class is the one that has improved the least. Poland is an even clearer case of reduction in distances between classes because the lower class has been the one benefiting the most from the reduction in depression, followed by the middle class, and the upper class has been the group that has improved the least. The exact same situation has occurred in Slovenia (although on a smaller scale) where the lower and middle class have improved more than the upper class. In Slovakia the upper class is the one benefiting less from the reduction in depression.



Figure 3.13: The consequences of the crisis among the ‘lucky’ countries



The countries included in this figure are the ones that experienced the greatest decrease in overall depression rates. In particular the reductions in depression were of 10.8 in Bulgaria, 10.4 in Poland, 7.8 in Slovakia and 4.28 in Slovenia.

To conclude we can say that in countries where things have got better, this improvement has come together with a reduction in emotional inequalities. In countries where things have got worse, the results are mixed, because it is mostly the middle-class people that are experiencing the greatest increase in depression, and only in one of these four countries has the lower class suffered the most.

### 3.6.6 Conclusion

Sociologists have worked extensively to understand differences in objective well-being between the most and the least privileged members of society. However, very little is known about how their feelings differ. This chapter aimed to shed light on this issue. First by showing that there are indeed important differences in emotions across countries and also within countries that are worth looking at and understanding. A first exploration of the data shows that in almost every country, individuals in the upper class systematically enjoy higher subjective well-being than individuals in the middle class – regardless of the measure we look at. That is, upper-class people experience positive emotions more often and negative ones less often than the middle class, and middle-class individuals are also better off than the lower class in terms of emotions. Although there is a lot of cross-country variation, the differences across classes are often of non-negligible size. Understanding why this is the case is important because SWB is an important life outcome that is unequally distributed over the population. To the extent that inequality in the distribution of SWB is class based, public policy can do something about it.

Using a special module of the ESS and pooling the data from 2006 and 2012, a multilevel model was estimated with individuals nested in countries that explained positive and negative emotions as a function of social class and the mediating variables between class and SWB: health, safety, social life and labour market status. The findings suggest that the differences in SWB between the upper and the lower class are mostly driven by differences in health and employment, and that the differences in the gaps across countries are due to differences in the differentials in those variables across countries. Feeling safe and having successful social relationships is no less important for negative emotions, but, since they are more equally distributed across classes, they do not contribute to the differences in negative emotions existing across classes and countries. This chapter is much more successful explaining differences in positive and negative emotions than explaining the satisfaction gaps.

Had there only been one round of the ESS, these conclusions would have to be taken with great caution, however the fact that we have data from 2006 and 2012, and the fact that the economic shock that the crisis brought with it has produced the expected effects on negative emotions that our model would predict, means that we may actually give them a causal interpretation. For example, between 2006 and 2012 the proportion of individuals that experienced economic difficulties increased dramatically in countries like Spain, due to a rise in unemployment levels, as did depression rates. At the same time, in countries like Bulgaria or Slovakia where employment rates grew and financial hardship decreased between 2006 and 2012, so did the experience of negative emotions and the prevalence of depression.

These changes in depression rates produced a reduction in the emotional gap in coun-

tries where things improved, because in those countries the lower and middle classes were the ones that benefited the most from the reduction in depression. However, in countries where things got worse and depression increased, the situation in terms of gaps in mixed since it was mostly the middle class that absorbed the increase in depression, getting in some cases very close to the levels of NA of the lower class. So, in such cases, although the emotional distances between the middle and lower classes got smaller, it means that more people are suffering now as the lower class have always done.



# Chapter 4

## How much should I work?

### Using subjective well-being to shed light on work-life balance

#### 4.1 INTRODUCTION

The work-life balance refers to how well individuals integrate work and life – other than work. Most of us would agree that even though working may indeed be very enjoyable, we need leisure time too. However, what is less clear is how much exactly one should work, or how much free time one needs to feel best.

Work life balance has for some time concerned policy makers, but lately the issue has gained much attention – probably because working time arrangements have diversified and in general become more flexible (Boulin et al., 2006; Messenger, 2004), and also because of the increased participation of women into the labour market, which may have contributed to making it more difficult to balance work with the rest of our lives. This is consistent with time pressure reports that suggest that people find it increasingly difficult to do all the things they want. Examples of this concern are the OECD work-life balance measures, or the French initiative to limit off-the-clock work emails to ensure that the 11 hours of daily ‘rest’ time to which all workers are legally entitled be spent uninterrupted. A similar initiative occurred one year earlier in Germany where the employment ministry banned its managers from calling or emailing staff out of hours except in emergencies to prevent employees from ‘burning out’.

Despite all this concern about the work-life balance, we know very little about what it is exactly, or how to achieve it. Usually, when people refer to work life balance, they mean something like ‘not working too much’ to avoid ‘burning out’. But, is that it? How much should we work if we want to feel at our best? We do not know the answer to this, but we could know, or at least try to find out, because we have at our disposal many measures of SWB that could be used as a benchmark to assess the adequacy of different working amounts. In fact, there are some authors that have already acknowledged this, and used this type of data together with time diaries to assess quality of life, and in

particular of work and leisure experiences like Dow and Juster (1985), Csikszentmihalyi and LeFevre (1989), or Gershuny (2013). It is the aim of this chapter to do precisely this, to employ time use data and subjective well-being variables to try to find out how much we should work to maximise SWB.

This chapter will explore the relationship between working hours and different well-being outcomes, essentially the enjoyment of activities, satisfaction, and feelings of time pressure. Work amounts that maximise well-being will be considered conducive to balance. There may be many different combinations of work and leisure that produce balance, or there may be just one point, a unique combination that produces equilibrium between work and life other than work. It is unlikely that we will identify a magic point at which balance is achieved but rather of a bracket of hours of work in which this can happen. Finding this bracket of possibilities is the first aim. The second is to take into account that not all workers like their jobs to the same extent and to see if that affects the optimal points. In other words, do individuals that like their jobs more, need less leisure? Can they afford to spend more time at work, and still achieve balance? Finally, special attention will be paid to the potential trade-offs among different SWB outcomes.

Although the results of this chapter are still very preliminary and caution is required, the analysis carried out suggests that there is indeed an optimal number of hours of work to maximise SWB. But the optimal point does indeed vary depending on the SWB outcome we look at, and most importantly on whether one likes one's job. For instance, for individuals that like their jobs more than the median, daily enjoyment and life satisfaction are maximised at approximately 6 and 9.5 hours respectively, and the frequency of unpleasant moments is minimised at approximately 7 hours. Besides, the curves are so flat around the optimal points that levels of SWB very close to the optimal ones are also achieved for a relatively wide range of hours around the optimal one. However, individuals who do not like their jobs that much should work as little as possible if they want to maximise enjoyment, but should work on something if they want to maximise life satisfaction (6.7 hours).

This chapter is organised as follows. In the next section a brief review of the existing literature on this subject will be provided, starting with the earliest attempts to address work-life balance and ending with the most sophisticated studies that have addressed this issue to date. Then, the latest French time use survey will be presented and the empirical strategy discussed. Then the results are presented for each SWB outcome separately, starting with enjoyment, followed by feelings of time pressure and finally for satisfaction. The chapter ends with a short discussion of the results.

## 4.2 LITERATURE REVIEW AND HYPOTHESES

When we speak of work-life balance (WLB), we refer to how well individuals integrate work and life outside of work. For some time the work-life balance issue has received a lot of attention among both policy makers and academics alike, and many terms have been used to refer to it: the interface between work and family, integration, work-family reconciliation or, work-family conflict. In this paper I will use the terms work-life balance, as suggested by the ILO (see Fagan et al., 2012).

There is a lot of literature that has, in a more direct or indirect way, tried to help us understand how to achieve balance. It is the aim of this section to briefly review it. The section is divided into two subsections, in the first one I will review the ‘indirect’ evidence and in the second one the ‘direct’ evidence. By ‘direct’ evidence I mean studies where the impact of, for instance, working hours is explored on some well-being outcome. For example, studies of the effects of working more than 48 hours a week on physical health, or exploring the effects of leisure characteristics on feelings of time pressure. ‘Indirect’ evidence on the contrary, would be studies that keep track of time aggregates with the intention of capturing quality of life but without actually exploring the effects of those on well-being (e.g. looking at the prevalence of overwork or shift work).

However, before that we will define ‘paid work’ and the ‘rest of our lives’, the two main time aggregates whose combination and effects on SWB this chapter investigates.

The starting point for grouping activities is As (1978) who proposes four types according to how much freedom of choice there is about doing the activity. He distinguishes between: necessary time, contracted time, committed time, and free time. *Necessary time* is time needed to satisfy the basic physiological needs (sleep, meals and personal health and hygiene). There is not much freedom of choice about doing these or not. *Contracted time* refers to regular paid work and time devoted to travel to work, time in schools and waiting for work to begin. *Committed time* covers all household chores and caring activities, and *Free time*: is the time that is left after the former is taken out (As, 1978). Note that these groups correspond exactly to what we usually refer to as: *sleep and personal care*, *paid work*, *unpaid work* and *leisure*.

Although the definition provided by As (1978) is quite intuitive, some controversy may arise regarding the distinction between unpaid work and leisure, because there are some activities, such as gardening, that could be considered both: unpaid work but also a leisure activity, since it may be done for pleasure. Since a consistent rule is needed, Reid’s third-person criterion is followed – according to which ‘unpaid work’ is considered to be any activity which could be delegated to some third party without loss of the final utility that derives from it (Reid, 1934). Thus, while gardening may very pleasant and considered leisure for many people, one could hire someone to care for the garden (and still enjoy seeing the garden well taken care of), whereas we would not hire someone to

go to the cinema on our behalf. This is why gardening is considered ‘unpaid work’ and watching a movie is considered ‘leisure’. Another way to look at it would be to say that while activities considered leisure have only process benefits (Juster and Stafford, 1985) – like the enjoyment of watching the movie – unpaid work has a final utility in addition to the process benefits.

The third person criterion is then a useful one that has been widely used in time use studies. Yet, when researching SWB it is important to keep in mind that this is a somewhat strange criterion because this means/ends, or work/leisure distinction can lead us to think that individuals would be better off if they could have the ‘ends’ – i.e. the leisure activities – and avoid the ‘means’ – i.e. the work. However, evidence suggests that this is not the case. There are process benefits in all activities (Gershuny and Halpin, 1996; Juster and Stafford, 1985), i.e., utility derived from performing the activities that we should not ignore. When those process benefits are considered we see that paid work and unpaid work are both pleasurable activities from which utility is derived (Gershuny, 2011; Juster and Stafford, 1985; Krueger, 2007), even if less than leisure activities. In some respects, work does produce higher well being than leisure, and stress levels seem to be lower at work than at home (Csikszentmihalyi and LeFevre, 1989; Damaske et al., 2014; Young et al., 1973). Besides, when we compare individuals in employment with those out of it, like homemakers or unemployed individuals, we find that the first are healthier, and more satisfied with their lives than non-employed individuals (Bromberger and Matthews, 1996; Gerlach and Stephan, 1996).

All this suggests that work makes people better off and that individuals would not be better off if they were at leisure all the time. This chapter wants to investigate ‘how much work’, paid work in particular, individuals should do in order to optimise SWB. Hence, this Chapter will explore the well being produced by different combinations of paid work and the rest of activities. At this point one may wonder why unpaid work is included in ‘the rest of our lives’ rather than in work since it is also a kind of committed time. This would seem especially reasonable for homemakers, however, in our sample of employees, there are no homemakers, and therefore the amount of time devoted to unpaid work is really small when compared to the time devoted to paid work, and since it is less committed than contracted time, and, of a very different nature to paid work, I prefer to separate unpaid work from paid work. Although I understand this issue is debatable, and in any case, the amount of unpaid work that the individual does will be taken into account.

### **4.2.1 Indirect measures of work-life balance**

Policy makers and academics have for a long time collected statistics on hours of work, driven by a general concern that long hours of work can have damaging social conse-



quences (Lourie, 1996). Hours of work have a relation to the quality of life to the extent that the greater proportion of the day is devoted to work, the less time remains for doing anything else. But not all time that is not devoted to work is devoted to leisure. Hence, some researchers have looked directly at leisure time, and have documented a dramatic increase in leisure time in the last decades in the US – especially among the less educated (Aguiar and Hurst, 2006), and also in Europe (Gimenez-Nadal and Sevilla-Sanz, 2011).

A more comprehensive picture of work-life balance is provided by Gershuny (2011) with a ‘triangle of daily activities’ that shows the exact combination of paid, unpaid and leisure time. By exploring changes in the shape and position of the triangle, one can easily get a sense of the existing balance between paid work, unpaid work, and leisure time. A similar but less graphic approach is proposed by Fisher and Layte (2004), who measure the proportion of ‘discretionary time’, which is time that is not spent in paid, unpaid or in personal care. The idea that leisure is not just time that is not spent at work is widespread and an example of this is the OECD Better Life Index, which maps ‘work-life balance’ by country by providing statistics of time devoted to paid, unpaid, personal care and leisure time.<sup>1</sup>

Leisure serves as an adequate buffer against stress (Iwasaki and Schneider, 2003; Roberts, 2011), and this is why the former research has taken care to quantify it as well as possible. However, some researchers claim that not all leisure is of the same quality and, therefore, that not all leisure serves its function equally well. In particular, some researchers have argued that leisure is of higher quality the less fragmented and the less contaminated it is by other activities, and also, if it is spent with other adults and without children that require the adults’ attention (Bianchi and Mattingly, 2003; Bittman and Wajcman, 2000; Gimenez-Nadal and Ortega-Lapiedra, 2010; Henderson et al., 1991; Sullivan, 1996). Based on the former assumptions, Sevilla et al. (2012) build quality measures using the American time use data to show that the relative growth in leisure time enjoyed by low-educated individuals documented in previous studies has been accompanied by a relative decrease in the quality of that leisure time. Fisher and Layte (2004) also explore the prevalence of multitasking and leisure fragmentation in several countries in an attempt to measure work-life balance. However, most of these assumptions have not been properly tested – an exception is Sullivan (1996), and therefore, making inferences about the quality of leisure based on those assumptions does not seem appropriate.

## 4.2.2 Direct measures of work-life balance

### 4.2.2.1 Measuring unbalance: hours of work and ill-being

Golden and Altman (2008) define overwork as “the point at which working hours begin

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<sup>1</sup>Available at: <http://www.oecdbetterlifeindex.org/topics/work-life-balance/>

to entail escalating risks or harms beyond those associated with normal, standard, agreed upon hours” (Golden and Altman, 2008, p.65, cited in Fagan et al. 2012). I think that this definition illustrates very well what this literature does for the most part: identifying the point at which work starts to threaten our physical and/or mental health. In other words the literature has mainly focused on understanding the consequences of a lack of balance, or working an excessive number of hours. Working long hours impedes a sufficient recovery time, and it is usually associated with unhealthy lifestyles such as smoking, high caffeine intake, alcohol consumption, lack of exercise and poor diet (Burke and Cooper, 2008; Van der Hulst, 2003). This is a reason for concern because a sizeable proportion of the workforce works long hours (Messenger, 2004; Messenger et al., 2007; Parent-Thirion et al., 2007). This literature is vast and only a brief overview will be offered here. The interested reader may want to look at Dembe et al. (2008) or Fagan et al. (2012) on which this section relies heavily.

Working long hours and is associated with general bad health, such as backache, headaches, muscular pain, injury, stress, high blood pressure, diabetes, overall fatigue and insomnia (Åkerstedt, 2003; Boisard et al., 2003; Burchell et al., 2008; Costa, 1996; Kawachi et al., 1995; Kawakami et al., 1999). Long working hours are also a significant source of work-family conflict, as they reduce the amount of time available to be spent with children and other family members (Berg et al., 2003; Burchell et al., 2008; Fagan and Burchell, 2002; Fagan and Walthery, 2011; Gallie and Russell, 2009; White et al., 2003), and work-family conflict can in turn lead to poor mood, anxiety, substance dependence disorders, prolonged fatigue and a greater need for recovery time, as well as lower job and life satisfaction (Frone, 2000; Gornick and Meyers, 2003; Hochschild, 1997; Hughes and Galinsky, 1994; Jansen et al., 2003; Lewis and Cooper, 1987, 1988; O’Driscoll et al., 1992).

The scheduling of paid working hours is also important because it affects the easiness of coordination with domestic routines and social life. Shift work, for example, interferes directly with the rhythm of the family (Kristensen et al., 2005). This is probably why many studies have found that it affects health and work family conflict. Employees working at weekends report significantly higher emotional exhaustion, job stress and psychosomatic health problems than other employees (Boisard et al., 2003; Burchell et al., 2008; Jamal and Baba, 1997). Kawachi et al. (1995) and Knutsson et al. (1986) showed that shift workers were 40% more likely to have had incidents of coronary heart disease than other workers. There is also causal evidence of the effects of shift work on divorce and the quality of marital relations (Perry-Jenkins et al., 2007; Presser, 2000; White and Keith, 1990). Non-day working schedules are also associated with stress and work-family conflict (Kingston and Nock, 1987; La Valle et al., 2002; Mellor, 1986; Rubin, 1994; Simon, 1990; Staines and Pleck, 1983). And this is in spite of a reduction in number of hours worked (Fagnani and Letablier, 2004). As with long working hours, there are reasons for

concern because a significant proportion of men and women work at non-standard times, and this phenomenon has been rising (Parent-Thirion et al., 2007; Pocock et al., 2007; Presser, 2005).

The negative effects of unusual schedules seem to be attenuated if workers have some autonomy and control over their work schedules (Barton and Folkard, 1991; Fenwick and Tausig, 2001; Hughes and Parkes, 2007). However, flexible working time arrangements may offer less autonomy in practice than on paper because while they may help with the coordination of work and family responsibilities, they may also isolate the worker and create difficult boundary maintenance between ‘work’ and ‘home’ space (Felstead et al., 2002; Pérez Sánchez and Gálvez Mozo, 2009), which may increase work-family conflict (Hecht and Allen, 2009).

An important part of this literature has been devoted to studying feelings of time pressure, the increasingly widespread reports of feeling rushed, that may affect individuals in paid work. Paradoxically, as leisure time went up, so did stress and feelings of time pressure, and abundant literature has emerged to capture ‘time poverty’ and ‘time crunch’ and related issues (Conley, 2009; Hamermesh and Lee, 2007; Hochschild, 1997; Robinson and Godbey, 1997; Schor, 2008, are just some examples). Hamermesh and Lee (2007) “Stressed Out on Four Continents: Time Crunch or Yuppie Kvetch?” is a very interesting example of this literature because it seems to question the importance we should give to time crunch reports. They find that in Australia, Canada, Germany, Korea and the United States, wealthier people are much more likely to complain – or ‘kvetch’ – about being busy than the poor. This is a fact that may be partly explained by longer hours of work. After controlling for time spent doing paid and unpaid work, individuals with higher incomes continue to feel more stressed, and the importance of higher incomes in generating time stress is not small, particularly in North America. This leads the authors to question the extent to which one should be concerned about these complaints. Whether these complaints coming from the rich come from a greater opportunity cost or are just a habit of the rich – a yuppie kvetch –, we do not know. But, do they hurt any less than the rushed feelings coming from actually working too many hours? This is without doubt an interesting phenomenon that deserves further investigation.

There is a bit of a generalised complaint (not solely from the yuppies) that seems, however, hard to reconcile with the evidence that suggests that individuals in employment have better health (physical as well as mental) than others (see previous chapter). For instance, a very recent study by Damaske et al. (2014) questions the idea that work can only be a source of stress and a threat to workers’ health. The authors measured people’s cortisol levels – a major biological marker of stress – and found that people have significantly lower levels of stress at work than at home. This is at odds with the reports of increasing difficulties to reconcile a work and life balance but it is actually consistent with the well-established fact that employed people who work have better mental and

physical health than their non-working peers (see Chapter 3).

I think that the findings of Damaske et al. (2014), together with all the evidence that workers have better health than non workers, suggests that balance may be somewhere in the middle between not working at all and working too much. How much work is too much seems to be clearer, but it remains to be seen how much we should work to maximise well-being and achieve balance. In the next section we review the studies that have used time use data and well-being information to shed light on that question.

#### 4.2.2.2 Hours of work and subjective well-being

As we have seen, most of the research concerning the relationship between work and well-being has focused on the negative aspects of working too much or at the wrong hours. We seem to know a lot about what working too much is, and what negative consequences it can bring. However, we know much less about the benefits of work and we know almost nothing about how much should we work to maximise well-being instead of just avoiding the miseries of excessive working hours. Shedding light on this is the aim of this chapter. Although I know of no study that addresses precisely this question, there are some studies that have touched upon these issues and I will discuss those next.

Several authors have acknowledged the value of time use data to gain an understanding of quality of life (that could improve the current GDP approach), and have used enjoyment or affect measures combined with time use data to produce national accounts of well-being. This was first proposed by Juster and Stafford (1985) who spoke about “process benefits” – the utility we derive from the things we do – and how those should also be taken into account when building national accounts. Other authors that have worked in this direction are Gershuny and Halpin (1996), Krueger (2007) or Kahneman et al. (2004a). All these proposals varied in the details but had in common the aim of producing a measure of utility that came from taking into account time spent in different activities, and the utility that those produce, to build utility accounts for the individual and society.

These authors vary in the sophistication with which ‘utility’ is measured. For example, Dow and Juster (1985) simply multiplied time spent on the activities by a score in a ranking of preferred activities. Whereas Krueger (2007) obtained actual utility by randomly sampling episodes during the day (based on the experience sampling methodology developed by Larson and Csikszentmihalyi, 1983) and collecting a score from 0-6 that captured the intensity of six affect measures, three positive and three negative.<sup>2</sup> He then grouped activities based on affective experiences (feeling interested, stressed, happy, sad, pain, and tired) during various activities. And secondly, he also built the “U-index” that is simply a measure of the proportion of time spent in an unpleasant state.<sup>3</sup> He concludes

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<sup>2</sup>The Princeton Affect and Time Survey (PATS). Available at: <http://krueger.princeton.edu/files/PATS.pdf>

<sup>3</sup>An episode is deemed unpleasant if the strongest emotion is a negative one.

that between 1965 and 2005 in the US, time spent in the most enjoyable and engaging forms of leisure activities has decreased for both men and women, which is at odds with the conclusions reached by Aguiar and Hurst (2006): “we have documented that the amount of leisure enjoyed by the average American has increased substantially over the last forty years” (cited in Krueger, 2007, p. 206). This discrepancy highlights the importance of using SWB information to value the quality of experiences. (Krueger, 2007, p. 206) remarks that categorisations of time are based on subjects’ reported experiences rather than on researchers’ judgements.

Many before Krueger (2007) have also acknowledged the arbitrariness of the distinction between work and leisure. For reasons of brevity I will not get into the details here but some examples include: Csikszentmihalyi and LeFevre (1989); Gershuny (2013); Sorokin and Berger (1939); Young et al. (1973) or Fisher and Layte (2004). Young et al. (1973) for instance collected a time diary sample in which they asked respondents to classify the activities as one of work, leisure, neither or both. As compared to the third person criterion assignment of current activities in this dataset, 35% of all “work” time was not so classified by the respondents themselves, while 28% of all “leisure” was classified as not pure leisure. Csikszentmihalyi and LeFevre (1989) followed 78 adult workers for 1 week and at randomly chosen moments individuals were asked to report how they felt. The aim was that of exploring if the quality of experience was more influenced by whether a person was at work or at leisure or more influenced by whether a person was in flow (i.e., in a condition of high challenges and skills (Csikszentmihalyi, 1991). The results showed that all the variables measuring the quality of experience, except for relaxation and motivation, are more affected by flow than by whether the respondent is working or at leisure. Moreover, most flow experiences are reported when working. Note that this is consistent with the very recent findings by Damaske et al. (2014) that people are less stressed – presenting lower cortisol levels – at their place of work than at home.

Other interesting studies that have used time use data linked to SWB information, although with a slightly different focus – that is, not with the aim of making overall assessments – are Gershuny (2009), Kahneman et al. (2004b), or Stone et al. (2006), but Gershuny (2009) is the one closest to this study and has in fact influenced it greatly. Gershuny (2009) makes an empirical exploration of diminishing marginal utility of activities with respect to time using diaries with enjoyment ratings from the UK and US from the mid 1980s. He finds striking similarities between the US and UK average ratings of activities, with out-of-home leisure being the most enjoyable activity, and shopping and unpaid work the least enjoyed activities. Paid work is somewhere in the middle. He also calculates the diminishing marginal utilities with respect to time and finds that all activities except watching TV have inverted-U utility functions. After obtaining the turnover points for each activity and discovering that the marginal utility for ‘leisure out of home’ does not become negative until 10 to 14 hours per day – a level so much

beyond the normal levels – which leads him to conclude that “on the basis of the evidence presented here, a little more time devoted, across a society, to out-of-home leisure, will produce more aggregate utility than would a similar margin of time devoted to at-home leisure, and more at-home leisure would similarly dominate more paid or unpaid work. These sorts of regularities could be used by public authorities as a justification for taxes, subsidies and regulations leading, for example, to less paid work time, and more time devoted to out-of-home leisure consumption.” (Gershuny, 2009, p. 20-21).

I agree with the former statement, however, given that doing more of one thing means doing less of something else, I think it is a good idea to also see what happens to overall enjoyment, in addition to exploring diminishing marginal utilities of activities. This is the purpose of this chapter, to explore the effects on overall enjoyment of doing more or less hours of work. In addition, I think that exploring the consequences of changes in the distribution of time across activities, on other outcomes in addition to enjoyment would be a good idea, just in case there were important trade-offs (as there probably are).

### 4.2.3 Objective and subjective happiness

In 1999, Kahneman (1999) introduces the concept of ‘objective happiness’, as opposed to ‘subjective happiness’, which is how he referred to happiness and life satisfaction self-reports. Objective happiness is derived from a record of instant utility over the relevant period. He acknowledged that these accounts of subjective experience provided by people could differ substantially from actual experience due to a series of biases that occur when the individual retrospectively evaluates his own experience. This led him to conclude that subjective happiness is some kind of imperfect version of SWB and that what he called ‘objective happiness’ is preferred.

The reason why the two differ is that happiness and life satisfaction self-reports are answered applying heuristics that are subject to certain biases that make the two differ. The duration neglect or the peak/end rule are good examples of this (Kahneman, 2000). Redelmeier and Kahneman (1996) discovered these two rules in an experiment involving a colonoscopy where they compared instant utility with remembered utility. Instant utility was the average of utility that results from adding up all instant reports of pain as the colonoscopy takes place, whereas remembered utility refers to the evaluation of the colonoscopy made at the end.

Redelmeier and Kahneman (1996) observed that although their colonoscopies varied in duration from 4 to 69 minutes, the correlation between the duration of a procedure and the patient’s subsequent evaluation was only 0.03. The peak/end rule refers to the fact that evaluation of the experience was heavily influenced by the peaks and the end, that is extreme moments of pain and by how the experience ended. The patients’ subsequent evaluation of the procedure was predicted with relatively high accuracy ( $r = .67$ ) from

the average of the most intense level of pain reported during the procedure, and of the mean pain level reported over the last three minutes. <sup>4</sup>

The discrepancies between instant utility and remembered utility in the colonoscopy would be analogous to the relationship between objective and subjective happiness, and this is why Kahneman (1999) concluded that objective happiness should be preferred. However, very soon after he acknowledged the importance of remembered utility as well, because even if remembered utility is a distorted view of reality it is the view that stays with us for as long as memory allows, and so these subjective accounts should not be neglected (Fredrickson, 2000; Kahneman, 2000).

The distinction between objective and subjective happiness is similar to that between the different components of SWB: affect and cognition, enjoyment and life evaluation (Diener, 1984). In the view of the former discussion, it is clear that both components are important: enjoyment as much as satisfaction with life. Enjoyment of activities capture how the individual feels at each moment whereas satisfaction with life tells us the assessment that the person makes of a certain period of his life – which may be subject to heuristics such as the ones described above. But also because certain decisions or actions, may affect the two differently. Consider doing a PhD, it may make your days less pleasurable due to the long hours you have to work, but it may have a very positive impact on life satisfaction if doing so means accomplishing a dream one had.

Thus, these two parts capture different things, both are important and may differ, and it is precisely because they may differ that both should be measured. Hence, the analysis of work-life balance could not be complete if any of these two measures were absent. The analysis of balance carried out here is not only focused on diary measures of affect that are closer to instant utility but also why we consider life evaluations and experience of time crunch.

The expectations that influence how certain events affect our life satisfaction, may operate at the country or cultural level. For instance, work could produce more or less satisfaction with life depending on how work-oriented the country in which the person lives is. I think it is plausible to argue that in countries with a great work culture such as the US, life satisfaction is optimised at a higher number of hours of paid work than in countries where there is not so much of a work culture and where leisure time is very valued such as France or Spain. Then I would perhaps expect that if this analysis was done with US data then higher optimal points would be found for satisfaction than with the current French dataset. However I would expect enjoyment or time crunch to follow

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<sup>4</sup>The Peak/End rule implies a counter-intuitive prediction: adding a period of pain to an unpleasant episode will actually improve its remembered utility (Redelmeier et al., 2003). For instance, leaving the colonoscope in place for about a minute after terminating the examination improved the evaluation of the procedure because it reduced the pain in the final moments of the procedure even though it just added an extra minute of discomfort (The extra minute is distinctly uncomfortable, but not very painful) (Redelmeier et al., 2003)

the same rules everywhere and, thus, optimal points to be more similar across countries. I see no reason why doing 10 hours of paid work should produce time crunch in France but not in the Netherlands. Similarly, I see no reason why the number of hours that optimises enjoyment should vary across countries, after all, the rules determining when people get tired of work and stop enjoying it should be quite universal.

Then, assuming that the optimal points for enjoyment are the same across countries, and that optimal satisfaction points can vary across countries, the culture of the country could affect the size of the trade-off between enjoyment and satisfaction. Thus, if the former were true, achieving balance and optimising all SWB outcomes may be easier in some countries than in others.



### 4.3 EMPIRICAL STRATEGY

This paper aims at shedding light empirically on work-life balance. It will do so by exploring the relationship between hours of paid work and different subjective well-being outcomes. Work hours that maximise well-being will be considered conducive to balance. There may be many different combinations of work and ‘life’ – everything else other than paid work – that produce balance, or perhaps there is just one point, a unique combination, that maximises well-being.

Given the enormity of the research question at hand, the analysis will be restricted to workers, in particular to employees, and to diaries reported to be ‘typical working days’. The analysis would undoubtedly be much more interesting if we included other groups, such as retired individuals and homemakers, but this would make the chapter much more complex and lengthy, and will therefore be left for future research. One of the key aspects of this study is the selection of well-being outcomes that will be used as benchmarks for defining the optimal points. This selection has been guided by the theory but with the limitations that the data imposes. However, it should be highlighted that the richness of the data source in question – the latest French time use survey – allows a quite satisfactory measurement of subjective well-being. Ideally we would also explore objective well-being outcomes, such as physical health, but this chapter will focus on subjective well-being only.

First, we will explore the crude relationship between hours worked and the different well-being outcomes. This is useful because it will give us a first picture of how employees – in France in this case – are doing. After this, regression analysis will follow, where the well-being outcomes will be explained as a function of hours of paid work and several control variables. This will allow us to get closer to causal estimates. However we should bear in mind that this is a purely cross-sectional study, it will only compare diaries of individuals that work more to those of individuals that work less and by doing so it will try to draw some conclusions about work-life balance. However, we cannot ignore the fact that these individuals may differ in more than working hours (and the variables that we control for). So, as usual, endogeneity is a concern.

If we could run an experiment, we would assign hours of work randomly to employees, and measure their SWB levels. Unfortunately we cannot do that, but, luckily, employers do it very often: 65% of the employees have a schedule imposed by their employers. These individuals are told how much, and when, to work. The remaining 35% of employees have some power in deciding how much and when to work. Employees with an imposed schedule are of course not a random sample of the employees; there may be self-selection into these types of jobs (and even more into the other 35%). However, employees with an imposed schedule are such a large part of the workforce that it is almost like an experiment, and, in any case, it is very interesting to explore the relationship between

hours of work and SWB for this large proportion of workers that are ‘forced’ to work a given number of hours. It is also very interesting to see if the remaining 35% of employees do ‘react’ very differently to working hours than employees with an imposed schedule. The estimates would be even more credible if the relationship between hours of work and SWB remained very similar for potentially very different individuals such as those that work free hours. However, if they did not, this would not invalidate the conclusions that we could draw from the employees with imposed schedules, which are to me the closest we will get here to the causal ones.

One further step to get credible estimates, and at the same time to tackle the second research question, is to explore the relationship between hours of work and SWB separately for individuals that like their jobs to different degrees. Bear in mind that preferences towards work, liking the job, is one of the main candidates to be one of those unobserved characteristics driving both working hours and subjective well-being. Individuals are asked about their job satisfaction, and I will use this variable to divide the sample into two groups: individuals above the median, and individuals below it. For simplicity I will often refer to those as the likes and not likes, but it should be kept in mind that most individuals in the not likes are actually satisfied with their jobs, just less so than the individuals in the likes. By exploring the relationship between hours of work and enjoyment for these two groups separately, we should be able to say something about whether individuals that like their jobs more, do in fact need less leisure to feel at their best.

## 4.4 THE DATA

The key explanatory variable of this chapter is *the number of hours spent in paid work*, and it is well known that time use data is superior to conventional surveys measuring working hours – both paid and unpaid work (Bonke, 2005; Gershuny and Robinson, 1994). Hence time use data is preferred. Among all the time use surveys available, not many are as rich in terms of SWB data as the last French time use survey. In fact it is one of the few sources that contains enjoyment rates linked to each episode of activity. It took place in six waves between September 2009 and September 2010, and it is representative of the French population in France and overseas. Households and their members were interviewed with the aim of collecting data on the way individuals organise their time as well as a large number of characteristics of households, and individuals.

Figure 4.1: The diary, part 1: the activities

<b>Décrivez vos différentes occupations de la journée :</b> <small>Indiquez les heures de début et de fin (plage horaire de l'activité) grâce à une accolade</small> <small>Décrivez votre occupation</small>		<b>Faites-vous autre chose en même temps ?</b> <small>(lecture, conversation, radio, TV...)</small>
18 h 00		
10	Je rentre du travail avec un collègue	Conversation
20		
30	Je me repose sur le canapé	J'écoute de la musique
40		
50	Je pars pour le supermarché	
19 h 00	Je fais des courses pour le dîner	
10		
20	Trajet retour du supermarché	
30		
40	Je surveille ma nièce qui fait ses devoirs	
50	Je prépare le dîner	Je garde ma nièce
20 h 00		
10	Je mange avec ma femme, mon frère et ma nièce	Conversation
20		
30	Je range la cuisine	J'écoute la radio
40	Je discute en ligne avec un ami sur messagerie instantanée (ordinateur)	Je grignote des biscuits
50		

The columns displayed in Figure 4.2 would be shown to the right of the columns here.

Data is collected on two visits, face-to-face with an interviewer using computer-aided data collection. The survey targeted around 12,000 households, and within each household two people are randomly selected, and each of them is asked to fill in two diaries: one during the week and one at the weekend, in addition to the questionnaire. This means that in total approximately 24,000 individuals are interviewed and that we have approximately 48,000 diaries. However, not all these diarists are asked to rate the pleasantness or enjoyment of the activities they do. Since doing so adds a substantive burden to diarists, just a 5% random subsample is asked to do so. This subsample was also asked about satisfaction with life in general and some life domains. This amounts to approximately 900 households, 1200 individuals, and 2,400 diaries. However, given that we restrict the analysis to working days approximately half of the diaries are excluded from the analysis and we remain with one diary per person. Sample size is further reduced because we

exclude diaries of low quality, and those diaries of individuals that in ‘typical working days’ report less than 2 hours of paid work, and self employed individuals for reasons that we will explain later.

Figure 4.2: The diary, part 2: characteristics of the activity

Lieu ou Moyen de transport	En présence de qui plusieurs réponses possibles						Votre activité est dans un but une seule réponse possible				
	Personnes du ménage										
	1 Seul	2 Votre conjoint	3 Votre père, votre mère	4 Enfant(s) du ménage	5 Autres personnes du ménage	6 Autres personnes que vous connaissez	1 Personnel ou pour son ménage	2 Profes- sionnel	3 Aide à un autre ménage	4 Bénévole, pour une association	
Cochez cette case s'il s'agit d'un trajet entre votre domicile et votre travail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
en voiture	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
chez moi	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
à pied	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
supermarché	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
à pied	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
chez moi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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The respondent must note down the details of their activities over a set day as shown in Figure 4.1. Each line in the diary corresponds to an elementary time unit of 10 minutes and respondents are asked to report all activities that have lasted at least 10 minutes, writing down the start and end times of the activities in succession, which helps them remember what they did and when they did it. They are encouraged to carry the diaries with them and fill them in during spare moments or at the end of the day at worst, to avoid relying heavily on memory. In addition to reporting the main activity, respondents are also asked to report secondary activities (in case there were any), where the activity took place, and whether there was someone with them (and who that person was eventually), as well as the purpose of the activity.<sup>5</sup> This can be seen in Figures 4.1 and 4.2, which show the diary forms that the 95% of diarists had to fill in. The other 5% had to fill a similar diary but with an extra column where the respondent had to rate the enjoyment of the activity (see Figure 4.3). They were not asked to do so every 10 minutes but only whenever there was a change in any of the columns he had filled in, that is, every time there was a change in either: the main activity, the secondary activity, the location or the presence of other persons or the purpose of the activity.

In principle, asking about the enjoyment of past activities could be problematic because what people enjoy and what they remember they enjoyed may not necessarily be the same (Kahneman, 1999). For this reason collecting SWB information ex-post is, in general, not advisable. However, the way in which affective information was collected

<sup>5</sup>This information is available at: <http://www.insee.fr/en/methodes/default.asp?page=sources/ope-enq-emploi-du-temps-edt-2009.htm>. Last accessed on 26 August 2014.

Figure 4.3: Diaries with enjoyment

Décrivez vos différentes occupations de la journée <small>Indiquez les heures de début et de fin (plage horaire de l'activité) grâce à une accolade</small> <small>Décrivez votre occupation</small>		Faites-vous autre chose en même temps ? <small>(lecture, conversation, radio, TV...)</small>	Est-ce un moment agréable ou désagréable ? <small>(de -3 : très désagréable à +3 : très agréable)</small>
18 h 00			-3 -2 -1 0 +1 +2 +3
10	Je rentre du travail dans les embouteillages	Conversation avec un collègue	-3 -2 -1 0 +1 +2 +3
20			-3 -2 -1 0 +1 +2 +3
30	Je me repose sur le canapé	J'écoute de la musique	-3 -2 -1 0 +1 +2 +3
40			-3 -2 -1 0 +1 +2 +3
50	Je pars pour le supermarché		-3 -2 -1 0 +1 +2 +3
19 h 00	Je fais des courses pour le dîner		-3 -2 -1 0 +1 +2 +3
10			-3 -2 -1 0 +1 +2 +3
20	Trajet retour du supermarché		-3 -2 -1 0 +1 +2 +3
30			-3 -2 -1 0 +1 +2 +3
40	Je surveille ma nièce qui fait ses devoirs		-3 -2 -1 0 +1 +2 +3
50	Je prépare le dîner	Je garde ma nièce	-3 -2 -1 0 +1 +2 +3
20 h 00			-3 -2 -1 0 +1 +2 +3
10			-3 -2 -1 0 +1 +2 +3
20	Je mange avec ma femme, mon frère et ma nièce	Conversation	-3 -2 -1 0 +1 +2 +3
30			-3 -2 -1 0 +1 +2 +3
40	Je range la cuisine	J'écoute la radio	-3 -2 -1 0 +1 +2 +3
50	Je discute en ligne sur messagerie instantanée (PC)	Je grignote des biscuits	-3 -2 -1 0 +1 +2 +3

Note that enjoyment rate seems to go from -3 to +3. I think this was the original plan, however in the end they used a 1-7 score.

reduces this bias substantially (Kahneman et al., 2004b). Note that the individual is somehow forced to “walk” through the 24-hour period and this helps him recall his feelings at the time with great accuracy. Evoking the context of the previous day is intended to elicit specific and recent memories, thereby reducing errors and biases of recall (Belli, 1998; Robinson and Clore, 2002, cited in Kahneman et al. (2004b)). This ‘day reconstruction’ (using Kahneman et al., 2004b, terminology) does in fact reduce that bias almost entirely, as they demonstrated by comparing the results of the self reports of emotions experienced the preceding day, to those reported as the activity took place using the experience sampling method (Csikszentmihalyi and Larson, 1987).<sup>6</sup>

Enjoyment answers ranged from 1 to 7, with 1 being “very unpleasant” and 7 being “very pleasant” or “very enjoyable”. But SWB is more than enjoyment and the French dataset does in fact include other interesting variables. Individuals are asked about their health, and health related habits such as smoking, skipping meals or cutting back on sleep, and subjective well-being in many ways. There is also information about feelings of time pressure, how busy the person is, how bored, life satisfaction and satisfaction with several life domains, and so on.

<sup>6</sup>The ESM methodology was developed by Csikszentmihalyi and Larson (1987). Participants in ESM studies are prompted to record where they are, what they are doing, and how they feel several times throughout the day. This provides a rich description of a sample of moments in respondents’ lives, and avoids the distortions that affect the delayed recall and evaluation of experiences (Kahneman et al., 2004b, p. 1776). In addition, Gershuny (2013) using two independent surveys from the 1980s that used different designs and coding systems for the UK and US respectively, produced strikingly similar results, speaking in favour of the methodology (Gershuny, 2009, p. 14)

### 4.4.1 The dependent variables

Several dependent variables will be used in order to capture, as well as possible, the three main SWB components: satisfaction, positive and negative affect. To this end, all the questions or variables that captured any of this were selected from the questionnaire. Table A19 in the appendix (on page 198) shows the original question wording and the possible answers, and Table 4.1 shows the actual variables constructed and finally used.

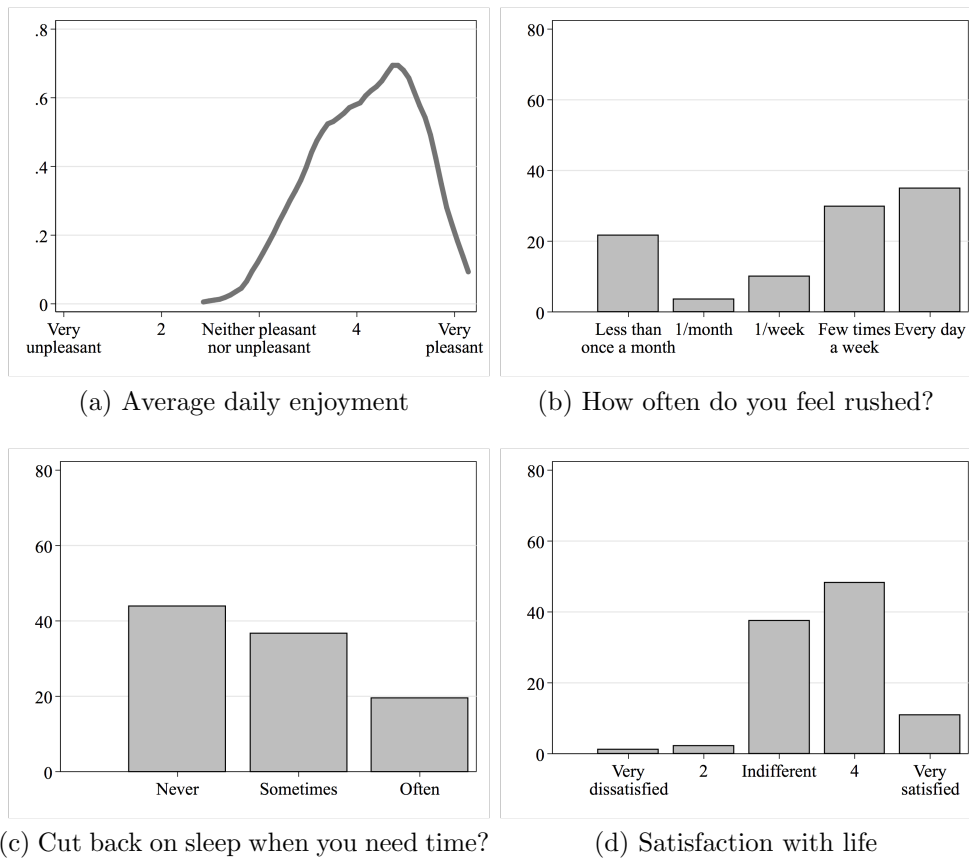
Table 4.1: Subjective well-being variables

Concept	Variable
Positive affect	Average daily enjoyment
	Frequency of pleasant moments
Negative affect	Frequency of unpleasant moments
	Frequency of neutral moments
	Feelings rushed
	Busyness
	Cutting back on sleep
Satisfaction	Skiping meals
	Life satisfaction
	Job satisfaction
	Satisfaction with leisure time
	Satisfaction with social life

The first variable that we will use is a measure of daily enjoyment that is simply the average of the enjoyment ratings experienced during the day. This is a measure of the affective component of SWB, and it could be considered a proxy of Kahneman’s ‘objective happiness’ (Kahneman, 1999), because it adds up the experienced utility of each moment. However, since enjoyment ratings are not collected at exactly the moment they occur, our measure may not be considered totally “objective”, because it may capture experienced utility to some extent (although as Kahneman et al. (2004b) showed, this type of bias is kept to a minimum with ‘day reconstruction’). Its distribution can be found in Figure 4.4, where it can be seen that most people have pleasant days. Average daily enjoyment is then an average of pleasant and unpleasant moments, of very pleasant moments and less pleasant activities. While this is interesting, Schimmack (2008) reminds us that well-being is not the intensity but the frequency of positive and negative affect. Therefore they will also be explored by building measures of the proportion of time spent in a pleasant state and the proportion of time spent in an unpleasant state. When reporting enjoyment, individuals can choose to say that an activity is neither pleasant nor unpleasant. I will measure that too.

There are many other variables at our disposal to measure negative states, to be more specific, there are several measures of time crunch, such as reports of rushed feelings and

Figure 4.4: Distribution of some dependent variables



reports of how busy the person is that I will also use. In addition to self-reports of feelings of time pressure, there is information about ‘to what extent the person cuts back on sleep or whether he/she skips meals to save time’. These measures are interesting because they are objective measures of time crunch or its consequences and, therefore, they will tell us whether self reports of busyness are actually capturing something meaningful, rather than just a complaint – perhaps a ‘yuppie kvetch’ – without consequences. Figure 4.4 shows that most people experience time crunch relatively often since most individuals feel rushed at least once a week and almost 60% of the individuals cut back on sleep sometimes or often. The cognitive component of SWB will be measured using all the satisfaction measures we have: satisfaction with life, with job, with leisure time and with social relationships. Figure 4.4 shows that most people are quite satisfied with their lives (although the proportion of people that report being indifferent is remarkably high).

#### 4.4.2 Independent variables

Individuals write down the activities they do in the diaries, using their own words, and these activities are later coded using a very detailed scheme of activities. Out of all of those activities, special attention will be given to those considered to be paid work, which

Table 4.2: Distribution of time across the main 4 activities (hours per day)

Gender	Paid		Unpaid		Leisure		Personal	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Female	8.1	2.46	2.6	1.92	3.0	1.89	10.3	1.63
Male	9.0	2.30	1.5	1.46	3.3	1.95	10.1	1.58
Total	8.6	2.43	2.1	1.78	3.1	1.93	10.2	1.61

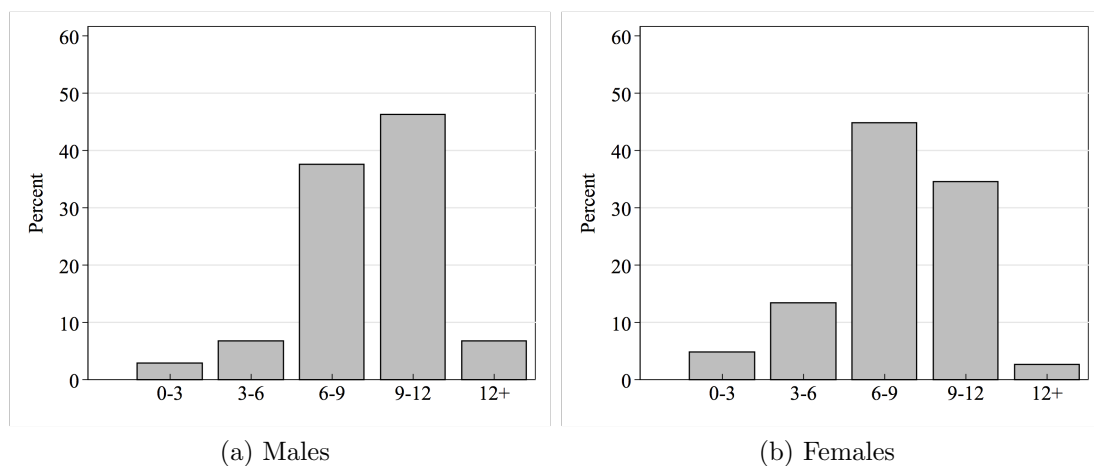
*Personal activities*: sleeping and personal care activities. *Leisure*: eating, work breaks; social activities; physical exercise (mostly outdoors); TV watching; reading or listening to the radio; doing nothing, thinking, resting, smoking; arts and hobbies; computer games, internet; social travel. *Unpaid work*: cooking; household upkeep; shopping and services; construction and repairs; gardening and pet care; childcare; adult care; completing diary or unclassifiable. *Paid work*: actual work; commuting to the workplace; job search activities; trainings.

is the key independent variable of this study, whose effect on SWB we want to estimate. Thus, total amount of time spent in *paid work* is the key independent variable, whose effect on SWB we will explore. It includes actual work, commuting to the workplace and also job search activities or trainings. Table A20 in the appendix (page 199), shows the activities that are included under paid work. The remaining time is either spent in unpaid work, leisure time or sleep and personal care activities. Table 4.2 shows the distribution of time across these four main groups of activities for individuals in employment in a typical working day, and Figure 4.5 shows the distribution of hours of paid work for that same sample.

As soon as one turns to the time use literature it becomes apparent that there are certain variables that are important because of the influence they have for how time is spent. Those are mainly gender, age, household composition, income, among others. In almost all countries, men usually work longer hours in employment than women, although throughout the world women continue to bear the major responsibility for housework and child care, irrespective of their working status (Bianchi et al. 2000; Gregory and Milner 2009 cited in Fagan et al., 2012). Household composition – the existence of children and that of a partner to share the burdens with – is an important control because the amount of domestic work increases when there are children or adults to take care of. Income is important because it can be used to purchase substitutes for domestic hours of work (e.g. child care, cleaners, delivery services etc.). Thus, these socio-demographic variables will be the first set of controls that we will introduce. The second ones will be variables that try to capture characteristics of the job that may influence work-life balance such as work schedule, shift work, type of job, etc. We will also take into account other time aggregates – e.g. unpaid work – when exploring the relationship between paid work and well-being outcomes.



Figure 4.5: Distribution of hours of paid work.



Source: INSEE, 2008-09 Time Use Survey. This Figure includes only individuals in employment in typical working days. The sample contains 2,311 men and 2,353 women.

## 4.5 RESULTS

The following pages will explore the relationship between hours of work and subjective well-being, measured in different ways. The first part of this section will explore the relationship between working hours and daily enjoyment, frequency of pleasant, unpleasant and neutral moments. The second part is devoted to time crunch, and the third, to exploring the relationship between working hours and several measures of satisfaction. The structure followed in these three parts will be the same. First I will show the crude relationship (before controls) between hours of paid work and the former outcomes. Secondly, we will see how the relationships vary when control variables are included. Finally, we will try to address potential endogeneity concerns by exploring separately employees with different work schedules, and individuals that like their jobs to different extents (the *likes* versus the *not likes*).

Out of all the variables that will be used in this section, only the time crunch questions are asked of the whole sample. Enjoyment ratings and satisfaction questions are only asked of the 5% subsample. This means that sample size will be rather small –around 300 individuals and diaries – for the first and third part of the results. The subsection on time pressure will benefit from a larger sample, of approximately 4,300 cases for most of the subsection (although when the time pressure analysis is done separately for *likes* and *not likes* we are restricted again to the 5% subsample). Precisely because of the sample size limitations, I decided to exclude self-employed individuals from the analysis, because preliminary analyses showed that they behaved quite differently than employees, but they were too few in number to be able to study them on their own.<sup>7</sup>

### 4.5.1 Hours of work and enjoyment

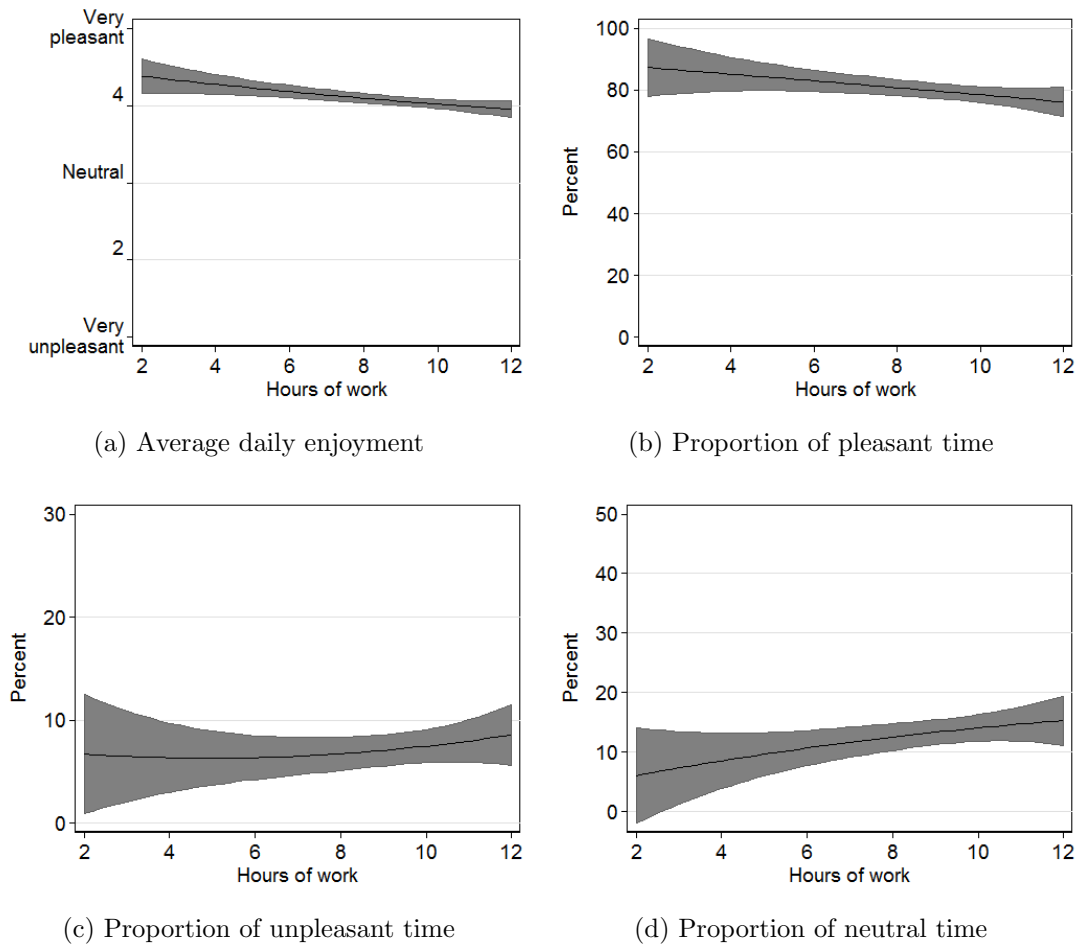
Figure 4.6 shows the relationship between hours of work and several measures of affect: average daily enjoyment, proportion of time spent in a pleasant state, proportion of time spent in an unpleasant state and, finally, the part of time spent in a ‘neutral’ state, that is neither pleasant nor unpleasant. The line shows the estimated marginal effect for different working hours, and the shaded area is the 95 per cent confidence interval. Figure 4.6 reveals the crude relationship between hours of paid work and affect; therefore, no confounding factors are taken into account. Here we just see how employees who work more and less are doing in terms of the former affect measures. Two main messages can be taken from Figure 4.6. The first is that hours of work seem to reduce the pleasantness of our day. This is summarised in Figure 4.6a that shows a gentle but clear decline in enjoyment as individuals that work more are considered. Looking at the other three

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<sup>7</sup>Since in the end we are working with a subsample of the subsample, I considered it best not to use weights. To my understanding those should be used only when I am using the entire sample, and since I am less concerned with representativeness than with causality I decided not to use them.

Figures – 4.6b, 4.6c, and 4.6d – we see how this comes about. Individuals that work more hours do experience less pleasant moments than those that work less, and they also experience a greater proportion of neutral moments, and slightly more unpleasant moments as well.<sup>8</sup>

Figure 4.6: The crude relationship between hours of paid work and affect



Estimates based on 331 diaries of employees in typical working days. Bear in mind that unlike conventional measures of working hours, here work includes not only actual time working but also the time spent going to work and so on and time in which you are not in the office but you are for instance preparing or waiting for work to begin. The curves displayed here come from the regressions of the “empty model” column in Tables A21, A22, A23, and A24 respectively, on pages 204 to 207.

The other message to be taken from Figure 4.6 is that employees seem to be doing quite well, almost regardless of the number of hours they work. While individuals that work less do experience on average more pleasant days, even those that do work a lot have quite enjoyable days as well. Note that even individuals that work 10 hours a day spend around 80% of their time in a pleasant state. But Figure 4.6 is just the crude relationship between working hours and affect. These marginal effects cannot be used to

<sup>8</sup>Nevertheless, these are just averages; it may be worth mentioning that 50% of the employees do not report any unpleasant activity, and only 66% report some neutral moment. These figures are very much in line with those of Kahneman et al. (2004b) and Krueger (2007).

infer that working more will make our day less pleasant. In order to make such claims causal estimates are needed. We will try to get closer to those in several ways. First by adding control variables, second by exploring the relationship between working hours and affect (after controls) for individuals with different types of schedules, and finally, running separate analysis for *likes* and *not likes*.

Figure 4.7 shows the relationship after controls, net of socio-demographics for the same affect outcomes. For each of them we run two regressions, one with a basic (but quite comprehensive list of regressors) and a second one with even more controls. Since the estimates resulting from these two regressions were very similar we decided not to show the confidence intervals, as doing so would not allow us to see the differences in the estimates. The regression tables from where these estimates come can found in the appendix (Tables A21 to A24 on pages 204 to 207). Note that to better appreciate the trends across working hours we have restricted the scales of the vertical axis considerably. For example, Figure 4.7a only shows enjoyment levels going from a neutral point to very enjoyable, and that is why it may seem that the declining trend has become more accentuated after controls, but this is actually not the case.

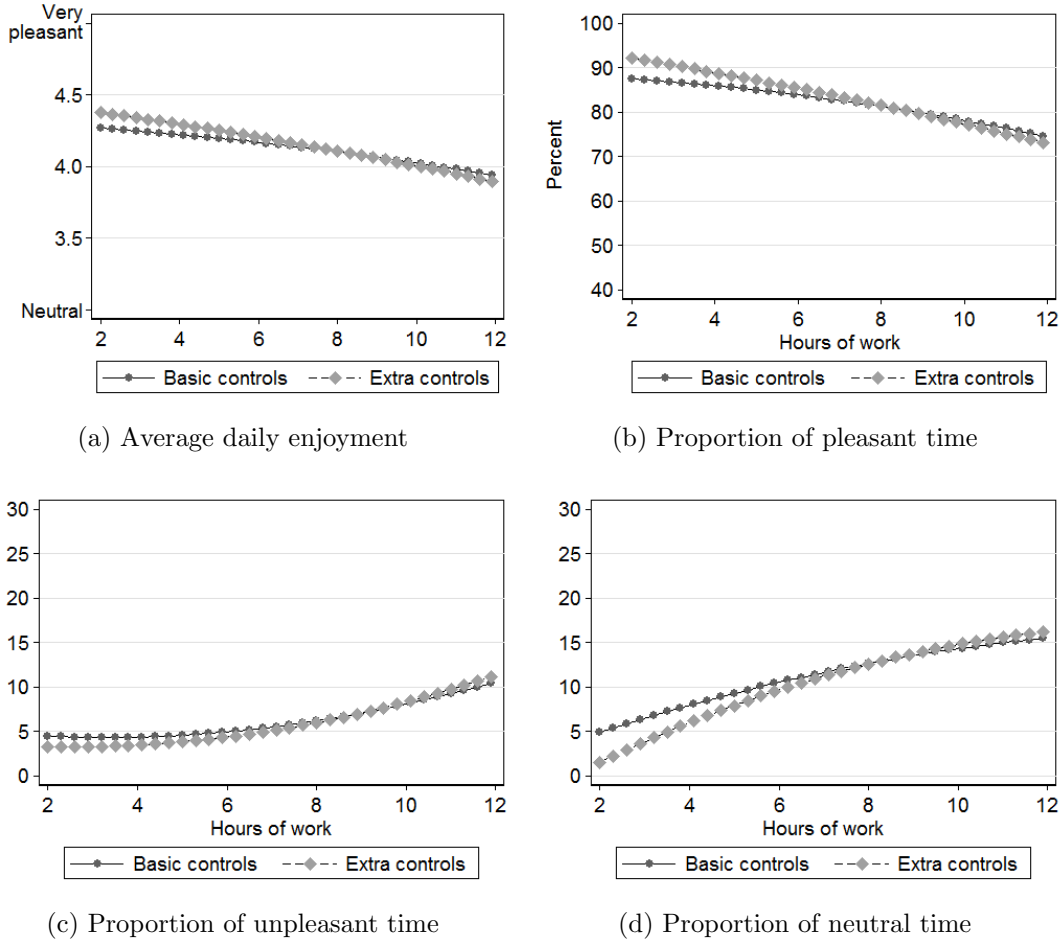
However the other affect measures – the proportion of pleasant, unpleasant, and neutral time – have become more accentuated as controls have been added. For instance, note that the proportion of pleasant time experiences a greater decline with working hours. This is especially the case for the proportion of time experienced in a pleasant state – Figure 4.7b – and for neutral moments – Figure 4.7d. The marginal effects from the regression with the extra set of controls shows a slightly stronger effect of working hours. For instance Figure 4.7d shows the marginal effects of hours of work on the proportion of time in a neutral state, that is neither pleasant nor unpleasant and this proportion goes up from 5% to 15% between an individual that works 4 hours to one working 12 hours.<sup>9</sup>

I have decided not to include any regression table in the main text in order to keep it short, and because, after all, what I am most concerned with is not the explanation of the whole variation in daily enjoyment or any of the other SWB outcomes considered, but, with the relationship between working hours and those outcomes, which can be much better captured with graphs. It should be noted that sample size is not that large and therefore there are some coefficients that while being sizeable will not show statistical significance because the standard errors are too big. The first thing that one sees when looking at the regression for daily enjoyment (and similar findings apply to the other

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<sup>9</sup>The ‘main controls’ are gender, age, partnership status, the presence of children, employment status of the partner, employment relation and salary, work place, hours of unpaid work, timing of the paid work, and whether it was a weekend or not, among others. The ‘extra regressors’ (also listed in the empirical strategy section) are: the type of job, type of schedule, whether the individual knows the schedule for the following day, week and month, evening or night work, and work in the weekends, whether the work is or is not controlled and whether the person can easily be absent from work, etc.

Figure 4.7: The relationship between hours of paid work and affect after controls



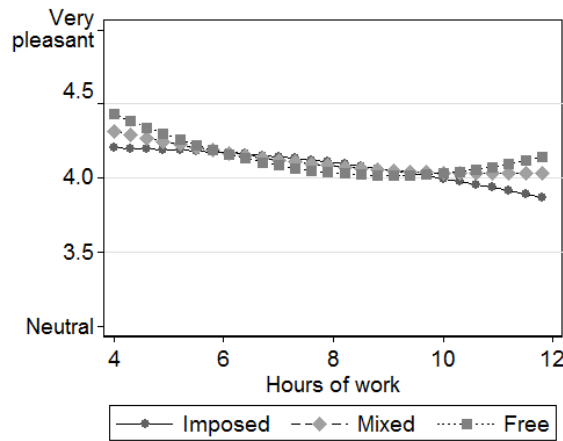
These estimates are based on a sample of 331 employees. Confidence intervals are not displayed so that the slight differences in the curves can be appreciated. The curves displayed here come from the regressions of the “basic controls” column in Tables A21, A22, A23, and A24 respectively, on pages 204 to 207.

affect measures) is that most of the socio-demographics do not have an effect on daily enjoyment, which is very similar to the findings of Kahneman et al. (2004b).<sup>10</sup> I also tried running separate regressions of enjoyment as a function of working time for the former socio-demographic groups separately and the shape of the curves was virtually the same. While socio-demographic variables have a strong effect on time use patterns, they do not seem to have an effect on how much we enjoy the activities, neither on how enjoyment varies as a function of time. What these socio-demographics seem to be doing is to place individuals at different points of the curve.

If we had an unbiased estimator of the effect of working hours on enjoyment, we could conclude from Figure 4.7 that every additional hour of work reduces our enjoyment.

<sup>10</sup>The only exceptions to this are income and job satisfaction. Income is negatively correlated with daily enjoyment and job satisfaction is positively correlated. Having a partner or having children seems to have some effect, but the large standard errors makes it impossible to get statistically significant results.

Figure 4.8: Hours of paid work and enjoyment by schedule type



There are 212 individuals with imposed schedule, 77 with some mixed schedule type and 42 with free schedule.

However, the estimates shown here are just the result of comparing diaries of people that work more to diaries of people that work less and, although we control for many possible confounding factors, there may be something about some individuals that makes them work more, and at the same time makes them enjoy their jobs more. In such scenarios, the bias produced would make the curves showing marginal effects look flatter than they actually are. And yet, we find a negative slope for daily enjoyment, suggesting that for the average employee, working more makes his or her day more unpleasant. Besides, individuals that are the most satisfied with their jobs work as much as those that like their jobs less (making the former scenario less likely). Average working hours is 8.7 for both individuals above the median in terms of job satisfaction as well as for those below (and the standard deviations are very similar as well, 2.3 and 2.05 for *likes* and *not likes* respectively). The shape of the whole distribution also looks very similar (see Figure A4 in the appendix, on page 201).

The former makes sense if we bear in mind that most employees do not decide how much to work. Figure 4.8 explores the marginal effects of hours of work on enjoyment separately for employees with different types of schedules. The message seems clear: it does not matter a great deal. Hours of paid work seem to reduce daily enjoyment for all employees regardless of their schedule type, although this trend is clearer for employees with an imposed schedule (65% of the total). The shapes of the curves are not exactly the same, but the general trend is a declining one for all, especially for the range of hours where we have more workers and therefore where the confidence intervals are narrow enough. We do not show the confidence intervals because it would make it impossible to see the differences in the estimates (they were so wide that the scale of the horizontal axis has been reduced). Note that the marginal effects for schedule types other than imposed schedules are based on very few observations and the confidence intervals are therefore

very wide. Thus the estimates for these other schedule types should be taken with greater caution. The curve that interests us most is that of employees with an imposed schedule and when we look at those, we see the same that we saw in Figure 4.7a: working hours reduce daily enjoyment. This result was in a way the expected one, since this type of employee – with an imposed schedule – is the majority.<sup>11</sup>

Yet there is one further step to get credible estimates and at the same time tackle the second research question. Next I will explore enjoyment as a function of working hours separately for individuals that are above the median in terms of job satisfaction and for those below. This will hopefully shed light on one of the main questions this paper seeks to address: whether people who like their jobs more need less leisure time. And, at the same time, since liking one's job is one of the main 'unobserved' features that may bias the estimate of interest, this analysis would also advance in the direction of getting an unbiased estimate. The results are shown in Figure 4.9.

The curves in Figure 4.9 show the marginal effects after controlling for the main set of controls (adding the extra regressors did not change the results much). These results seems to be telling us clearly that liking one's job matters, so much so that the main conclusion drawn from the analysis so far changes to a considerable extent. So far we had concluded that working reduces daily enjoyment. However, we now see that this is no longer the case if you like your job quite a lot. For instance, Figure 4.9a shows that, for both *likes* and *not-likes*, daily enjoyment is quite high at 4 hours of work, but what happens with every additional hour of work after that is very different for *likes* and *not likes*. While the *likes* experience an increase in daily enjoyment up to 6 hours of work, where they reach the maximum, and then experience a very gentle decrease, the *not likes* only get worse when they work more hours. Therefore, in order to maximise daily enjoyment an individual with job satisfaction below the median should work as little as possible, whereas for individuals that like their jobs more than the median, working a non-negligible number of hours is what makes them maximise enjoyment. In fact given how flat the curve is, a level of daily enjoyment very close to the optimal can be reached for quite a wide range of hours (see Table 4.3). However things look very different for the *not likes* that experience a decline in daily enjoyment of a significant magnitude (0.25 between 4 and 8 hours of work).<sup>12</sup>

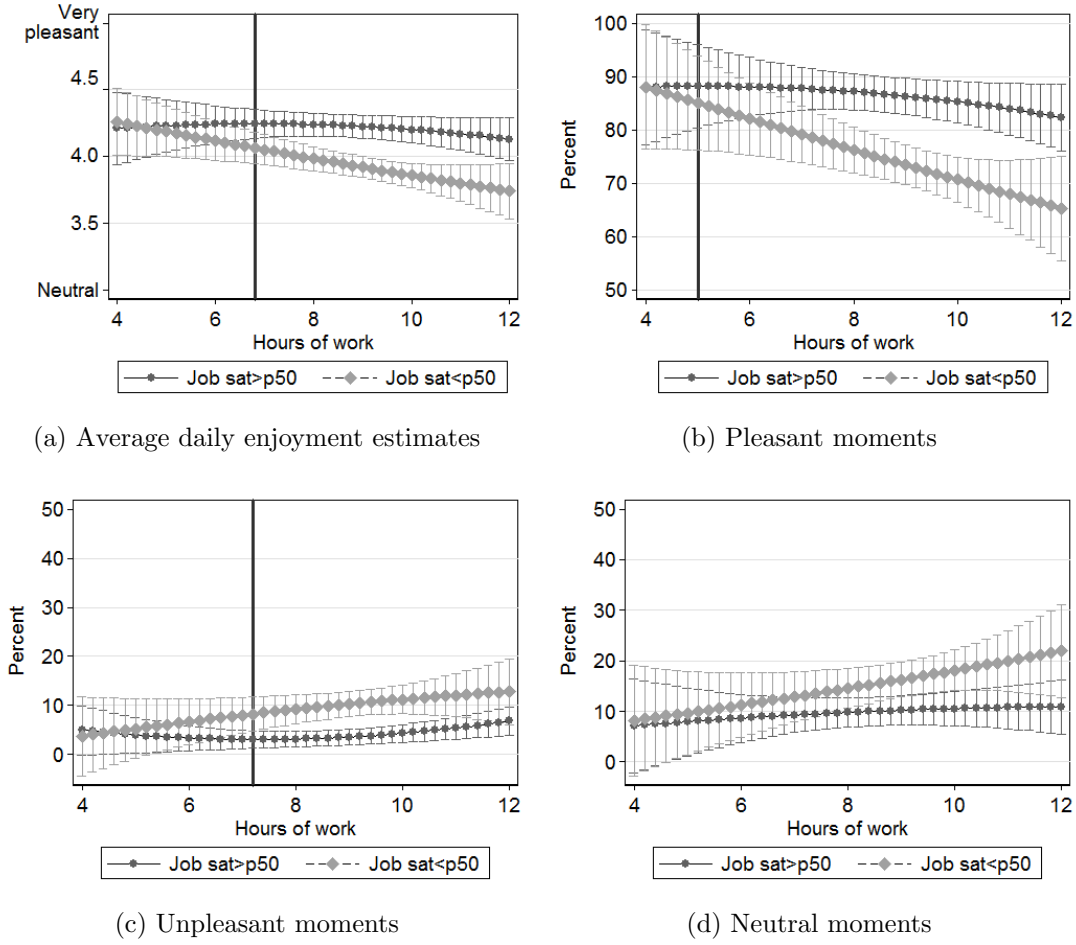
Consistently with the marginal effects for daily enjoyment of *likes* and *not likes*, Figures 4.9b, 4.9c and 4.9d, show that the proportion of time in a pleasant, unpleasant and neutral state also varies with job satisfaction. Figure 4.9b, for instance, shows that

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<sup>11</sup>The exploration of marginal estimates for the other outcomes are included in the appendix in Table A5 on page 202.

<sup>12</sup>Does the former mean that individuals with job satisfaction below the median do not enjoy their jobs? Not at all, the only reason why *not likes* experience a decrease in daily enjoyment as well as a worsening in any of the other measures of affect, is not that their jobs makes them feel bad, instead it has to do with the fact that they do less of other things that they enjoy more such as being at leisure. Figure A6 in the appendix shows this.

Figure 4.9: Hours of paid work and enjoyment for *likes* and *not likes*



Note: In our sample there are 162 employees with job satisfaction above the median, 180 employees with job satisfaction below the median. The vertical lines show the optimal points. The curves displayed here come from the regressions of the “likes” and “not likes” columns in Tables A21, A22, A23, and A24 respectively, on pages 204 to 207.

as hours of work increase, the frequency of pleasant moments goes down, but it does so at a much faster rate for the *not likes* than for *likes*. With regard to the experience of unpleasant moments, they clearly go up with hours of work for *not likes*, but for *likes* they always remain at lower levels than for *not likes* and, in fact, they reach a minimum at approximately 7 hours, and then increase gently. With regard to neutral moments (Figure 4.9d), they increase as we work more, but they do increase more, with every hour, for individuals with lower job satisfaction. Note that for 4 hours of work the expected value of neutral moments is slightly below 10% for both *likes* and *not likes*, while for 12 hours of work, the frequency of neutral feelings has doubled for *not likes* and it is just slightly above 10% for *likes*.<sup>13</sup>

<sup>13</sup>These results come from the regressions found in Tables A22 to A24 in the appendix.



## 4.5.2 Hours of work and time crunch

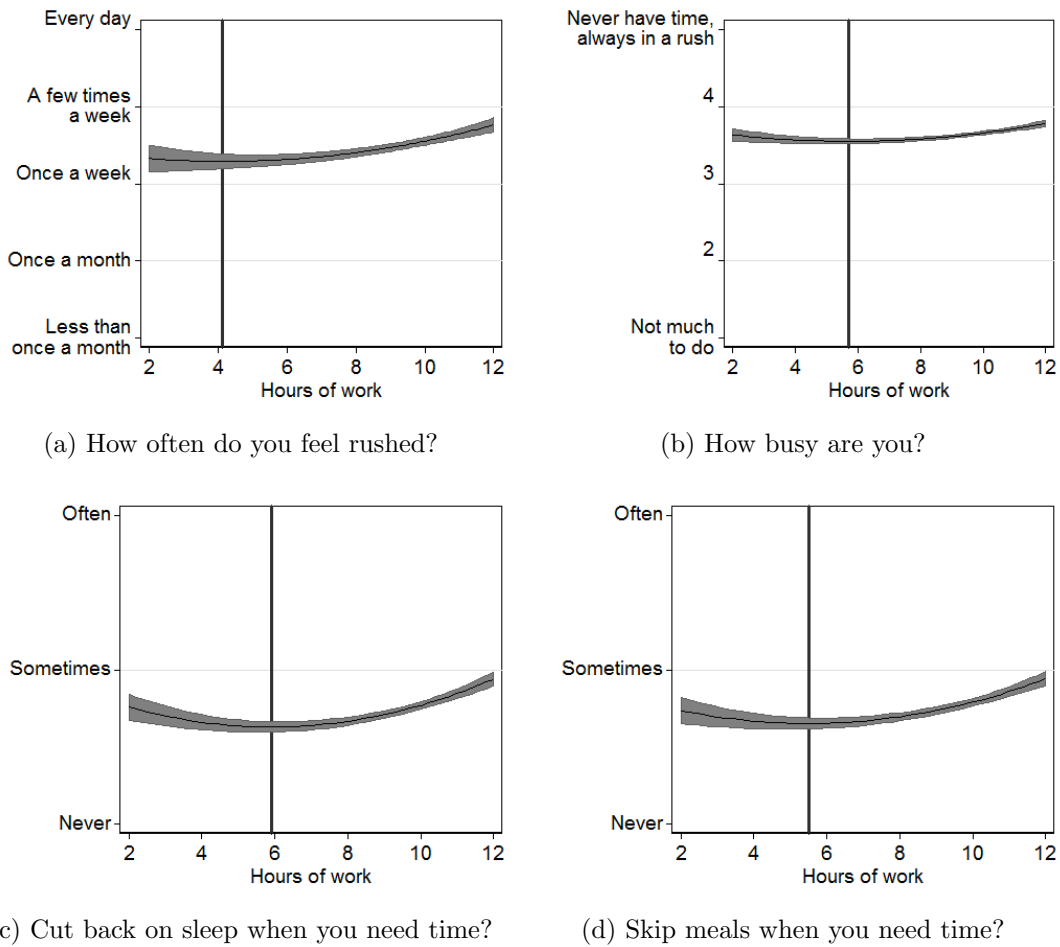
Time pressure is a negative state (as it is the frequency of unpleasant moments). Time pressure is also one of the most recurring negative outcomes that working seems to produce and, therefore, a very familiar phenomenon to almost all workers. Another example of negative state is the frequency of unpleasant moments that we saw in the previous section. Ideally we would also look at other negative states, such as tiredness or boredom, which are available in the French dataset, but we must leave these for the time being and focus on time pressure. This will be done mainly through the exploration of the relationship between working hours and the variable *rushed feelings*, but we will also look at the self-reports of busyness, and at the two measures of actual behaviour that reflect time pressure: skipping meals or cutting back on sleep to save time.

The empirical strategy followed in this section is very similar to that of the previous one. I start by exploring the crude relationship between working hours and the former outcomes, then controls are added and finally a separate analysis for employees with different types of schedules is run, as well as for *likes* and *not-likes*. With the exception of the latter, the sample size in this section is much larger because the time pressure questions are asked of the whole sample. The results of this section suggest that the more you work, the more likely you are to feel rushed, busy, skip meals or cut back on sleep to make up time. Some differences are found, however, between *likes* and *not likes*, but this time the results are mixed because although for every level of working hours individuals who like their jobs more seem to be less rushed, they experience a greater increase in feeling rushed as they work more, which does not happen to the *not likes*.

Figure 4.10 shows the gross relationship between hours of paid work and the measures of time pressure discussed above. The graphs show marginal effects and 95% confidence intervals. Note that these intervals are much narrower than the ones in the previous section because sample size is 15 times larger. The first thing that comes to our attention when looking at these four graphs is that experiencing time pressure is a very familiar phenomenon. Looking at Figure 4.10a we see that individuals working as little as 4 hours experience feelings of time pressure at least once a week on average. It is also remarkable that the expected value of busyness is above the neutral point for all employees regardless of how much they work. Similarly, individuals doing as little as two hours of paid work report skipping meals and cutting back on sleep time to save time. As expected, all these four measures of time pressure increase with the number of hours worked. For instance, individuals doing 12 hours of paid work a day compared to those doing 2 or 4 hours, go from reporting feeling rushed once a week to several times a week.

It may seem odd to see that these time pressure measures are not minimised at 2 hours, but recall that this is the crude relationship and that individuals that report very little paid work may be doing more unpaid work, which may equally produce time crunch.

Figure 4.10: Hours of work and time pressure

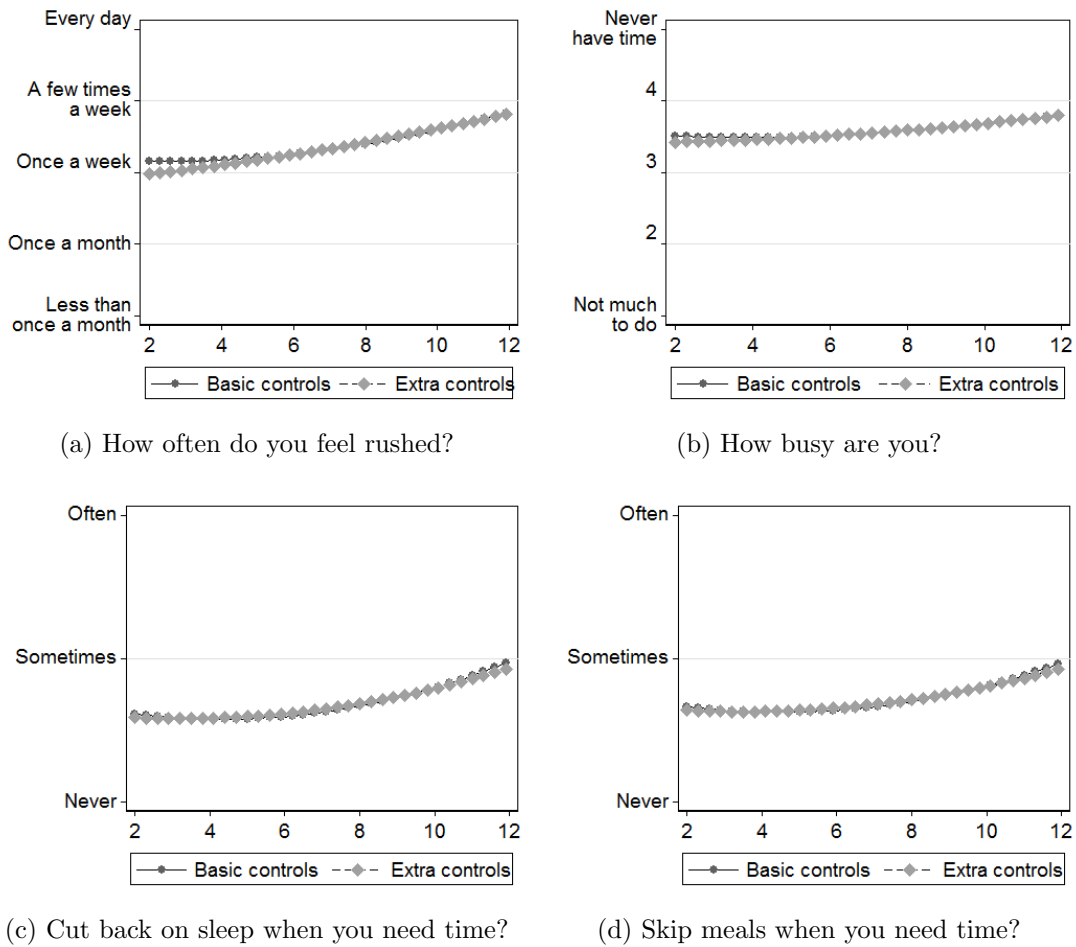


Estimates based on approximately 4,300 observations. As usual, the vertical lines included in each of the four graphs mark the optimal points – hours of paid work where the negative outcome in question is minimised. The curves displayed here come from the regressions of the “empty model” column in Tables A26, A27, A28, and A29 respectively, on pages 209 to 212.

This is why next we look at the relationship between hours of work and the time crunch measures after controls, in Figure 4.11. The graphs shown in Figure 4.11 come from the regressions shown in Tables A26 to A29, shown in the appendix (pages 209 to 212).

Figures 4.11a to 4.11d show two set of estimates, corresponding to the marginal effects of hours of work on time crunch coming from 2 different regressions: one with the main controls and the second one with the extra set of controls, although it may be hard to see that there are two estimates there because most of the time the estimates completely overlap. Note that now the marginal effects have become closer to a straight line, they are less curvilinear, meaning that, *ceteris paribus*, individuals doing more paid work report more time crunch. It is no longer the case that individuals doing very few hours of paid work are more rushed than those doing 4 or 6 hours of paid work (which makes sense). In other words, it seems that in order to minimise rushed feelings one should work as little as possible (which seems reasonable). However, with regards to cutting back on sleep

Figure 4.11: Hours of work and time pressure after controls



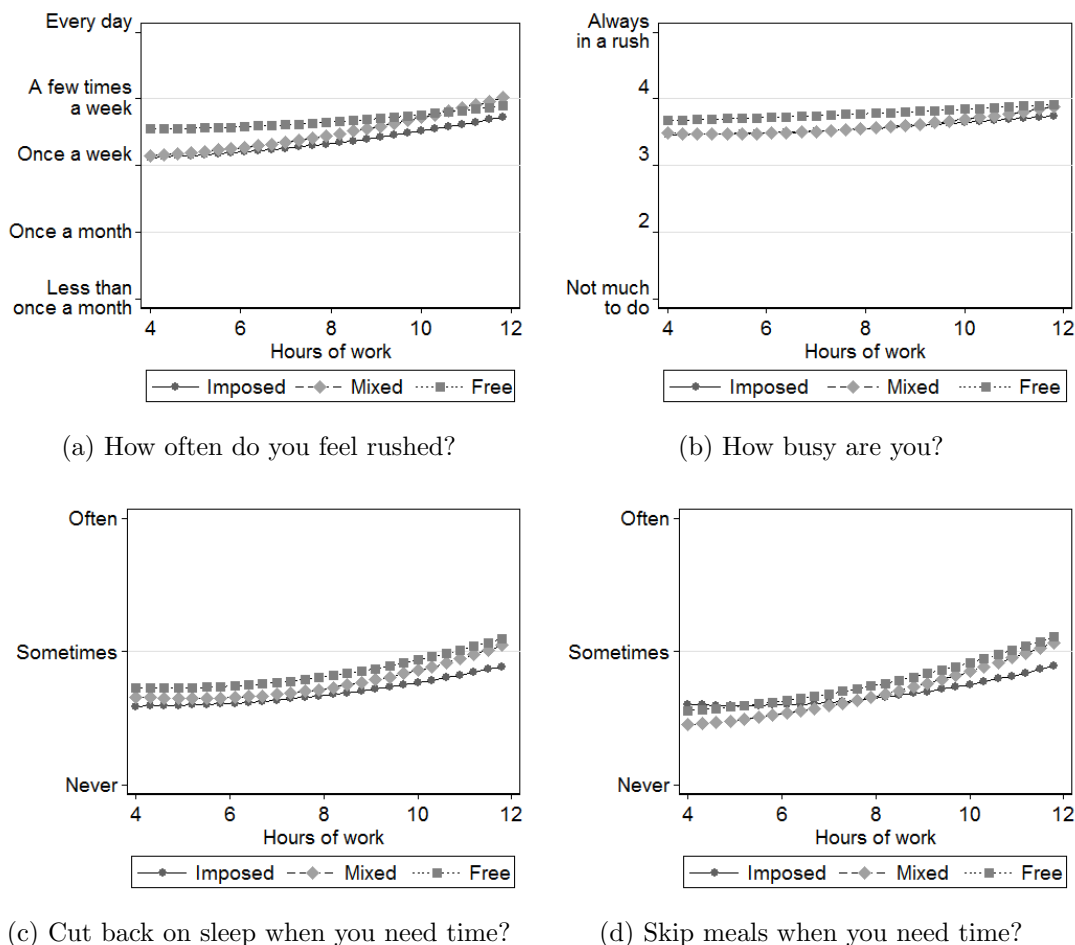
Estimates based on 4,300 diaries approximately. Vertical lines show optimal points – hours of paid work where the negative outcome in question is minimised. The curves displayed here come from the regressions of the “basic controls” column in Tables A26, A27, A28, and A29 respectively, on pages 209 to 212.

and skipping meals, we also observe that the curve has become less curvilinear, although for those last two measures, optimal points are reached at positive hours of work.

Unlike in the enjoyment regressions, here, the socio-demographics are clearly related to experiencing time pressure. For instance, women are more likely to experience time pressure, and the size of the effect is substantive. Having children has a positive, substantive and statistically significant relation with all measures of time pressure. Having a partner also seems to matter but the effects are mixed; it seems to clearly reduce the likelihood of cutting back on sleep or skipping a meal to gain time, but it increases feelings of busyness and being rushed (although the standard errors are so large that the results are not statistically significant). The amount of time devoted to unpaid work increases feelings of time pressure, feeling busy, and makes it more likely that we will skip a meal or cut back on our sleep. However, this does not seem to imply a ‘yuppie kvetch’ since the salary effect goes away when job features are controlled for (with the exception of cutting

back on sleep). For further details see the regression tables in the appendix, Tables A26 to A29.

Figure 4.12: Hours of work and time pressure by schedule type

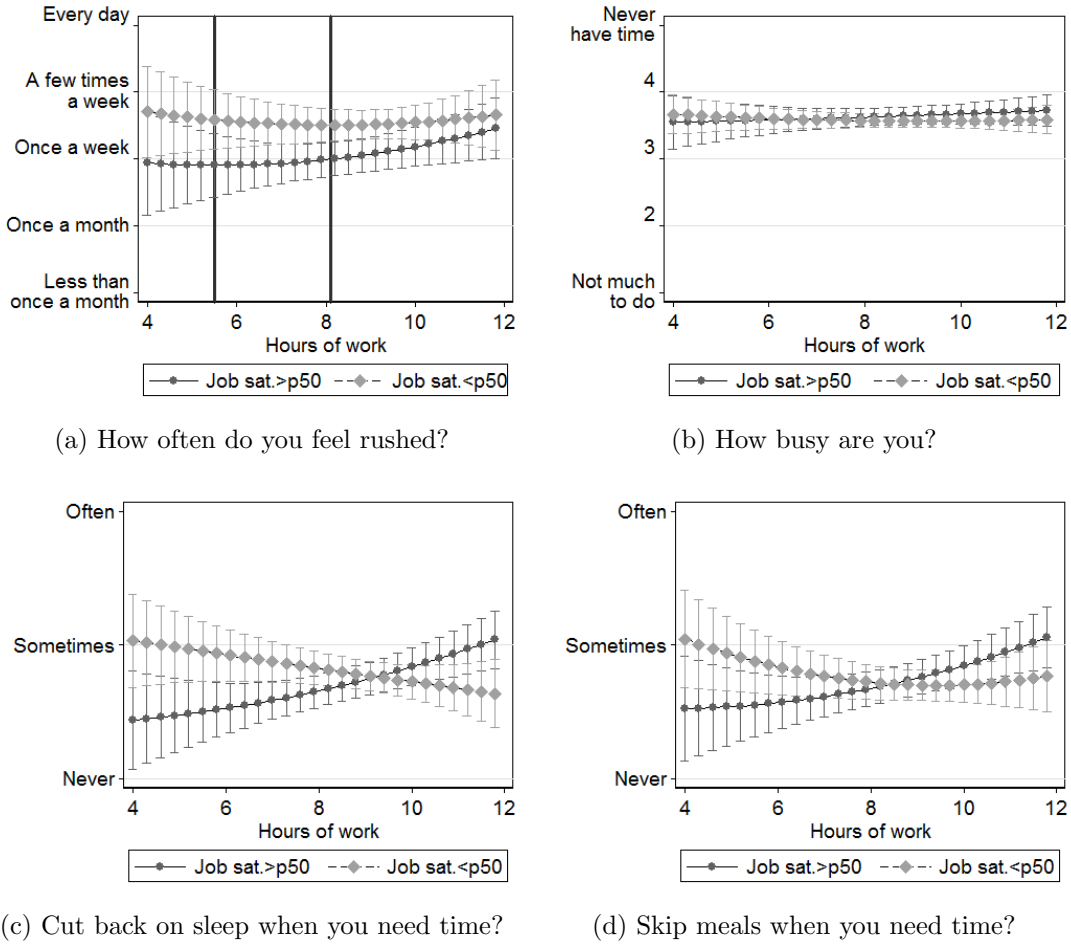


These marginal effects are estimated with 2,952 individuals with an imposed schedule, 966 with a mixed schedule and 560 with a free schedule. This time confidence intervals are much narrower than in the previous section but still overlapped and so we decided not to include them.

One of the things done in the previous section to give more credibility to the estimates was to explore the marginal effects separately for employees with different types of schedules, paying special attention to individuals that could not choose how much or when to work. Here we do the same, with the advantage of having a much larger number of employees even for less common schedule types. The results of this exploration can be found in Figure 4.12 which supports the conclusions reached so far: the more you work, the more time crunch you experience. This is the case for all types of workers, regardless of their type of schedule. Although some differences are observed across schedule types, the trend is the same for all. It is noticeable that individuals with free schedules seem to feel more rushed than other types of employees for a given number of working hours, although for long hours of work they tend to converge. Thus, the more you work, the more time pressure you feel, regardless of the time crunch measures we look at, and regardless

of the schedule the individuals has.

Figure 4.13: Time crunch for *likes* and *not-likes*



Note: There are 162 employees with job satisfaction above the median, 180 employees with job satisfaction below the median. The vertical lines show the optimal points. The curves displayed here come from the regressions of the “likes” and “not likes” columns in Tables A26, A27, A28, and A29 respectively, on pages 209 to 212.

Next we run a separate analysis for individuals with job satisfaction above the median – the *likes*, and individuals below the median – the *not likes*. Unfortunately the job satisfaction question only applies to the 5% subsample and therefore the marginal effects shown in Figure 4.13 are based on far fewer individuals than previous figures in this section. Interestingly, individuals with high job satisfaction experience a greater increase in time pressure – for all measures – than individuals that like their jobs less. However, at the same time, for any given number of hours, they report lower levels of time crunch than individuals that like their jobs less. This is for instance the case for the question of rushed feelings. However, for the other three variables, the marginal effects cross and therefore *likes* are not less rushed at all levels of working hours. They are less so up to 8 hours approximately and they are more rushed than *not likes*. These results should nevertheless, be taken with caution given that the sample size is rather small, but I think

that these could be confirmed with a larger sample since they make sense. Individuals that like their jobs more may be also more involved and high involvement puts greater pressure on employees to do their jobs well, which may become more difficult as the number of hours goes up.

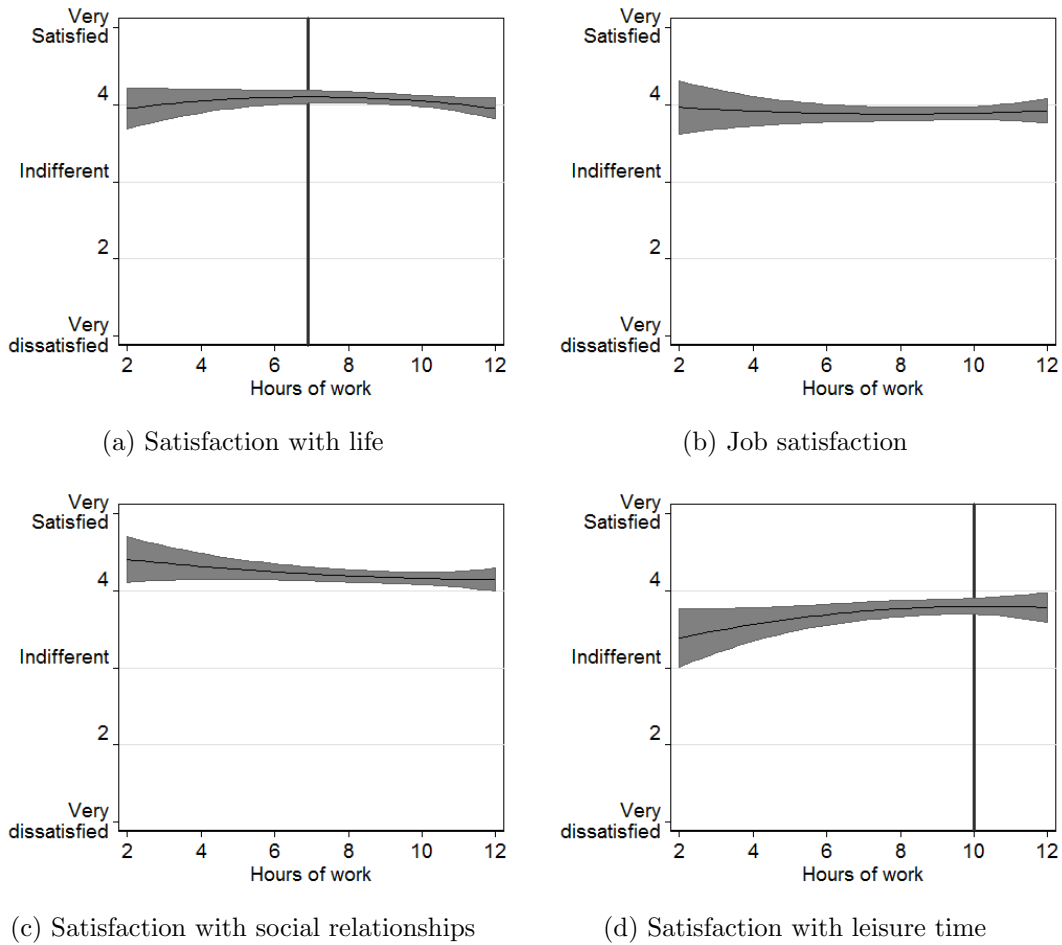
Considering the variable ‘feelings of time pressure’ alone, one might think that there is some over-reporting of time crunch because people who work very little also report being very busy and rushed. However, this is precisely why I wanted to include variables like ‘skipping meals’ or ‘cutting back on sleep’, because those show, that regardless of whether there is a more or less ‘legitimate’ reason for feeling rushed, feeling rushed has actual and real consequences. In other words, feeling rushed means that you behave as if you were so, regardless of where that rushed feeling comes from. The more one works, the more one cuts sleeping time and so on. I think this phenomenon requires more attention and a better understanding.

### **4.5.3 Hours of work and satisfaction**

This section explores the relationship between hours of paid work and satisfaction, the component of SWB with the greatest cognitive charge. To be more specific we will explore the relationship between hours of paid work and satisfaction with life in general, with the job, with leisure and with social relationships. Unfortunately, only the 5% subsample was asked the satisfaction questions – as well as the enjoyment variable, therefore sample size is, again, rather small. Figure 4.14 gives us a first idea of what the relationship between hours of work and satisfaction is like. Note that all the estimates are well above the indifference level which means that for all the working hours considered here – a quite comprehensive and normal range of hours – workers are expected to enjoy high satisfaction with life in general, and with the domains here considered, almost irrespective of how much they work.

There is some variation, however, depending on the variable we look at. For instance the curves for life satisfaction and job satisfaction are flatter than for the other two. In particular, the life satisfaction curve is a very gentle inverted U-shape, with individuals being most satisfied with their lives at approximately 7 hours of paid work, and those working less or more than that being slightly less satisfied. The curve for job satisfaction seems even flatter than life satisfaction, which means that the expected level of job satisfaction is almost irrespective of the number of hours worked, which I find rather surprising. In relation to satisfaction with social relationships, we observe that individuals that work more are less satisfied with their social life than those working less, although not much less. Note that the expected level of satisfaction with social life is always above 4. Satisfaction with leisure time is the domain with the greater differences between individuals that work less and individuals that work more. However, I am not sure that

Figure 4.14: Hours of paid work and satisfaction



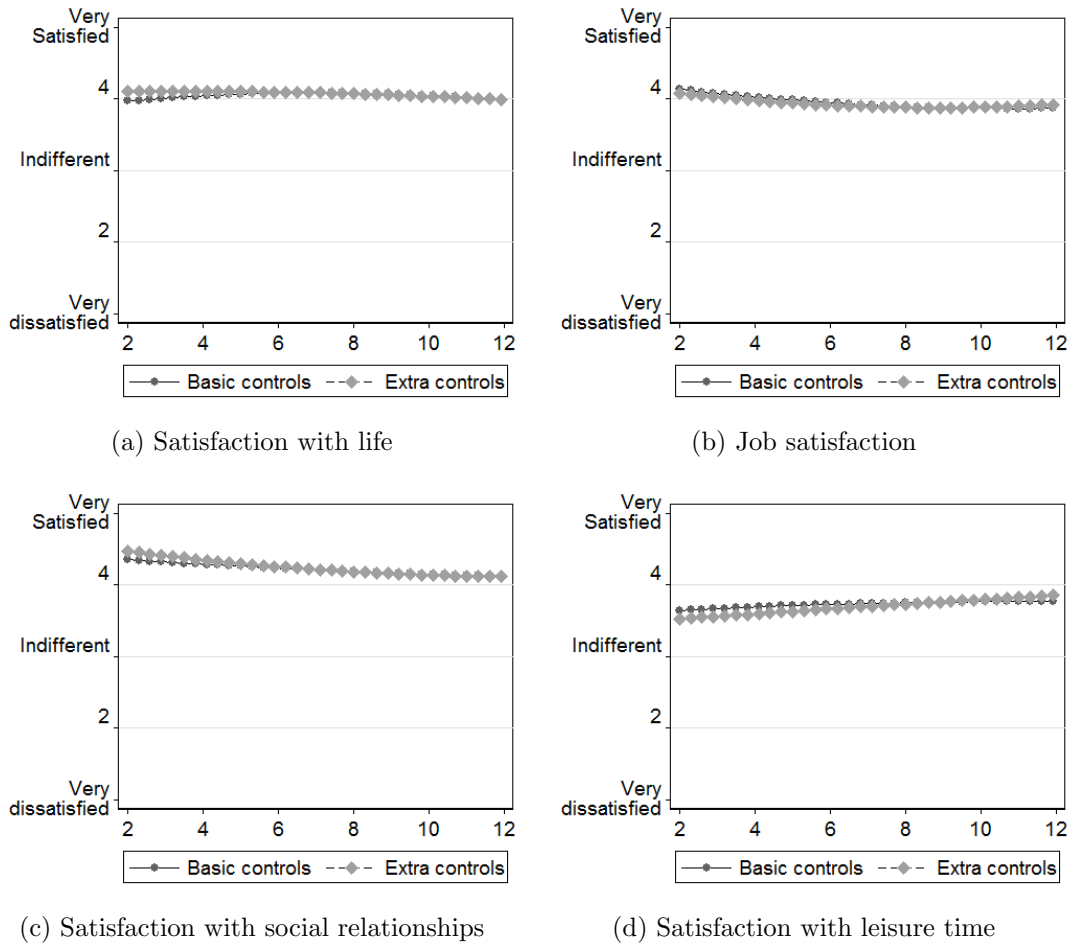
Note: N=496. Vertical lines indicate optimal points, that is, levels of working hours where satisfaction is maximised. The curves displayed here come from the regressions of the “empty model” column in Tables A30, A31, A32, and A33 respectively, on pages 213 to 216.

the shape of the curve is the expected one, since satisfaction with leisure time seems to be increasing with hours of work until 10 hours and then declines. It makes sense to some extent that if an individual works very little and has too much leisure time, he does not value it that much, however, I would also expect some dissatisfaction among individuals working 10 or 12 hours a day, but this does not seem to be the case.

However these are just crude correlations. It is possible that things will change when we control for possible confounding factors. We see this in Figure 4.15. But there is no change; all the curves remain more or less the same – except for perhaps the one for leisure satisfaction, which is slightly less pronounced. So we move now to exploring likes and not likes.<sup>14</sup>

<sup>14</sup>I also explored how the relationship of interest varied with schedule type, and the results of this exploration can be found in the appendix, in Figure A3, but they are not shown here because they do not add much. Unlike in previous sections, where different schedules did not matter which reinforced the idea that the estimates were quite robust, here they do vary, and I am not sure how to explain this variation.

Figure 4.15: Hours of work and satisfaction after controls



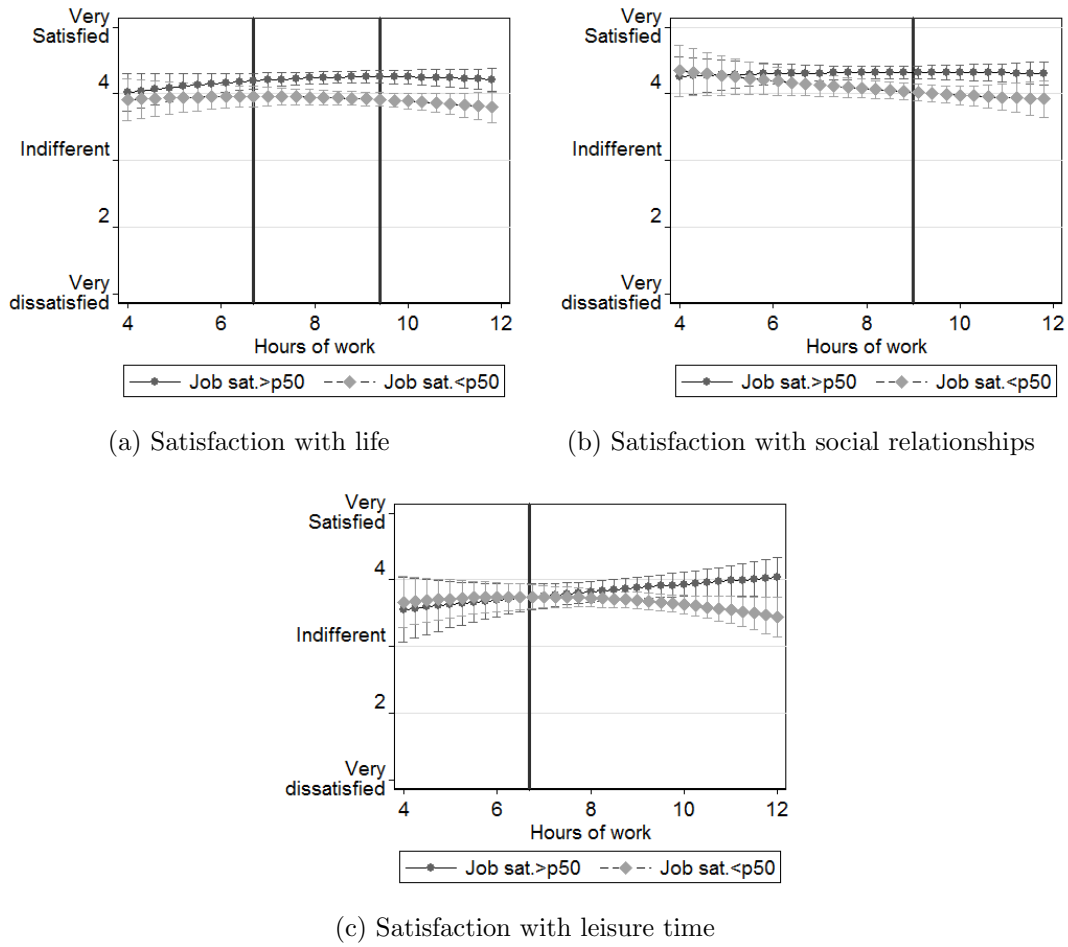
Note: employees: 391, self employed: 81. The curves displayed here come from the regressions of the “basic controls” column in Tables A30, A31, A32, and A33 respectively, on pages 213 to 216.

It is particularly interesting to see what happens to satisfaction when we explore *likes* and *not likes* separately. The results of this exploration are shown in Figure 4.16. The first thing we can note is that these three measures of satisfaction remain very high for all groups, employees who like their jobs more than the median, and also for employees who do not like their jobs that much. The most interesting thing that we see is that satisfaction with life is maximised with a positive number of hours for both *likes* and *not likes*. In other words, everyone, regardless of how much they like their job maximises satisfaction if they work. But, the optimal number of hours is always higher for *likes* than for *not-likes*, and not only that, but the curve for *likes* is almost always above the curve for *not-likes*, meaning that for almost any number of hours of work, *likes* are more satisfied than *not-likes*. In addition because of having a higher optimal point, this means that they can be balanced even if they work more than those individuals that do not like their jobs.

With regards to life satisfaction in particular – Figure 4.16a – we see that employees



Figure 4.16: Hours of work and satisfaction by liking



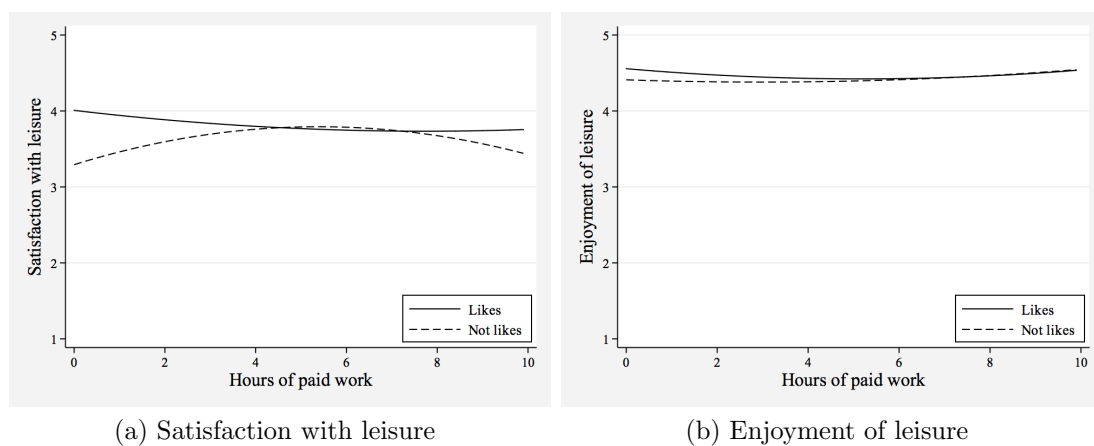
Note: The CI for employees that like and not just overlap for the first 4 hours of work, so actually for between 4-8 hours. After this there is no overlap. The estimates shown in this table are based on 190 observations for employees with job satisfaction above the median and 208 below. The curves displayed here come from the regressions of the “likes” and “not likes” columns in Tables A30, A31, A32, and A33 respectively, on pages 213 to 216.

that are more satisfied with their jobs are always more satisfied with their lives than those that are less happy about their jobs, and that while *not likes* peak at 6.7 hours, *likes* do so at 9.6 hours. The curves are, however, so flat that levels of satisfaction virtually similar to those of the optimal points can be reached for a quite wide range of hours around the optimal point. With regards to satisfaction with social relationships, *likes* are also more fortunate because after 5 hours of work (before the curves overlap), satisfaction is always higher for *likes* than for *not likes*. In addition, whereas satisfaction decreases with every hour of work for the employees with low job satisfaction, for individuals that like their jobs, the opposite happens, satisfaction with social relationships seems to increase up to almost 10 hours of work when it reaches the maximum. This may be explained by a more satisfactory social life in the work place. Whereas for individuals that do not like their jobs that much, every additional hour of work reduces leisure time for socialising.

I do not know exactly how to explain the relationship between hours of work and

satisfaction with leisure time. The curve that ‘not likes’ face is to be expected, a gentle inverted u-shape, but ‘likes’ seem to be more satisfied with their leisure time the less leisure time they have. One possible explanation could be that they really make the most of their free time and therefore it is very intense leisure that they enjoy. Nonetheless, I think it is a little odd; yet it is worth exploring the utility function of leisure for ‘likes’ and ‘not likes’, which could be illuminating. Figure 4.16c showed that individuals with high job satisfaction are more satisfied with their leisure as they do more hours of paid work, however, since not all time not spent in paid work is leisure, we start by showing the relationship between leisure satisfaction and actual leisure time. Next to it we plot the other utility function of leisure understood as the relationship of enjoyment of leisure time as a function of time spent in leisure.

Figure 4.17: Leisure satisfaction, and leisure enjoyment as a function of leisure duration.



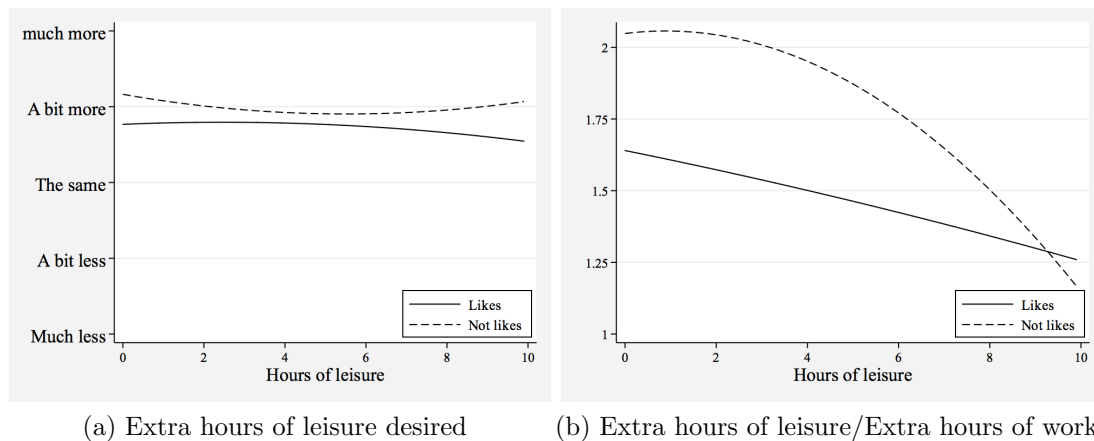
The *likes* are individuals above the median in terms of job satisfaction,  $N=191$ , The *not likes* are individuals below the median in terms of job satisfaction,  $N=200$ . Confidence intervals are not displayed because they overlap and it would not be possible to appreciate the differences in the curves.

Figure 4.17a shows that as we put in the horizontal axis hours of leisure time rather than paid work, the relationship varies a bit, now we see that leisure satisfaction does not decrease permanently as we spend more time in leisure. Satisfaction with leisure declines at first but then it remains stable at a high level of satisfaction between 6 and 10 hours. This makes it a bit less puzzling but I am still surprised to see that leisure satisfaction is highest among those with the least leisure time. Figure 4.17b does not solve the puzzle because it shows that leisure time does remain almost equally pleasant regardless of the number of hours spent in leisure (although there is a very gentle u-shape). This is so for both *likes* and *not likes*, and therefore calls into question the utility function explanation because on the one hand there is almost no decline, and on the other hand the utility function is very similar for both groups.

I am not sure that the utility function alone can explain the decline that the *likes* experience in leisure satisfaction as they spend more time in leisure time, because I expect

leisure satisfaction to be somewhat related to the amount of time spent in leisure and to it being considered sufficient by the individual. There are some questions in the dataset that ask individuals what they would like to do more of if they had more time. For instance, if you had more hours in a day would you work more, have more leisure, and so on. I think that these questions can help to shed light on this precise issue because they can show if there are differences between *likes* and *not likes*, in their desire for more hours of leisure. If for instance the *likes*' desire for extra leisure is smaller than that of the *not likes*, this could explain why they are so satisfied with very little leisure.

Figure 4.18: Desire for extra leisure time.



The *likes* are individuals above the median in terms of job satisfaction, N=191. The *not likes* are individuals below the median in terms of job satisfaction, N=200. Confidence intervals are not displayed because they overlap and it would not be possible to appreciate the differences in the curves.

Figure 4.18 shows the desire that individuals express for more free time (figure 4.18a) and for more free time compared to how much work they would like to do (figure 4.18b). The latter is important because most individuals express a desire to do more of almost all activities, and thus I think that comparing the desire for leisure with that for more work may be a better estimate of the desire for extra leisure time. Figure 4.18a shows that both 'likes' and 'not likes' would like to have more free time than they actually have, and that this desire is greater for the 'likes' than for 'not likes' which is consistent with the satisfaction with leisure time that is always lower for 'not likes' than for 'likes'. The desire for more free time of 'not likes' declines with hours of leisure (expected) up to 6 hours of leisure approximately, and then goes up again (this is not so expected, but confidence intervals are so wide there that I would not be so certain about this). The desire for more free time of 'likes' is almost the same between 0 and 4 hours of leisure and then starts to decline.

Figure 4.18b shows clearly that all employees' desire for leisure compared to work goes down as they spend more time in leisure, however different patterns emerge for *likes* and *not likes*. While *likes*' desire for leisure declines linearly with hours of leisure, for

*not likes* it takes 2-3 hours for the relative desire for leisure to decline. Note that ‘likes’ with 1 hour of leisure desires twice as much extra leisure time than extra work time, whereas ‘likes’ desire 1.6 times more leisure than work. I think that Figure 4.18 can explain partly why the ‘likes’ are more satisfied with their leisure time than not likes for all levels of work, however I think it does not shed light on the puzzling pattern that we aimed at shedding light on because we saw that, as one would expect, the desire for leisure is highest (absolute and relative to desire for more work) when the individual has the least leisure time. In any case the sample size is rather small, and so this remains highly speculative, and thus the puzzle remains for future research.

## 4.6 CONCLUSION

By using time diaries of different individuals, in particular the diaries of typical working days of employees, we have explored how several SWB outcomes vary with hours of work. In doing so we have discovered several things. On the one hand, we have seen that employees experience relatively high levels of enjoyment and satisfaction, almost regardless of how much they work. Unfortunately this is also the case for time crunch, which is experienced to a non-negligible extent by all employees. On the other hand, the analysis carried out suggests that there is indeed an optimal number of hours for almost all the subjective well-being outcomes considered, and that these do not always coincide; in other words, there are trade-offs. However, these trade-offs are greater if you do not like your job that much, whereas if you do like your job, you can almost “have it all”. Besides, optimal points are usually higher for individuals that like their jobs more, which could be interpreted as supporting the hypothesis that those that like their jobs more do indeed need less leisure time. Table 4.3 summarises the main findings.

When we observe the crude relationship between hours of work and affect we see that more hours of work seem to reduce the pleasantness of our day, this is so because individuals that work more hours experience less pleasant moments than those that work less, and in turn they experience a greater proportion of neutral moments, and slightly more unpleasant moments as well. This remains the case even after controlling for the usual socio-demographics and job characteristics. However, when we look separately at individuals above and below the median in terms of job satisfaction, different patterns clearly emerge in favour of individuals who like their jobs more, who maximise daily enjoyment and minimise the proportion of unpleasant time at a positive number of hours. This is not the case for individuals who do not like their jobs that much because for them every hour of work reduces enjoyment, the proportion of pleasant moments, and increases the proportion of unpleasant and neutral time (compare columns 1 and 5 in Table 4.3). Note that due to how flat some of the curves of marginal effects are, levels of SWB very close to the optimal ones can be reached in a quite wide range of hours (see columns 2 and 6 in Table 4.3).

Satisfaction levels are high almost regardless of the number of hours worked. The most interesting thing that we see is that satisfaction with life is maximised with a positive number of hours for employees that like their jobs more, but also for those that do not like their jobs that much. In other words, everyone, regardless of how much they like their jobs, needs to do some hours of work to optimise satisfaction with life, although, the optimal number of hours is always higher for *likes* than for *not-likes*, and not only that, but the curve for *likes* is almost always above the curve for *not-likes*, meaning that for almost any hour of work, *likes* are more satisfied than *not-likes*. Thus, from looking at the evidence of affect and satisfaction we can say that individuals that like their jobs

Table 4.3: Optimal number of hours by subjective well being outcome

SWB Outcome	Job satisf.> p50				Job satisf.< p50			
	Optimal (1)	O. Range (2)	E(Y) (3)	E(avg) (4)	Optimal (5)	O. Range (6)	E(Y) (7)	E(avg) (8)
Daily enjoyment	6.0	2.6-9.6	4.26	4.23	Min.	–	4.26	3.94
Pleasant time (%)	4.0	1.1-7.0	89.0	86.5	Min.	–	88.3	74.2
Unpleasant time (%)	7.1	5.4-8.8	3.0	3.4	Min.	–	3.6	10.0
Neutral time (%)	Min.	–	6.35	10.08	Min.	–	8.12	15.78
Feeling rushed	4.9	3.2-6.6	2.87	3.05	8.3	6.4-10.4	3.51	3.51
Feeling busy	Min.	–	3.55	3.64	9.6	6.0-12.0	3.56	3.57
Cutting back on sleep	Min.	–	1.51	1.73	9.4	7.3-11.6	1.70	1.70
Skipping meals	2.2	0.0-3.3	1.45	1.71	Max.	–	1.64	1.79
Life Satisfaction	9.6	7.2-12.2	4.26	4.25	6.7	4.0-9.6	3.96	3.94
Social life	9.6	5.2-14.0	4.32	4.32	Min.	–	4.33	4.04
Leisure time	Max.	–	4.05	3.86	6.7	4.8–8.6	3.79	3.71

The first column shows the number of hours that optimise each SWB outcome (‘Optimal’). The next column shows the ‘Optimal range’ that is, a bracket of hours where the individual would achieve a level of SWB very close to the optimal (less than 0.05 different for enjoyment, satisfaction and cutting back on sleep or skipping meals, less than 1% for the frequency of pleasant moments, and less than 0.5% for the frequency of unpleasant moments). The third column ‘E(Y)’ shows the expected value of SWB for the optimal number of hours (those shown in the first column). ‘E(avg)’ shows the expected value of SWB for the individuals that works the average number of hours. When in the optimal point column we see “Min.” that means that the optimal point is achieved by working as little as possible, and when it says “Max.” it means that point is reached by working as much as possible.

more do indeed need less leisure time since they can maximise SWB by working more hours than individuals that like their jobs less. But this does not mean that they need to actually work more than individuals that like their jobs less, because the flatness of the marginal effects makes it possible for them to enjoy levels of SWB very similar to the optimal ones for a very wide range of hours.

The analysis carried out here seems to suggest that the more you work, the more likely you are of feeling rushed, busy and the more likely you are to skip meals or cut back on your sleep to make up time. These results seem to be robust because they remain the same after controls and also regardless of the type of schedule employees have. However, when we explore separately individuals that like their jobs more and those that like it less, different – and not very clear – patterns emerge for each of them. But this time, the advantages go in the opposite direction. *Likes* optimise rushed feelings at a lower number of hours than *not likes*, and should work as little as possible to optimise the other measures of time crunch. This may be explained by greater work involvement of the *likes*, it seems to be the price to pay for liking a job. It should be highlighted, however, that although the optimal point is lower for *likes*, until approximately 8 hours of work, they

experience lower levels of time pressure than *not likes*.

To conclude we can say that there are indeed optimal hours of work to maximise well-being, but that those optimal points do not always coincide. However, the trade-offs are smaller for individuals that like their jobs more, than for those that like their jobs less. In particular, *likes* optimise enjoyment and satisfaction at a positive, and even large, number of hours, but do experience time pressure nonetheless. While individuals that do not like their jobs that much should work for some time to optimise satisfaction with life, but doing so reduces their daily enjoyment. Although these results should be taken with caution because they are based on cross-sectional data and a relatively small sample, I think that the fact that most employees cannot choose how much to work, and that we take into account job preferences – which may be an important factor explaining some of the variation in working hours – gives some credibility to the causal interpretation of the results. In any case the precise points obtained here and displayed in Table 4.3 should just be taken as approximations. One further limitation of this study is that the exclusion of the self employed, while necessary, gives the small sample size; and the fact that the self employed seemed to behave quite differently, means that the results are less interesting, since approximately one third of the labour force is not represented.





# Chapter 5

## Conclusion

### 5.1 THE THESIS CONTRIBUTION TO THE STUDY OF SUBJECTIVE WELL-BEING

Two major theories of subjective well-being are need theories and comparison theories. Whereas the first hold that SWB is the result of need gratification (Veenhoven, 1991; Veenhoven and Ehrhardt, 1995), comparison theories, or theories of relative utility, hold that people assess the adequacy of their situation in relation to variable standards such as other people, or themselves in the past. In other words, all judgements are relative, and the same event can be judged as positive or negative, depending on the social comparison that is made (Duesenberry, 1949; Lance et al., 1995; Parducci, 1968, 1995). Hence, while need theories predict that improving everyone's SWB is possible, relative utility theories hold that happiness is partly a zero-sum game, and that we live on an *hedonic treadmill* that makes us return to our happiness set point (Brickman and Campbell, 1971; Helson, 1964; Lykken and Tellegen, 1996).

The debate about the absolute versus relative nature of happiness became extremely popular with Easterlin's "Does economic growth improve the human lot? Some empirical evidence" (Easterlin, 1974). In this article, Easterlin questioned whether happiness had accompanied economic growth, and his answer was essentially "no". First, he compared several countries with different levels of wealth and did not find significant differences in happiness among them. Second, he observed how in the US, between 1946 and 1970 income levels doubled but average happiness levels remained unchanged. Finally, he observed how within each country, the better off were happier than the less well off. In his view, relative theories (Parducci, 1968, 1995) explained all of these outcomes. The hedonic treadmill was responsible for the stagnation of happiness because, as income went up, so did people's expectations, keeping SWB at the same level in spite of the improvement in income, and social comparisons explain why the better off are happier than the less well off. In this context, he argued, raising the happiness of all seemed impossible (Easterlin, 1974).

However, some later studies with better datasets – with more countries and longer time series – have found that richer countries, are indeed happier than poorer ones (e.g. in 2000, average happiness in Denmark was 8.5 and 5.5 in Greece), and that economic growth does in fact come with an increase in average happiness levels (Diener and Oishi, 2000; Hagerty and Veenhoven, 2003; Inglehart and Klingemann, 2000; Veenhoven, 1989, 1991; Veenhoven and Hagerty, 2006b). For example, Veenhoven (1989) showed that in post-war Western Europe and Brazil, a rise in income was followed by an increase in happiness. The former has given support to need theories, and it is incompatible with an extreme interpretation of the hedonic treadmill, according to which we systematically adapt to higher income levels (Brickman and Campbell, 1971). Some things should produce permanent changes in happiness, and those may be unequally distributed across countries, otherwise, the variation we observe in levels of SWB across the globe would not be possible.

In almost every country, individuals in the upper part of the income distribution do report higher SWB levels than less well-off individuals, which Easterlin (1974) explained using social comparisons. However, the relationship between income and SWB is weaker in richer countries. In fact, it is almost negligible in wealthy countries suggesting that it may not be social comparison but need satisfaction that explains this differential (Diener and Oishi, 2000). These authors find a correlation of 0.14 in Norway compared to 0.38 in South Africa, which they interpret as being the result of all citizens in Norway having greater chances of satisfying their needs than in South Africa. Poor individuals in rich countries may benefit from universal healthcare, while in poor countries, even the wealthiest individuals may not be able to avoid violence or insecurity.

To sum up, the fact that people are happier in rich countries than in poor countries, and, that in the time series, rises in income are usually followed by rises in average SWB levels, suggests clearly that SWB is partly linked to objective life circumstances. The within-country correlations between income and SWB – which are smaller and almost negligible in some countries – point in the same direction. Besides, the lack of a clear relationship between income inequality and levels of SWB (Veenhoven, 1993, 1997), further questions the idea that inequality undermines happiness. Yet, there are plenty of studies using data for a single country – and comparing richer and poorer individuals – that argue that relative income matters for happiness (e.g. Ferrer-i Carbonell, 2005; McBride, 2001). These claims are clearly incompatible with the macro evidence, besides having serious flaws at the theoretical and empirical level. Chapter 2, “Who cares about the Joneses!”, reviews and attempts to challenge that literature. It does so at the theoretical level by considering some of the psychological literature on social comparisons, and at the empirical level by exploring the within-individual variation in relative income on life satisfaction and mental distress using the BHPS, and showing that changes in relative income – a function of own income and the income of reference – do not explain SWB.

Most authors trying to test need theories have used income as a proxy for need satisfaction. While this may be sufficient for comparing poor and rich countries, this approach is clearly limited as countries grow richer, because in some rich countries everyone has access to good health care, whereas in others this is not the case. Hence, in two countries with similar income, need satisfaction could differ substantially. This may explain why the relationship between income and life satisfaction is less clear at higher income levels (Diener and Oishi, 2000), and probably why Easterlin and Veenhoven have quarrelled so much about it (Easterlin, 1974, 1995, 2001; Hagerty and Veenhoven, 2003; Veenhoven, 1989, 1991; Veenhoven and Hagerty, 2006b).

Measuring need satisfaction directly, instead of using per capita income as a proxy is desirable. Chapter 3 does this by using a sample of 19 European countries, from the third and sixth round of the European Social Survey where a special module on SWB was included that made measuring emotions with accuracy possible. It tries to explain the class-based differential in the experience of positive and negative emotions with four groups of variables: health, safety, social life and labour market outcomes. Since the former are unequally distributed across classes, and have been shown to affect SWB, they could be explaining SWB differences across social classes, and since this inequality should also vary across countries, they could also explain why social class matters more in some countries than in others.

Chapter 3 uses survey questions to approximate need satisfaction. For instance, one of the questions used to proxy social life asks individuals about the frequency of social meetings, the possible answers are “almost every day”, “several times a week”, “once a week” or “less than once a month”. Similar questions are used to assess the satisfaction of other needs. While this is surely better than per capita income to measure need satisfaction, the former variables are just an approximation, more or less accurate, of the amount of social life, because on the one hand it relies on the individual’s recall, and second, because it is a categorical variable – i.e., seeing friends once a week for one hour is not the same as spending an entire day with them, but the ESS question would not differentiate between the two situations. Time diaries would allow a much better measurement of socialising because they provide a very detailed account of how the individual spends their time, and with whom they are at all times (and even of the quality of that experience). Thus, diaries could contribute to a clearer understanding of the link between need satisfaction and SWB. Chapter 4 is an example of that approach. It uses time diary data from France to explore the relationship between working hours and different well-being outcomes with the aim of empirically determining which work amounts optimise SWB. Several well-being outcomes are considered – enjoyment of activities, satisfaction, and feelings of time pressure – with the intention of measuring SWB comprehensively, but also with the aim of explaining the potential trade-offs among different SWB outcomes, which is an issue of great importance for SWB research but to which little attention has

been devoted so far. Not all workers like their jobs to the same extent, and Chapter 4 investigates to what degree liking a job can affect the *optimal* number of hours, and more generally the relationship between hours of work and SWB.

In the following pages the main findings of these three chapters will be presented, as well as their main limitations. How the findings of the thesis relate to the SWB theories will also be discussed, as well as policy implications and ideas for future research. Since Chapters 2 and 3 are more clearly connected to the absolute versus relative nature of SWB, the policy implications of these two chapters will be discussed together. The final section will be entirely devoted to Chapter 4.

## 5.2 HAPPINESS, ABSOLUTE OR RELATIVE?

### 5.2.1 Challenging the relative income hypothesis

According to the relative income hypothesis, having an income below that of your reference group reduces SWB, while having an income above that of the reference group raises SWB (Clark, 1996). In this context, an individual's SWB depends not only on his own situation, but also on that of others (Parducci, 1968, 1995). However, social comparisons are complex and flexible processes in which the individual plays an important role and, therefore, assuming that a contrast in incomes will produce a given effect seems unreasonable. In fact, it has been shown that individuals often use social comparisons in a self-serving way (Brown and Dutton, 1995; Diener and Fujita, 1997). Individuals could simply choose wisely the reference groups so that they benefit from a comparison or simply avoid income comparisons altogether if their financial situation is bad.

Besides, unlike need theories, which predict SWB as a consequence of need satisfaction of which the individual does not need to be aware, relative deprivation theories require the active participation of the individual by engaging in a social comparison, however they do not seem to make use of social comparisons that often. When asked *whether comparing one's income with that of other individuals was or was not important*, the majority of individuals from several European countries answered that this was not the case (ESS, own calculation). When Schimmack et al. (2002) asked some individuals to report their life-satisfaction and immediately after to report their thoughts during the life-satisfaction judgements, social comparisons were mentioned just 6% of the time. Hence, assuming that people make income comparisons when judging their lives is also a very strong assumption. This contrasts with the lab evidence in which individuals have been found to make great use of social comparisons when making judgements (Parducci, 1968, 1995; Smith et al., 1989). Diener and Fujita (1997) explain this contradiction as being the result of experiments forcing individuals to focus on differences between individuals and into making comparisons, which may not apply to natural settings.

In the light of the former evidence, the weak evidence that supporters of the relative income hypothesis have found seems less surprising (see Table 2.1). Using data from the BHPS, Chapter 2 shows that changes in relative income are not associated with changes in life satisfaction or mental distress. Relative income is defined by the ratio between own income and the income of the reference group. Two measures of income are used: usual net payment per month and a measure of per capita household income. Defining the income of reference is, in my opinion, the most controversial part of this and all other papers that try to assess the effects of relative income on SWB. First, because it is difficult to identify the group of reference, and second because even knowing the group of reference, it is difficult to know the type of comparison that is being made. A variety of reference groups have been used in the literature, as well as in Chapter 2 – i.e., individuals in the same region, with the same education level, in the same occupation, ethnic group and a combination of the former. It is assumed, as in the rest of the literature, that incomes above that of the reference group should raise SWB and incomes below it should reduce SWB. The results of the fixed effects regressions of SWB on relative income question the relative income hypothesis, because changes in relative income do not affect either life satisfaction or mental distress. Although in most cases the coefficients have neither statistical nor practical significance, there are some coefficients that are statistically different from zero but that have no practical significance. For example, an individual in the third income quintile earning approximately 1,000 pounds who experiences an increase in his own income of 20% (while the income of reference stays unchanged at 1,000), has an expected increase in life satisfaction of just 0.018.

These results are quite robust because they do not vary depending on whether earnings or per capita household income is used, neither with the reference group, nor with the SWB outcome considered. Besides, the results are not driven by ‘special’ individuals because the distribution of personality is almost identical for individuals experiencing the most change and those experiencing the least change. I also looked separately at the effects of changes in relative income driven by own income and the income of the reference group, since the latter should be more exogenous than the first, finding no relevant differences. Other robustness checks were carried out that supported the main results.

Although this is not the first study to question the idea that relative income matters for SWB (Diener and Fujita, 1997; Diener et al., 1999; Veenhoven, 1991, 1993), it is, to my knowledge, one of the few that explicitly attempts to challenge the relative income hypothesis. Many researchers have in fact found no effects, but they have not been very open to interpreting their findings as contradicting the relative income hypothesis. Publication bias towards ‘effects’ rather than ‘no effects’ may have had something to do with it, but I also think that the main reason the weak evidence was so quickly accepted as giving support to the relative income hypothesis is that it is very much in line with

deeply rooted ideas about the importance of relative standing (Solnick and Hemenway, 1998; Veblen, 1899).

### 5.2.2 The class-based emotional gap

In most countries upper-class individuals enjoy, on average, higher SWB than middle- and lower-class individuals. Chapter 3 takes data from several European countries that took part in the third and sixth rounds of the European Social Survey, and tries to explain differences in positive and negative emotions with the following group of variables: health, safety, social life, employment and financial situation. The initial idea was that of exploring class-based differences in happiness and life satisfaction, but it soon became clear that comparing those across countries presented methodological issues that would compromise the credibility of the research, thus the focus was placed on exploring the gaps in positive and negative emotions instead – which, unlike the former, could be compared across countries (Huppert et al., 2009; Van de Velde et al., 2010).

The countries with the smallest gaps in negative emotions between the upper and lower class in 2006, were Norway, Sweden, Switzerland, Denmark and Russia, all with a gap below 0.05. The largest emotional gaps are found in Slovenia, Belgium, Bulgaria and Slovakia, where the gap lies between 0.15-0.20.<sup>1</sup> In countries with small gaps the lower class has a higher prevalence of depression of between 2 and 5 percentage points more than the upper class, whereas in countries with the largest gaps, those differences are of 15 to 25 percentage points. In countries with small gaps, the experience of negative emotions is low, with an average score between 0.5 and 0.6, for the entire population, which means that individuals experience negative emotions somewhere between ‘never’ and ‘sometimes’.<sup>2</sup>

Countries with the highest scores are: Bulgaria, Russia and Slovakia, with average scores above 0.9 in all cases. In the former, the upper class may experience negative emotions with as little frequency as individuals in Norway or Switzerland, but the middle and lower class depart substantially from that level. For instance, in Slovenia the depression rate among the upper class is just 6.7, even lower than that of Norway, but it is more than three times higher for the lower class. Other examples of such countries are the Netherlands, Ireland, Finland, Cyprus, and Belgium. But, there are other countries where everyone is just worse off in general, such as Bulgaria, Estonia, Poland, Portugal, Russia and Slovakia.

The explanation put forward in Chapter 3 is that differences in negative emotions

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<sup>1</sup>Remember that gaps show the difference in affect scores across classes. Both positive and negative affect scores range from 0 to 3, and gaps, the difference between these scores between social classes, in our sample go from 0.01 to 0.25, with a mean of 0.12 and a SD of 0.066.

<sup>2</sup>Russia is an exception to the former because it is the only country in the sample with a very small class gap and high level of negative emotions. In other words, in Russia, there is equality in the distribution of positive and negative emotions because everyone is almost equally unhappy.

between the upper and the lower class are mostly driven by differences in health and employment and, consequently, that the differences in the gaps across countries are due to differences in the differentials in those variables across countries. Feeling safe and having successful social relationships are no less important for negative emotions, but since they are more equally distributed across classes (and better satisfied) they contribute to the differences in negative emotions existing across classes and countries to a lesser extent. For instance, in the UK, the proportion of individuals with depressive symptoms among lower-class individuals is almost double that of upper-class people (15 versus 27 per cent). This is explained by differences in health and financial strain across classes. There is a difference of 13.6 percentage points between the upper and lower class in the proportion of individuals that report having good health, and a difference of 10 percentage points in financial strain between upper- and lower-class people. Differences in terms of social life and safety feelings are below 5 percentage points. Consistently with the ‘needs explanation’, in countries with the smallest differences in negative emotions, across classes, the distribution of need satisfaction is more equal. For instance, in Sweden, there is just a 4 percentage points difference in depression rates between upper and lower class individuals, and this is explained by a less than 5 points difference in good health between the upper and lower class, and another 5 points difference between the upper and lower class in terms of financial strain.

The former examples also show that per capita GDP is insufficient to explain well-being at certain levels. Sweden and the UK have quite similar per capita GDP levels – Sweden, 32,000 USD, and the UK, 29,000 USD, and yet they provide different levels of need satisfaction to their populations. In Sweden, average need satisfaction – the average of the proportion of individuals with good health, that feel safe, have a good social life, and have enough income – is 89.3, whereas in the UK it is 81.3. Some may argue that income inequality may be behind this, since in Sweden income inequality is much lower than in the UK (the Gini index is 34 in the UK and 23 in Sweden). Yet, income inequality does not seem to be a necessary condition for providing high and equal need satisfaction. Switzerland is a good example because it is a country with high income inequality (Gini index of 29.9), and yet average need satisfaction in that country is much higher than in the UK, 90.25. In fact, need satisfaction is as high as in Sweden, and as egalitarian.

Having the same questions in 2006 and 2012 presented an exceptional opportunity because the economic crisis occurred right in between these two rounds. The financial crisis of 2008 destroyed many jobs and forced many people into unemployment and financial hardship. Since unemployment and financial hardship were precisely among the variables that explained most of the differences in negative emotions across classes, having a large and somewhat exogenous shock on those, being able to explore their emotional consequences was an extremely interesting opportunity for testing causality. Between 2006 and 2012 the proportion of individuals that experienced economic difficulties increased

dramatically in countries like Spain (from 14.8 to 33.0) due to a rise in unemployment levels (from 4.4 to 21.4), as did depression rates (from 19.2 to 25.1), just as need theories would predict. Similar stories are found for Ireland and Cyprus. At the same time, there were countries such as Bulgaria, Poland or Slovakia, where the economic situation improved between 2006 and 2012, and the prevalence of depression went down.

The results of this study clearly support need theories, however we must be cautious because our analysis does not say anything about the cognitive component of SWB, life satisfaction, and, while we are very successful in explaining the gaps in negative emotions – as well as its variation across countries, we are less successful at explaining positive emotions. My intuition is that those would be better explained if the measurement of need satisfaction improved. Having sufficient social contacts may be enough for not feeling bad and preventing depression, but having a very satisfactory social life explains why some people have more or less positive emotions. This brings me to a more general limitation of the analysis that should be kept in mind: need measurement is still quite limited.

Another important limitation of Chapter 3 is that individuals that never took part in the labour market are excluded from the analysis, and so are homeless people and other marginal individuals that do not take part in surveys. This is very unfortunate since those are the most disadvantaged members of society, whose emotional differences with the top of society, this paper aimed at capturing. Although individuals that never worked and do not have a social class are a small percentage in most countries, they exist and they are mostly women, low educated, and have significantly lower SWB than individuals included in the analysis. The exclusion of homeless people is probably a bigger problem. Unfortunately we cannot do much with the dataset at hand, but this issue should be addressed by future research since it does not make much sense to be concerned with SWB and not know anything about the group with higher chances of having low SWB. Yet, while the former limitation probably does make the description of inequality in the distribution of SWB provided in this chapter biased downwards, this chapter is still interesting from the causal point of view, because explaining away the differences between the lower and upper class shows that need satisfaction affects SWB.

### **5.2.3 Policy implications: the inequality that matters**

Sociologists have worked extensively in understanding objective differences in well-being between the most and the least privileged members of society (Rose and Harrison, 2012). However, very little is known about how their feelings differ. SWB is an important life outcome that is unequally distributed over the population. To the extent that inequality in the distribution of SWB is class based, public policy may be able to do something about it. However, before that an understanding of how those differences are produced is



required. Relative utility theories predict that such gaps or differentials should exist since inequality and social comparisons should, by definition, make the better off feel better than the less well off; whereas absolute utility theories predict the existence of a gap in SWB due to differences in need satisfaction. The cross-country comparisons and time series data (Diener and Oishi, 2000; Veenhoven and Hagerty, 2006b) have given support to need theories and less so to relative utility claims, since the correlation between income and SWB is weaker in rich countries. Yet, most studies connecting needs and SWB have used income per capita as a proxy for need satisfaction, which is clearly insufficient when looking at already rich countries.

Chapter 3 takes data from the European Social Survey and tries to explain the class-based differential in the experience of positive and negative emotions across 19 European countries following the needs approach. The analysis suggests that health and financial strain explain most of the class differential as well as its cross-country variation in gaps (and levels) because these are the two factors that differ more between classes and between countries. Social life and safety feelings are remarkably equal across the population, and therefore, although important to SWB, they do not play an important role in explaining differences across countries. This gives support to need theories and takes it away from relative theories because, first, it is clear that in countries where need satisfaction is most egalitarian, so are emotions (e.g. Norway, Sweden or Switzerland). Second, in all countries in our sample, the class differences disappear when needs are accounted for, suggesting that if there were no differences in needs they would be egalitarian in terms of SWB, like Norway, Sweden or Switzerland. The former is reinforced by the analysis of the consequences of the crisis, which produced the expected effects: increase of negative emotions where the economic situation deteriorated and reduction in the frequency of those where the financial situation improved. Finally, in an earlier version of the research, income inequality was included as a country-level regressor, and it had no impact at all on the emotional gap.

Chapter 2 also challenges relative utility theories. It starts by questioning the simplistic way in which social comparisons are supposed to happen, and at the empirical level, by showing that changes in relative position do not affect life satisfaction or mental distress. Although the chapter has some important weaknesses, such as the definition of the reference group, and the fact that comparisons take place in a certain way, which should make us cautious about the results, it also reminds us that there is no convincing evidence about the effects of relative income for SWB. Therefore, more studies are needed and, until then, caution is required when claiming that inequality reduction is crucial for sustaining happiness. The existing evidence simply does not support that claim.

Chapter 2 as well as all the articles that try to test the relative income hypothesis face an enormous challenge: identifying the group of reference and the type of comparison that the individual makes (i.e. is the individual that has less than the reference group

being negatively affected by seeing that others have more than him, or is he instead motivated to work harder to be like the others in the future?). However, regardless of how people compare, in a country with greater inequality, social comparisons should have a greater effect. Yet, the evidence available does not support this since researchers have not found any relationship between SWB and mean income of the nation (Diener et al., 1995), nor with the maximum income, the minimum, or with the skew of the distribution (Hagerty, 2000). Need theories receive support, while relative theories do not. This has important policy implications that are discussed next, the first one, that everyone's SWB can improve at once, and the second one, that the usefulness of relative poverty lines and the concept of relative deprivation is doubtful.

Happiness is not a zero-sum game because if it were, upper, middle and lower class should, by definition, differ in their SWB levels, and this is not always the case. For instance, in Switzerland, Norway, and some other countries, the frequency with which different social classes experience positive and negative emotions is virtually the same. There is income inequality, and there probably always will be, therefore, knowing that this is not going to prevent anyone from enjoying higher SWB is good news.

The OECD, as part of its aim of keeping track of citizens' well-being, periodically constructs a measure of poverty for all European countries. This measure gives the proportion of individuals below a certain threshold. However, this threshold is not the income level that citizens in each country need to purchase basic commodities, but 50% of the median household income. In other words, it is a relative poverty measure. There seem to be practical reasons behind the adoption of the relative poverty line, e.g., *avoiding economic hardship is a primary objective of social policy. As perceptions of 'a decent standard of living' vary across countries and over time, no commonly agreed measure of 'absolute' poverty across OECD countries exists. A starting point for measuring poverty is therefore to look at 'relative' poverty, whose measure is based on the income that is most typical in each country in each year.* (Factbook, 2010). This is unfortunate, because with this measure we are not capturing deprivation but income distribution – which may be important, but is not the same as poverty. The following example will make clear why I think this is so.

According to the former definition, Switzerland and Slovakia have almost the same proportion of poor people since they have similar poverty rates. According to the OECD poverty in Switzerland is 8.7 and in Slovakia, 8.1 (see Table A9). Yet, living standards differ so much that while in Switzerland only 11.4% of individuals aged 30-60 present depressive symptoms, the equivalent in Slovakia is 36.1% (ESS, own calculation). This is because need satisfaction is higher in Switzerland than in Slovakia (despite income inequality being much higher in Switzerland than in Slovakia). Average need satisfaction is 90.3% in Switzerland versus 70.3% in Slovakia, because the proportion of people with good health, feeling safe, socialising enough, and having enough income, is much higher

in Switzerland than in Slovakia, and in consequence, more people are suffering in Slovakia than in Switzerland. Besides, while income inequality is higher in Switzerland than in Slovakia (the Gini Index in Switzerland is 29.9 while in Slovakia it is just 23.3, almost as low as that of Sweden), need satisfaction is not only higher, but more equal in Switzerland. In consequence, not only is depression lower on average in Switzerland, but there is less inequality in the distribution of depression across the Swiss population. The depression gap is 4.7 percentage points between the upper and lower class. This is 14 percentage points higher in Slovakia for the lower than the upper class. Equality in SWB applies to other outcomes as well such, as positive emotions or happiness and life satisfaction. In this context, does it make sense to say that poverty is equal in Switzerland and Slovakia?

According to the OECD, in the Mid-2000s, 6.8% of people in Norway were poor. Thus, the poorest 6.8% of the population in Norway are defined as poor (while none of the richer individuals is considered poor). Yet, when we look at negative emotions and depression rates by class in Norway we find that the negative emotions score are virtually the same across classes. Not surprisingly, the proportion of individuals depressed or with depressive symptoms is very similar for upper- and lower-class individuals, 8.3 and 10.0 per cent respectively. There is depression among lower-class individuals, but it does not seem to be related to income since surely they differ between the upper and lower class and yet they feel the same. Does it make sense then to define the 6.8% of the population with the lowest income in Norway as poor?

Relative poverty lines do not make much sense, and yet, they are incredibly widespread, for example, the ‘At-risk-of-poverty’ measure developed by Eurostat is essentially the same, just using 60% of median equivalised income after social transfers, rather than 50%. But there are many more institutions that use them, and researchers use them to measure deprivation and to signal the population in need. This is mistaken in itself, but also because it means often that these nonsense measures replace absolute deprivation, absolute poverty measures are much more important. Besides, there are already good measures to keep track of income inequality such as the Gini index or the quintile ratio, thus relative poverty does not add much.

It is worth emphasising that the analysis carried out in Chapters 2 and 3 suggest that income inequality per se does not affect SWB, while need satisfaction – i.e. health and avoiding financial strain – does. Therefore, the aim of reducing income inequality under the belief that this reduction, per se, will bring happiness, should be abandoned because income inequality in itself has very little to do with human suffering. This does not mean that policy makers should not care about income inequality. There are several reasons why they may want to do so. For instance, income inequality could affect SWB indirectly, via making the universal health care less likely. It is also possible that income inequality directly affects some outcomes that we value such as economic growth. If more unequal countries grow less, governments would have one reason to target inequality. And, last

but not least, governments may want to target inequality simply because citizens dislike it.

## 5.3 WORKING HOURS AND SUBJECTIVE WELL-BEING

### 5.3.1 How much we should work?

Most of the research concerning the relationship between work and well-being has focused on the negative aspects of working ‘too much’, or at the ‘wrong hours’ (see Fagan et al., 2012, for a review). However, we know much less about the benefits of work, and, in particular, about how much to work to maximise well-being. This is at odds with the insights of important psychologists working in the area of SWB, that have highlighted the importance of being devoted to our job, or having one that we are passionate about, as a key for happiness (Lykken, 1999; Seligman, 2002). Most individuals are satisfied with their jobs, but some more than others, Chapter 4 explores the dynamics between hours of work and SWB, separately for individuals with high and low satisfaction, with the aim of understanding the effects of liking a job for work-life balance. The chapter uses the diaries of typical working days of employees from France from the last time use survey. This survey was carried out between September 2009 and September 2010 and, in addition to some typical SWB questions, it contains enjoyment ratings for each episode of activity for a 5% subsample.

The analysis suggests that all employees experience relatively high levels of enjoyment and satisfaction, almost regardless of how much they work. Unfortunately, time crunch is also very high for all employees. Exploring separately individuals according to how satisfied they are with their jobs shows some interesting patterns. There is indeed variation with working hours, and there is a particular number of hours that maximises SWB, but optimal hours differ depending on the SWB outcome we look at. In other words, there are trade-offs, and those trade-offs are greater if you are among those with low job satisfaction. Individuals above the median in terms of job satisfaction optimise enjoyment and satisfaction at 6 and 9.5 hours respectively, and the frequency of unpleasant moments is minimised at around 7 hours of work. Whereas, individuals that do not like their jobs that much should also do some work to optimise satisfaction with life (6.7 hours), but doing so reduces their daily enjoyment considerably, and increases the proportion of time spent in an unpleasant state.

Optimal points are usually higher for individuals with high job satisfaction, suggesting that individuals that like their jobs more do indeed need less leisure because they can afford to work longer hours and still optimise SWB. The former does not mean, however, that they need to actually work more than individuals that like their jobs less, to maximise SWB, because the flatness of the marginal effects makes it possible for them

to enjoy levels of SWB almost identical to the optimal ones for a very wide range of hours. For example, by working 8 hours, individuals with high job satisfaction do reach almost optimal enjoyment and life satisfaction levels, and always higher than those of individuals with low job satisfaction. They do not minimise time crunch however, since most time crunch measures are minimised by working as little as possible. Individuals with low satisfaction can optimise life satisfaction and time crunch at once, but not daily enjoyment. However, although individuals with low job satisfaction optimise time crunch at around 8-9 hours of work, for that amount of work, they do experience more time pressure than individuals with high job satisfaction.

Although these results should be taken with caution because they are based on cross-sectional data and a relatively small sample, the fact that most employees cannot choose how much they work, gives some credibility to the causal interpretation of the results. Note that 65% of employees have an imposed schedule and, in consequence, the distribution of working hours is almost identical for individuals with high and low job satisfaction. Besides, running a separate analysis for employees with high and low job satisfaction – which may be an important factor explaining some of the variation in working hours – gives further credibility to the causal interpretation of the results. Chapter 4 does not say anything about the what divides people into high and low job satisfaction, it just explores the differences in SWB as a function of working hours, between individuals that like their jobs more and those that like their jobs less. Chapter 4 shows that liking one's job is important in the dynamic between hours of work and SWB. Besides, to the extent that one believes that job satisfaction can be enhanced, the results of this analysis all have important policy implications.

Chapter 4 has several limitations that should be mentioned before discussing policy implications. One of them, perhaps a minor one, is that liking one's job, or job satisfaction, is not a binary issue, and thus, by treating it as binary we lose a lot of the variation for the sake of simplicity. Future analyses should consider treating job satisfaction as a continuous variable. A major limitation of Chapter 4 is that it ignores important groups of the population such as retired individuals, homemakers, and students. They are excluded from the analysis for practical reasons, not because they do not interest us. Although homemakers and retired people do not do paid work, they do different activities, some leisure ones, and other more obligatory ones, because they are required to maintain quality of life – such as personal care and preparing meals, which may be more or less conducive to well-being. The analysis would improve considerably if the homemakers and retired individuals were included. The exclusion of the self-employed is also unfortunate, but it was inevitable given the sample size. They are an important group, because, if I am not mistaken, many jobs are becoming more like those of self-employed individuals, and therefore understanding them means understanding a big, and most importantly growing, part of the population. Unfortunately, they were so few and

they seem to be facing very different SWB functions as a function of time at work, and thus I opted to leave them out. Finally, I would like to highlight once more, that most of the results presented in Chapter 4 are based on a relatively small sample, of less than 400 diaries. Chapter 4 would benefit from a larger sample, as well as from having more diaries for each individual, so to be able to explore the within-individual variation.

### 5.3.2 Policy implications and future research

Work-life balance has concerned policy makers for some time, but lately the issue has attracted more attention – probably due to the flexibilisation of working time arrangements and the increased participation of women into the labour market (Boulin et al., 2006; Messenger, 2004). Examples of this concern are several political initiatives to reduce working time to 35 hours per week or to impede the ‘contamination’ of leisure with work related activities such as checking emails. In Spain, for instance, a few political parties are proposing the 35-hour working week as a way to reduce unemployment, and presumably improve the quality of life by making it easier to achieve work-life balance. However, if the economics of this initiative are doubtful, the alleged benefits for work-life balance are even more dubious.

As much as these proposals may seem to be common sense, there is no evidence, to my knowledge, that reducing the working week to 35 hours will help us have more balanced lives. In fact, the analysis carried out in Chapter 4 questions such assumptions, since many employed individuals can maximise daily enjoyment and life satisfaction by working more than 40 hours per week.<sup>3</sup> Besides, the SWB curves as a function of working hours are usually so flat at around the optimal points that a variety of work hours can bring levels of SWB very close to the optimal, suggesting that a reduction of 1 hour a day would not change things much. This should make us wonder whether initiatives such as the 35-hour working week make much sense from the perspective of well-being. Table 5.1 tries to show this.

Columns (I) to (III) in Table 5.1 compare SWB for individuals working 35 and 40 hours per week. It does so showing the estimated SWB levels for individuals working 7 and 8 hours a day respectively. Columns (I) and (II) show the predicted values, and (III) shows the difference between (I) and (II), that is, the expected gain in SWB of reducing daily hours of work from 8 to 7, and thus the weekly hours from 40 to 35. As expected, there is practically no change between the 40-hour working week and the 35-hour one. For instance, daily enjoyment would increase by 0.03 (just 6% of a standard deviation). The expected change is also insignificant in life satisfaction and time pressure, quantitatively but probably also statistically speaking. For instance, working 8 hours

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<sup>3</sup>To know the exact number of proportion of employees that optimise SWB working 40 hours per week, we would need to treat job satisfaction as a continuous variable.

Table 5.1: Is the 35-hour work week worthwhile?

SWB Outcome	Hours of work			Job satisfaction (40 hrs.)		
	35 hrs. (I)	40 hrs. (II)	Diff. (III)	> $p50$ (IV)	< $p50$ (V)	Diff. (VI)
Daily enjoyment (1-5)	4.14	4.10	0.03	4.24	3.98	0.25
Unpleasant time (%)	5.6	6.1	-0.5	3.2	9.2	-6.1
Neutral time (%)	11.8	12.6	-0.8	9.8	14.5	-4.8
Life Satisfaction (0-10)	8.16	8.17	-0.01	8.47	7.90	0.58
Feeling rushed (%)	58.8	59.2	-0.4	53.3	55.6	-2.2

‘Feeling rushed’ shows the proportion of people that report feeling rushed several times a week or every day”.

versus doing 7 hours, would increase life satisfaction by 0.01 and reduce time pressure by just 0.4 percentage points. It seems, then, that reducing the working week to 35 hours would not affect SWB very much. Whereas liking one’s job seems to provide greater improvements in terms of SWB, columns (IV) to (VI) show this precisely. Individuals with low job satisfaction spend 3 times more time in an unpleasant state than individuals with high job satisfaction, and, 50% more time in a neutral state. The former reduces daily enjoyment by half a standard deviation (0.25), and life satisfaction by one standard deviation.<sup>4</sup>

It is important to highlight that while Table 5.1 does show with some credibility that reducing the working day by one hour would not affect SWB, it does not prove that the differences displayed in Col (VI) are showing causal effects, but they are suggestive. It seems very plausible that liking what you do makes you happier and more satisfied with your life, and it also seems likely that we are capable of improving job satisfaction. Besides, it is important to note that in any case, the power of improving quality of life through a reduction in work time – or via advancing retirement – is quite limited. Work occupies approximately one half of our waking time if we work 40 hours per week, almost as much as if we work 35 hours per week. So, focusing on improving the quality of working time seems to be a strategy with much more potential. In the light of the research presented here, it makes no sense to keep thinking about work as a pain to avoid, but, instead, as a goldmine to exploit.

Besides, there is a lot of research showing that the health of individuals engaged in paid work is better than that of those out of the labour force (Damaske et al., 2014; Kahneman et al., 1999), which suggests that the SWB of homemakers and retired individuals should not, in principle, be higher than that of workers. Yet, with the current analysis we cannot answer that yet. This is left for future research, where I hope to compare not only average

<sup>4</sup>Note that the improvement would not change much if we looked separately at individuals with high and low job satisfaction separately.

levels of SWB for homemakers and retired individuals, but also explore work-life balance; that is, explore the relationship between e.g. hours of unpaid work and SWB. The former should be done for both homemakers and retired individuals.

I am particularly interested in exploring the effects of retirement for SWB or work-life balance. In this analysis we find that work is good for SWB – especially for employees with high job satisfaction, which makes me wonder about the effects of retirement for SWB. I would like to explore work-life balance for retired individuals, and its relation to hours of work (unpaid work in this case). I would like to investigate carefully the relationship between work and SWB for individuals of different ages, distinguishing by occupations types, if possible (it is not possible with the French dataset because the subsample with affect is very small), to see if as people age, activities become less pleasant or tiring. The former analysis, together with the more general comparison of employed and non-employed individuals could shed light on the adequacy of early retirement, an issue of extreme policy relevance. My guess is that if we could explore these by type of activity we could find important differences since occupations that are more demanding physically could create a burden as we age – whereas this would not be the case with researchers or intellectual workers in general, whose SWB should not necessarily improve with retirement.

One of the most interesting findings of Chapter 4 is the existence of trade-offs between affect and cognition – between enjoyment and life satisfaction, especially among employees with low job satisfaction. The existence of trade-offs among SWB components highlights the importance of not limiting the analysis to a single SWB measure. For instance, the exclusive focus of National Time Accounts on affect could lead us to erroneous conclusions, since based on enjoyment solely we would conclude that working is bad for individuals that do not like their jobs, however, if satisfaction is taken into account, we would conclude otherwise. Chapter 4 uses several measures that capture different aspects of SWB, yet there are more variables that could be incorporated into the analysis such as tiredness or boredom, which are present in the French dataset.

It is also important to understand better the interrelations between affect and cognition, to which very little attention has been paid so far. In this chapter we have seen that being satisfied with the job is one example of a variable that reduces the discrepancies between satisfaction and affect. Another example could be culture. For instance, in a sexist culture, working long hours outside the household could reduce life satisfaction for women with small children. It would be extremely interesting to replicate this analysis with other datasets from different countries to compare the emerging trade-offs. I would expect the relationship between working hours and affect to be more or less the same everywhere while the relationship between working hours and satisfaction to vary across countries, and perhaps also across socio-demographic groups.

Finally, greater efforts should be made to understand better the time pressure phe-



nomenon, because all workers experience it to a large extent even if they do not work that much, and, moreover, regardless of whether they are very satisfied with their jobs or not. Besides, time crunch is the only outcome, of those considered so far, that is not optimised simultaneously with life satisfaction and affect for individuals with high job satisfaction. We may be tempted to conclude that time crunch is just a complaint without further consequences. The fact that individuals with high life satisfaction, high daily enjoyment, and high job satisfaction can report very high levels of time crunch inclines me to agree with that position, however, we cannot be sure. In fact, precisely to address that suspicion, I included alternative and, perhaps somewhat more ‘objective’ measures of time crunch such as the extent to which people skip meals and cut back on sleep to save time, and it turned out that the majority of people, almost 65% of those who report feeling quite rushed, do skip meals and cut back on sleep to save time. Hence, we cannot simply conclude that time crunch reports are unimportant. Further research is clearly needed, but, given that time crunch may indeed be a serious issue, I think I will take a break now and leave the study of time crunch for the future.



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# Chapter 6

## Appendix

### 6.1 APPENDIX OF CHAPTER 2

Table A1: Cross-tabulation between income quintiles and subjective well being (UK, 2002)

Quintile	Earnings (£)		Life-Satisfaction		Mental Distress		N
	mean	SD	mean	SD	mean	SD	
1	325.9	141.6	7.21	1.98	3.12	1.52	1,676
2	718.1	90.0	6.95	2.01	3.03	1.46	1,742
3	1001.0	82.0	7.02	1.86	2.97	1.39	1,681
4	1331.4	117.9	7.13	1.73	2.87	1.33	1,556
5	2172.8	700.7	7.18	1.67	2.85	1.31	1,424
Quintile	Household income (£)		Life-Satisfaction		Mental Distress		N
	mean	SD	mean	SD	mean	SD	
1	732.2	246.4	6.91	2.51	3.33	1.66	3,385
2	1280.6	142.4	7.00	2.32	3.17	1.54	3,073
3	1800.3	162.3	7.10	2.13	3.06	1.48	2,962
4	2455.1	232.8	7.17	1.89	3.01	1.42	2,821
5	4260.5	2095.6	7.32	1.74	2.90	1.38	2,715

This table has been obtained using wave 12th of the BHPS, corresponding to the year 2002. All amounts expressed in sterling pounds. The reason why the number of observations across quintiles does vary more than expected, is that quintiles were calculated for each wave and for all individuals for whom we had per capita household income information, while this table includes only individuals for whom we have per capita household income, life satisfaction and mental distress.

Table A2: The effects of relative income on life-satisfaction by sign of change (using First differences rather than Fixed effects.)

	Earnings			Per capita HH. Income		
	<i>all</i>	<i>ch(ri) &gt; 0</i>	<i>ch(ri) &lt; 0</i>	<i>all</i>	<i>ch(ri) &gt; 0</i>	<i>ch(ri) &lt; 0</i>
Region19	0.085*** (0.024)	0.071* (0.033)	-0.009 (0.041)	0.030* (0.013)	0.029 (0.020)	-0.005 (0.020)
Region133	0.082*** (0.024)	0.064 (0.033)	-0.018 (0.041)	0.030* (0.013)	0.037 (0.020)	-0.001 (0.020)
Education	0.079** (0.024)	0.073* (0.034)	-0.032 (0.040)	0.024 (0.013)	0.038 (0.020)	-0.003 (0.020)
Occupation	0.076** (0.025)	0.112** (0.038)	-0.087* (0.041)	0.025 (0.018)	0.043 (0.028)	-0.007 (0.029)
Ethnicity	0.084*** (0.025)	0.097** (0.035)	-0.018 (0.042)	0.031* (0.014)	0.042* (0.021)	-0.002 (0.021)
Pr. wage	0.045 (0.024)	0.055 (0.032)	-0.075 (0.043)	0.027 (0.014)	0.053** (0.020)	-0.009 (0.021)
N	57,359	30,585	26,774	114,364	58,891	55,473

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . Columns ‘all’ contain all individuals, and the other columns, ‘ $ch(ri) > 0$ ’ and ‘ $ch(ri) < 0$ ’ contains regression with positive and negative changes in relative income respectively.

Table A3: The effects of relative income on mental distress by sign of change (using First differences rather than Fixed effects.)

	Earnings			Per capita HH. Income		
	<i>all</i>	<i>ch(ri) &gt; 0</i>	<i>ch(ri) &lt; 0</i>	<i>all</i>	<i>ch(ri) &gt; 0</i>	<i>ch(ri) &lt; 0</i>
Region19	-0.078*** (0.016)	-0.136*** (0.021)	0.098*** (0.029)	-0.015 (0.008)	-0.023 (0.012)	0.009 (0.012)
Region133	-0.058*** (0.017)	-0.108*** (0.023)	0.094** (0.030)	-0.010 (0.009)	-0.026* (0.012)	0.000 (0.014)
Education	-0.063*** (0.016)	-0.136*** (0.022)	0.097*** (0.028)	-0.012 (0.008)	-0.029* (0.012)	0.005 (0.013)
Occupation	-0.051** (0.017)	-0.117*** (0.026)	0.068* (0.028)	-0.000 (0.012)	-0.033 (0.017)	0.006 (0.022)
Ethnicity	-0.072*** (0.017)	-0.151*** (0.023)	0.106*** (0.029)	-0.020* (0.008)	-0.038** (0.012)	-0.001 (0.013)
Pr. wage	-0.057*** (0.016)	-0.133*** (0.021)	0.090** (0.029)	-0.011 (0.008)	-0.038** (0.012)	-0.000 (0.013)
N	89,243	47,422	41,821	179,378	90,396	88,982

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , Columns ‘all’ contain all individuals, and the other columns, ‘ $ch(ri) > 0$ ’ and ‘ $ch(ri) < 0$ ’ contains regression with positive and negative changes in relative income respectively.

## 6.2 APPENDIX OF CHAPTER 3

Table A4: Class size

Country	2006			2012		
	Upper	Middle	Lower	Upper	Middle	Lower
Belgium	49.5	22.4	28.1	49.9	19.9	30.2
Bulgaria	28.4	23.1	48.5	28.3	23.6	48.1
Cyprus	22.8	41.6	35.6	30.7	35.1	34.2
Denmark	51.5	17.4	31.1	50.9	22.2	26.9
Estonia	37.6	13.4	49.1	40.3	19.0	40.7
Finland	41.6	27.2	31.3	43.7	24.9	31.4
Germany	39.3	29.5	31.3	48.7	22.7	28.6
Ireland	44.9	31.8	23.4	39.2	29.6	31.2
Netherlands	53.0	22.7	24.3	53.2	22.4	24.4
Norway	45.9	25.4	28.7	59.1	17.2	23.8
Poland	24.3	29.8	45.9	33.7	29.3	37.0
Portugal	17.8	30.8	51.4	16.9	32.2	50.9
Russia	31.1	21.8	47.1	34.6	26.6	38.8
Slovakia	34.5	21.3	44.2	41.8	21.3	36.9
Slovenia	38.5	22.2	39.4	42.4	19.7	37.9
Spain	25.8	33.8	40.4	42.2	21.9	36.0
Sweden	48.1	25.0	26.9	52.4	20.4	27.1
Switzerland	46.5	31.4	22.1	57.7	21.8	20.5
UK	47.6	26.5	25.9	45.5	29.4	25.1
Total	39.0	26.1	34.9	42.3	24.2	33.5

Each column shows the proportion of the sample in each social class.

Table A5: Social class distribution and individuals with no social class

Country	Upper		Middle		Lower		No class	
	%	N	%	N	%	N	%	N
Belgium	48.8	457	22.1	207	27.7	260	1.4	13
Bulgaria	26.2	182	21.4	146	44.8	305	7.6	45
Cyprus	20.9	118	38.0	200	32.5	170	8.6	44
Denmark	50.2	411	17.0	139	30.3	248	2.4	20
Estonia	37.2	264	13.3	94	48.7	345	0.8	6
Finland	41.2	375	26.9	245	31.0	282	0.9	8
Germany	38.1	558	28.6	432	30.3	486	3.0	40
Ireland	42.5	396	30.1	249	22.2	203	5.2	47
Netherlands	52.1	563	22.3	236	24.0	246	1.6	16
Norway	45.4	434	25.1	240	28.4	271	1.0	10
Poland	23.5	214	28.9	244	44.5	375	3.0	25
Portugal	16.5	191	28.6	288	47.8	495	7.1	66
Russia	29.5	365	20.7	240	44.8	514	5.0	54
Slovakia	32.3	296	20.0	183	41.4	379	6.2	57
Slovenia	36.1	264	20.8	152	36.9	270	6.2	45
Spain	24.3	234	31.9	299	38.1	356	5.7	52
Sweden	46.8	466	24.3	242	26.2	261	2.6	26
Switzerland	45.6	481	30.8	288	21.6	198	2.0	15
UK	46.8	557	26.1	310	25.5	312	1.6	24
Total	37.6	6826	25.2	4434	33.6	5976	3.6	613

Source: The European Social Survey, 3rd round of data.



Table A6: Center for Epidemiologic Studies Depression scale (CES-D)

Country	2006					2012				
	Upper	Middle	Lower	Avg.	Gap	Upper	Middle	Lower	Avg.	Gap
Belgium	0.57	0.71	0.76	0.66	-0.19	0.58	0.67	0.75	0.65	-0.17
Bulgaria	0.87	0.91	1.02	0.95	-0.16	0.72	0.78	0.83	0.78	-0.11
Cyprus	0.57	0.62	0.71	0.63	-0.14	0.61	0.71	0.77	0.70	-0.16
Denmark	0.58	0.58	0.63	0.59	-0.05	0.56	0.61	0.58	0.58	-0.02
Estonia	0.77	0.81	0.86	0.82	-0.09	0.66	0.79	0.89	0.78	-0.22
Finland	0.58	0.58	0.64	0.60	-0.06	0.53	0.59	0.61	0.56	-0.08
Germany	0.68	0.74	0.81	0.73	-0.13	0.68	0.69	0.79	0.71	-0.11
Ireland	0.56	0.55	0.62	0.57	-0.06	0.55	0.55	0.64	0.57	-0.09
Netherlands	0.58	0.68	0.68	0.61	-0.11	0.59	0.61	0.62	0.58	-0.03
Norway	0.51	0.52	0.53	0.52	-0.02	0.45	0.53	0.54	0.48	-0.09
Poland	0.67	0.81	0.92	0.83	-0.25	0.62	0.66	0.76	0.67	-0.14
Portugal	0.78	0.83	0.92	0.86	-0.14	0.69	0.86	0.89	0.85	-0.20
Russia	0.92	0.98	0.93	0.94	-0.01	0.87	0.89	0.89	0.88	-0.01
Slovakia	0.81	0.93	0.96	0.90	-0.15	0.79	0.77	0.90	0.81	-0.10
Slovenia	0.55	0.67	0.75	0.65	-0.20	0.46	0.57	0.61	0.53	-0.15
Spain	0.60	0.64	0.74	0.67	-0.14	0.65	0.80	0.84	0.75	-0.19
Sweden	0.58	0.66	0.61	0.61	-0.04	0.56	0.57	0.62	0.58	-0.06
Switzerland	0.55	0.60	0.59	0.57	-0.04	0.55	0.63	0.62	0.58	-0.08
UK	0.65	0.66	0.79	0.68	-0.14	0.66	0.70	0.73	0.67	-0.08
Total	0.66	0.70	0.79	0.71	-0.11	0.63	0.70	0.76	0.68	-0.12

The CES-D (Center for Epidemiologic Studies Depression scale) is a summary measure of negative affect that ranges from 0 to 3. The ‘Gap’ column shows the gap in the CES-D score between upper and lower class individuals (Gap=upper-lower).

Table A7: Positive affect (PA)

Country	2006					2012				
	Upper	Middle	Lower	Avg.	Gap	Upper	Middle	Lower	Avg.	Gap
Belgium	1.84	1.70	1.73	1.78	0.11	1.85	1.81	1.71	1.80	0.14
Bulgaria	1.57	1.49	1.38	1.46	0.19	1.85	1.81	1.61	1.73	0.23
Cyprus	1.72	1.67	1.54	1.64	0.19	1.97	1.86	1.81	1.89	0.17
Denmark	1.87	1.85	1.92	1.88	-0.05	1.93	1.85	1.94	1.91	-0.01
Estonia	1.81	1.78	1.59	1.70	0.22	1.91	1.74	1.66	1.78	0.25
Finland	1.73	1.69	1.69	1.71	0.04	1.82	1.73	1.74	1.78	0.09
Germany	1.81	1.78	1.66	1.76	0.15	1.87	1.86	1.76	1.83	0.12
Ireland	1.85	1.88	1.91	1.88	-0.06	1.96	1.91	1.89	1.92	0.07
Netherlands	1.92	1.80	1.82	1.87	0.10	1.98	1.97	1.94	1.99	0.03
Norway	1.84	1.83	1.91	1.86	-0.07	1.98	1.96	2.02	1.99	-0.04
Poland	1.69	1.61	1.56	1.61	0.13	1.87	1.87	1.76	1.84	0.11
Portugal	1.78	1.71	1.64	1.70	0.14	1.80	1.65	1.65	1.67	0.16
Russia	1.63	1.54	1.54	1.57	0.10	1.73	1.70	1.68	1.72	0.05
Slovakia	1.84	1.68	1.67	1.73	0.17	1.88	1.92	1.79	1.87	0.09
Slovenia	1.95	1.87	1.80	1.88	0.15	2.07	2.02	2.00	2.04	0.07
Spain	1.67	1.76	1.62	1.68	0.05	1.67	1.60	1.54	1.62	0.13
Sweden	1.75	1.69	1.75	1.74	0.00	1.86	1.90	1.84	1.86	0.03
Switzerland	1.94	1.88	1.96	1.93	-0.01	2.01	1.98	2.00	2.01	0.01
UK	1.68	1.72	1.65	1.70	0.03	1.75	1.70	1.73	1.75	0.02
Total	1.78	1.74	1.68	1.74	0.09	1.87	1.82	1.76	1.83	0.11

PA is a summary measure of positive affect that ranges from 0 to 3. The ‘Gap’ column shows the gap in the Affect score between upper and lower class individuals (Gap=upper-lower).

Table A8: Depression rates

Country	2006					2012					Ch.
	Upper	Middle	Lower	Avg.	Gap	Upper	Middle	Lower	Avg.	Gap	Avg.
Belgium	9.9	24.6	25.8	17.7	-15.9	12.0	17.3	24.6	16.9	-12.6	-0.7
Bulgaria	33.5	31.4	43.4	37.7	-9.8	23.7	25.4	30.2	26.8	-6.5	-8.8
Cyprus	9.3	11.7	20.1	13.8	-10.8	16.8	24.7	28.4	23.3	-11.6	8.7
Denmark	9.5	7.9	15.0	10.8	-5.5	8.5	16.9	14.4	12.1	-5.9	1.3
Estonia	23.3	22.8	26.0	24.5	-2.8	16.4	24.3	34.0	25.2	-17.6	0.7
Finland	10.1	11.8	14.9	12.1	-4.8	7.3	10.6	13.2	9.8	-5.9	-2.3
Germany	14.6	20.3	26.2	19.5	-11.6	15.7	17.0	25.5	18.7	-9.9	-1.8
Ireland	12.2	11.7	13.5	12.1	-1.3	14.6	15.3	20.2	16.2	-5.6	4.1
Netherlands	11.7	17.0	20.0	14.7	-8.3	12.3	14.6	19.4	13.6	-7.1	-0.7
Norway	8.3	7.9	10.0	8.6	-1.7	4.2	9.6	11.4	6.9	-7.2	-1.8
Poland	20.3	26.6	37.4	29.8	-17.1	14.5	18.9	24.8	19.3	-10.3	-11.0
Portugal	24.2	28.9	38.3	32.6	-14.1	21.3	28.9	31.3	29.1	-10.0	-4.7
Russia	35.3	34.9	30.9	33.2	4.4	31.2	31.7	31.2	31.0	0.0	-3.7
Slovakia	27.0	38.5	41.0	36.1	-13.9	26.6	25.4	34.2	28.3	-7.6	-5.7
Slovenia	6.8	16.0	22.5	15.0	-15.7	7.1	11.7	15.5	10.7	-8.4	-4.1
Spain	13.2	14.4	27.4	19.2	-14.1	18.2	28.7	31.4	25.1	-13.3	5.9
Sweden	11.2	19.5	15.3	14.5	-4.1	10.6	17.8	17.3	14.0	-6.8	-0.5
Switzerland	8.7	14.0	13.5	11.4	-4.8	9.6	15.5	15.1	11.7	-5.5	-0.3
UK	16.5	17.7	27.0	18.9	-10.5	19.0	26.1	23.0	21.2	-4.0	1.8
Total	16.7	19.6	26.6	20.1	-8.7	15.8	20.8	25.2	19.6	-8.3	-1.4

Being depressed means having a CES-D score –measure of negative emotions– above or equal to 1. The last column, ‘Ch. avg.’ shows the change in average depression rates for the population between 2006 and 2012.

Table A9: Macro indicators

Country	2006				2012		
	GDPpc	Growth	Gini	Poverty	GDPpc	Growth	Gini
Belgium	37,918	2.7	27.8	8.8	43,395	-0.1	26.5
Bulgaria	4,313	6.5	31.2	n.a.	7,022	0.6	33.6
Cyprus	23,863	4.1	28.8	n.a.	26,352	-2.4	31.0
Denmark	50,462	3.4	23.7	5.3	56,364	-0.4	28.1
Estonia	12,472	10.1	33.1	n.a.	16,887	3.9	32.5
Finland	39,487	4.4	25.9	7.3	45,649	-1.0	25.9
Germany	35,237	3.7	26.8	11.0	42,597	0.7	28.3
Ireland	52,118	5.5	31.9	14.8	45,921	0.2	29.9
Netherlands	41,458	3.4	26.4	7.7	45,960	-1.2	25.4
Norway	72,959	2.3	29.2	6.8	99,635	2.9	22.5
Poland	8,958	6.2	33.3	14.6	12,721	1.9	30.9
Portugal	19,177	1.5	37.7	12.9	20,175	-3.2	34.5
Russia	6,947	8.1	38.7	n.a.	14,090	3.4	39.7
Slovakia	12,842	8.4	28.1	8.1	16,892	1.8	25.3
Slovenia	19,405	5.8	23.7	n.a.	22,059	-2.5	23.7
Spain	27,847	4.1	31.9	14.1	28,281	-1.6	35.0
Sweden	43,948	4.3	24.0	5.3	55,039	0.9	24.8
Switzerland	54,140	3.8	30.3	8.7	78,928	1.0	28.8
UK	40,807	2.8	32.5	8.3	38,648	0.3	31.3
Total	32,766	4.6	29.9	9.6	36,601	0.4	29.7

Note: ‘GDPpc’ contains per capita Gross Domestic product in current USD, and ‘Growth’ annual growth (World development indicators, World Bank). ‘Gini’ is the Gini index of equalised disposable income ranging from 0 to 100 (Eurostat, SILC). ‘Poverty’ is a measure of relative poverty that shows the proportion of individuals below 50% of median household income (obtained from the OECD, corresponds to Mid 2000).

Table A10: Good health

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	86.2	76.3	70.8	79.7	83.7	78.9	68.7	78.2
Bulgaria	67.5	57.9	58.6	61.0	80.0	72.8	64.8	71.3
Cyprus	93.7	90.1	82.2	88.1	87.8	83.7	78.0	83.1
Denmark	85.4	77.7	71.8	79.9	83.7	78.2	70.8	79.2
Estonia	58.7	47.9	38.3	47.1	64.8	47.6	41.6	52.1
Finland	80.5	73.5	65.6	74.0	80.8	73.1	70.2	75.9
Germany	73.2	64.8	58.0	65.8	68.8	61.0	54.7	62.8
Ireland	88.1	88.2	80.0	86.2	86.0	84.2	85.2	85.5
Netherlands	83.8	73.7	70.9	78.4	82.4	76.2	70.1	77.6
Norway	87.3	79.2	71.6	80.8	86.9	72.6	72.8	81.0
Poland	72.4	54.6	49.5	56.4	70.9	64.3	63.9	66.5
Portugal	63.4	51.3	48.1	51.8	74.1	69.0	63.8	67.6
Russia	37.1	26.2	27.0	30.1	34.7	35.4	32.0	33.4
Slovakia	74.2	60.7	58.3	64.0	78.1	68.4	63.4	70.8
Slovenia	73.9	61.8	44.1	59.5	77.2	63.6	50.8	64.9
Spain	75.8	66.5	60.9	66.5	70.5	65.7	58.0	64.9
Sweden	82.8	78.9	78.2	80.5	86.5	80.5	75.8	82.3
Switzerland	91.4	81.2	82.3	86.3	86.9	80.7	84.2	85.3
UK	81.5	77.6	67.7	76.8	78.2	80.7	70.9	77.2
Total	78.0	68.4	58.6	68.6	76.7	69.6	62.8	70.3

Individuals that reported their health to be either “good” or “very good”. The remaining individuals do report their health to be “fair”, “bad” or very bad”

Table A11: Feeling safe

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	87.5	73.8	79.6	82.2	90.8	84.9	79.4	86.2
Bulgaria	44.3	44.4	54.9	49.0	60.0	56.3	60.8	59.6
Cyprus	86.2	84.3	93.8	88.2	76.0	64.5	70.3	70.1
Denmark	92.7	87.8	87.4	90.2	95.1	90.4	94.9	94.1
Estonia	64.1	59.1	61.4	62.0	72.8	74.3	69.6	71.6
Finland	92.8	89.4	92.9	91.9	94.8	92.8	95.2	94.5
Germany	88.1	77.2	77.3	81.4	86.4	79.3	80.0	83.1
Ireland	73.6	73.1	68.3	72.3	80.0	79.9	77.2	79.2
Netherlands	90.1	86.1	78.1	86.2	90.9	90.0	84.8	89.4
Norway	97.0	87.5	94.8	94.0	93.2	93.8	93.1	93.3
Poland	73.1	75.9	78.1	76.2	87.6	83.6	88.0	86.2
Portugal	82.7	86.1	81.6	83.0	81.0	75.2	79.0	77.7
Russia	57.2	56.7	62.0	59.2	57.8	62.5	65.0	61.7
Slovakia	68.5	62.9	69.8	67.3	71.4	69.2	76.3	73.1
Slovenia	92.7	90.7	92.5	92.4	95.6	96.4	95.9	96.0
Spain	85.4	75.4	78.5	79.2	83.0	82.1	81.9	82.6
Sweden	91.0	82.2	87.4	87.8	92.2	85.1	88.3	89.7
Switzerland	91.5	83.6	84.2	87.5	92.7	85.1	88.8	90.3
UK	74.4	58.8	70.2	69.1	80.6	72.5	81.5	78.8
Total	82.6	76.2	77.1	78.9	83.8	78.3	79.2	80.9

Individuals that reported they felt either “safe” or “very safe” when walking alone in the dark in the area where they lived. The rest are individuals that feel “unsafe” or “very unsafe”.

Table A12: Lives with a partner

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	86.7	79.7	77.3	82.5	77.4	74.1	70.8	74.4
Bulgaria	72.9	85.4	83.9	81.6	73.4	74.9	77.2	75.7
Cyprus	85.5	88.1	88.8	87.8	75.8	83.2	82.0	80.5
Denmark	81.0	82.7	76.2	78.6	82.0	82.7	71.4	78.8
Estonia	77.7	77.7	72.2	75.0	74.7	71.0	63.0	68.6
Finland	82.4	78.4	68.8	77.1	74.9	71.6	67.9	72.3
Germany	75.7	76.1	72.4	74.7	74.9	79.9	74.1	75.9
Ireland	82.9	82.9	77.4	81.6	78.1	75.4	71.1	75.0
Netherlands	79.4	80.3	81.2	80.1	80.7	79.6	73.4	78.7
Norway	78.8	81.2	77.5	79.0	76.5	71.2	72.8	74.6
Poland	85.8	80.4	75.7	79.4	81.8	78.0	75.2	78.1
Portugal	70.3	81.4	81.7	79.7	67.7	72.5	73.0	72.1
Russia	72.9	72.7	75.1	73.8	71.4	68.1	73.9	71.7
Slovakia	82.1	82.5	81.5	81.9	79.7	82.3	74.6	77.8
Slovenia	81.1	82.9	85.9	83.3	74.5	77.2	75.6	74.8
Spain	80.0	80.1	76.7	78.7	74.5	70.2	74.6	73.6
Sweden	82.2	76.4	72.0	78.0	78.0	72.4	72.7	75.3
Switzerland	79.2	82.9	85.7	81.8	74.9	80.1	77.0	76.4
UK	81.4	81.0	70.6	78.5	78.1	75.9	66.5	74.8
Total	80.0	80.4	77.5	79.2	76.6	75.5	72.8	75.0

Table A13: Frequent social meetings

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	69.1	65.4	64.6	67.0	62.4	58.4	55.9	59.9
Bulgaria	57.5	50.7	53.3	54.4	53.6	56.8	52.5	53.8
Cyprus	44.3	44.0	42.6	43.6	50.9	46.4	39.8	45.6
Denmark	72.7	73.4	69.6	72.1	65.7	67.0	61.6	64.9
Estonia	54.4	51.1	50.3	51.8	42.8	38.0	34.0	38.3
Finland	71.5	64.1	62.4	66.7	61.8	58.7	59.2	60.1
Germany	54.4	55.5	50.3	53.1	59.6	48.8	49.5	54.2
Ireland	61.7	57.7	63.1	60.8	46.0	43.8	51.9	47.1
Netherlands	80.8	78.3	64.7	76.4	74.7	71.8	70.2	73.0
Norway	77.2	78.3	75.3	76.9	72.7	67.1	71.8	71.6
Poland	35.8	33.2	33.0	33.6	33.8	33.8	27.7	31.2
Portugal	89.8	90.9	86.0	88.0	76.4	80.3	74.4	76.7
Russia	46.0	42.8	33.5	39.8	40.6	42.2	34.9	39.4
Slovakia	58.4	50.8	54.7	54.9	54.8	54.1	54.8	55.1
Slovenia	50.6	52.6	39.6	46.7	58.2	47.7	50.2	53.6
Spain	77.2	77.8	72.1	75.4	70.6	72.9	65.1	68.9
Sweden	70.8	65.3	64.8	67.9	73.3	78.7	70.0	73.6
Switzerland	79.2	70.8	74.4	75.5	72.6	65.0	59.6	68.1
UK	63.4	63.5	63.2	63.4	57.4	52.0	56.0	55.1
Total	65.7	62.6	58.1	62.2	59.7	55.8	53.5	56.7

Proportion of individuals that meet socially with friends or relatives at least once a week.



Table A14: Unemployment

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	3.5	6.2	14.3	7.0	2.6	10.5	16.2	7.9
Bulgaria	7.1	8.4	30.9	18.2	10.5	13.9	19.6	15.4
Cyprus	1.1	2.1	4.1	2.4	7.1	15.1	15.7	12.6
Denmark	1.3	2.4	3.4	2.1	3.1	5.6	11.9	5.9
Estonia	0.4	9.0	4.4	3.4	4.1	8.8	12.1	8.0
Finland	1.2	9.3	14.5	7.4	3.9	10.3	15.5	8.8
Germany	5.7	11.1	12.8	9.3	2.2	5.3	9.6	5.0
Ireland	1.8	1.7	8.3	3.3	11.1	11.9	32.6	18.3
Netherlands	2.2	3.4	7.0	3.6	2.5	5.1	5.4	3.8
Norway	0.7	3.2	2.6	1.8	1.2	4.7	3.0	2.2
Poland	3.1	9.5	11.9	8.8	4.1	10.0	13.2	8.8
Portugal	3.7	5.7	16.0	10.4	13.8	19.8	31.0	24.0
Russia	1.5	0.5	6.7	4.3	3.1	4.0	4.5	4.4
Slovakia	2.3	4.8	13.5	7.7	3.4	6.4	15.9	8.8
Slovenia	2.5	5.5	12.2	6.9	9.3	12.5	21.9	13.7
Spain	2.1	4.2	6.4	4.4	14.4	18.7	31.0	21.4
Sweden	1.8	3.5	3.9	3.0	2.1	4.4	7.5	3.9
Switzerland	0.8	1.7	5.9	2.2	1.3	2.9	1.5	2.0
UK	2.9	3.4	7.6	4.1	5.0	8.8	11.7	7.5
Total	2.4	5.0	9.8	5.8	5.5	9.4	14.7	9.6

Note: the unemployment figures displayed here may differ from official unemployment from more reliable sources like national labour force surveys because of the higher quality of the later to measure unemployment, and also because this table only provides Figures for the age-group 30-60.

Table A15: Financial strain

Country	2006				2012			
	Upper	Middle	Lower	Avg.	Upper	Middle	Lower	Avg.
Belgium	13.2	24.2	29.5	20.2	11.8	25.4	38.4	22.5
Bulgaria	62.8	77.9	83.5	76.4	48.5	72.3	82.5	70.4
Cyprus	14.3	25.5	35.8	26.5	32.7	55.6	64.3	51.4
Denmark	3.7	6.5	7.4	5.3	4.6	5.6	5.6	5.0
Estonia	20.5	32.3	35.2	29.4	20.9	36.7	46.6	34.4
Finland	6.9	11.5	14.2	10.4	9.3	13.7	20.5	13.6
Germany	8.7	18.2	31.6	18.7	9.3	14.9	25.6	15.2
Ireland	6.6	11.3	15.5	10.4	22.7	35.8	48.0	34.7
Netherlands	6.7	14.2	23.3	12.4	5.9	13.6	23.7	12.0
Norway	3.9	12.1	11.8	8.3	5.0	9.6	14.4	7.9
Poland	22.3	36.8	48.7	38.8	18.5	33.2	40.9	30.9
Portugal	11.0	26.6	45.6	33.6	26.0	48.6	60.7	50.9
Russia	55.2	65.5	70.6	64.9	52.5	53.2	59.3	55.4
Slovakia	22.0	36.3	56.9	40.7	26.0	32.4	50.5	36.5
Slovenia	5.7	8.1	21.6	12.6	6.8	17.8	28.9	17.1
Spain	4.4	10.5	25.3	14.8	18.6	35.6	49.7	33.0
Sweden	4.1	11.2	8.1	7.1	6.3	21.8	15.6	12.1
Switzerland	7.6	12.3	18.5	11.4	5.6	12.6	21.7	10.3
UK	11.7	17.1	21.3	15.6	16.2	23.4	33.7	22.3
Total	13.2	22.7	35.6	23.7	16.9	31.8	43.3	29.2

Individuals that find it “difficult” or “very difficult” to live on present income. The rest are individuals that report either “living comfortably” or “coping” on present income.

Table A16: Regression output

	(PA)		(CES-D)	
	Coeff.	SE	Coeff.	SE
Upper class	-0.039**	(0.015)	0.002	(0.007)
Middle class	-0.009	(0.012)	-0.012	(0.006)
Hampered, a bit	-0.063***	(0.009)	0.082***	(0.007)
Hampered, a lot	-0.136***	(0.018)	0.200***	(0.013)
Very bad	-0.251***	(0.038)	0.444***	(0.028)
Bad	-0.190***	(0.016)	0.235***	(0.012)
Good	0.184***	(0.009)	-0.137***	(0.006)
Very Good	0.394***	(0.011)	-0.250***	(0.008)
Trust	0.011***	(0.001)	-0.012***	(0.001)
Assaulted recently	-0.014	(0.008)	0.034***	(0.006)
Very unsafe	0.002	(0.017)	0.060***	(0.013)
Unsafe	-0.054***	(0.009)	0.055***	(0.007)
Very safe	0.060***	(0.008)	-0.025***	(0.006)
Partner	0.132***	(0.007)	-0.138***	(0.005)
Intimate, has	0.130***	(0.014)	-0.119***	(0.010)
Less than once a month	-0.121***	(0.012)	0.128***	(0.009)
Once a week	-0.048***	(0.011)	0.043***	(0.008)
Almost every day	0.094***	(0.007)	-0.063***	(0.005)
Unemployed	-0.036**	(0.014)	0.050***	(0.010)
Out of the lf.	0.008	(0.010)	0.020**	(0.007)
Past short unemp.	-0.039***	(0.008)	0.024***	(0.006)
Past long unemp.	-0.051***	(0.009)	0.052***	(0.007)
Confortably	0.074***	(0.008)	-0.053***	(0.006)
With difficulty	-0.135***	(0.009)	0.105***	(0.007)
With great difficulty	-0.267***	(0.014)	0.249***	(0.010)
Constant	1.508***	(0.094)	0.973***	(0.069)
sd(Upper)	0.053***	(0.012)	0.020***	(0.007)
sd(Middle)	0.037***	(0.012)	0.000***	(0.000)
sd(Constant)	0.082***	(0.014)	0.052***	(0.009)
sd(Res)	0.569***	(0.002)	0.418***	(0.002)
N	34,330		34,367	

Standard errors in parentheses

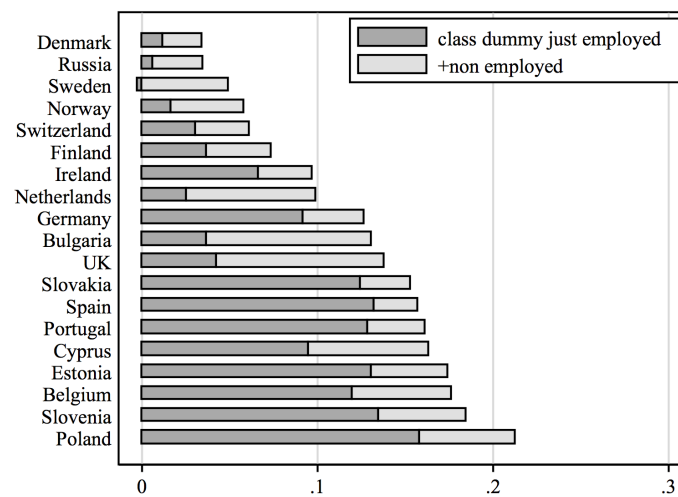
\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$  To make the table shorter we have not include in the output the control variables age and gender, but they are included in the regression.

Table A17: The distribution of the crisis across classes

Country	Social class			Total
	Upper	Middle	Lower	
Belgium	2.2	-7.3	-1.1	-0.7
Bulgaria	-10.0	-6.0	-13.1	-10.9
Cyprus	8.3	13.0	8.3	9.5
Denmark	-1.0	8.9	-0.6	1.3
Estonia	-6.9	1.4	8.0	0.7
Finland	-2.8	-1.2	-1.7	-2.3
Germany	1.7	-3.3	-0.7	-0.9
Ireland	2.4	3.6	6.7	4.1
Netherlands	-1.1	-2.4	-0.6	-1.1
Norway	-4.1	1.7	1.4	-1.8
Poland	-5.4	-7.7	-12.6	-10.4
Portugal	-0.3	0.0	-7.0	-3.5
Russia	-4.4	-3.2	0.3	-2.2
Slovakia	-3.0	-13.1	-6.8	-7.8
Slovenia	-0.8	-4.3	-6.9	-4.3
Spain	5.1	14.3	4.0	5.9
Sweden	-0.6	-1.7	2.0	-0.5
Switzerland	0.8	1.5	1.6	0.3
UK	2.4	8.4	-4.0	2.3
Total	-0.9	0.1	-1.2	-1.2

Each column shows the proportion of increase in depression in that class. The column 'Total' gives us the overall change in depress in the country. The columns do not add up to the Total column because for that to happen we would have to weight the increase in each class by class size.

Figure A1: The class gap in negative emotions with and without the non-employed.



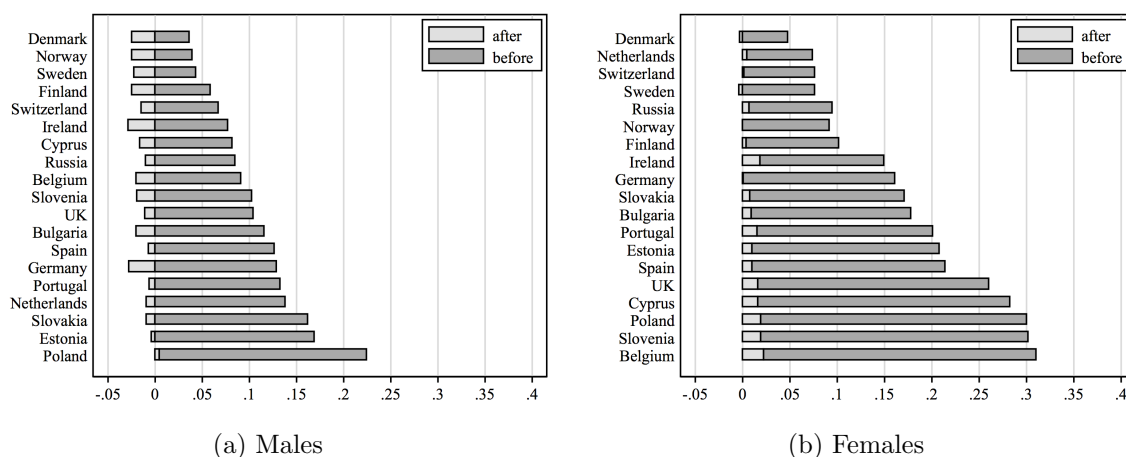
Source: The European Social Survey, 3rd round of data. The bars captures the size of the class gap between upper and lower class in negative emotions. The darkest bar shows the gap if non employed individual were excluded from the analysis and if we add the light bar to it we have the class gap when all non employed individuals are part of the analysis (this is the one analysed in Chapter 3).

## 6.2.1 Gender analysis of the class gap in negative emotions

The aim of this appendix is that of exploring gender differences in the relationship between social class and SWB. For the sake of simplicity I will limit the analysis to the class gap in negative emotions between upper and lower class individuals.

Figure A2 shows the class gap for males and females. The first thing we observe is that the class gap is much larger for females than males in almost all countries. For example in the UK, in 2012, the gap in the negative emotions score is 0.1 for males and 0.25 for women. In Belgium and Slovenia the class gap for men is 0.1 too but that for women approximately 3 times the male's gap. The Netherlands is an exception because there the class-gap is larger for men than for women, it is 0.07 for women and double that amount for men. Second, when the analysis is carried out separately for men and women, the ranking of countries in terms of the class gap changes substantively, although some countries remain in similar positions, like Scandinavian countries remaining at the top for both men and women, and Eastern European countries, such as Poland, being at the bottom.

Figure A2: The class gap in the CES-D score for males and females.



Source: The European Social Survey, 3rd and 6th round of data. Controls include health, safety, social life, employment, and financial situation.

Despite the non negligible difference in the strength of the correlation between class and negative emotions across gender, the factors mediating such relationship seem to be the same because in both cases the gap is explained when health, employment, safety and social life are controlled for – see Figure A2, and, when we make a decomposition, the relative contribution of each group of variables remains quite similar for men and women – see Table A18. Note that for both, health, labour force status, and financial strain explain most of the gap in negative emotions, 82 and 85 per cent for men and women respectively. There are however slight variations across gender, for instance, in safety and financial strain that explains more the men's gap than women's and health plays a more

important role explaining class-based differences in negative emotions among women.

Then, if the same variables explain the class gap for men and women, and if the contributions of the different group of variables are more or less the same for men and women, this means that the reason why the class gap in negative affect is larger for men is because the gaps in health, financial strain and so on, is greater among women than men. In other words, it is a story of composition. The UK is one example of country where the association between social class and negative emotions varies substantially with gender. Note that the gap is 0.1 approximately for men and almost 0.25 for women. and this is so because the differences in terms of employment, financial strain, health and so on, between upper and lower class people, are much wider for women than men. The employment gap is of 15 percentage points for men and 24 for women. The gap in financial strain is 13 percentage points for men and 22 for women, and so on. Whereas in Denmark, where the class gaps are similar for men and women so are the gaps for men and women in employment, financial strain and the rest. For instance, the gender gap in financial strain is 3 percentage points.

Table A18: Contribution of each group of variables to the class gap in negative emotions

Gender	Social	Safety	Health	Labour	Income	Total
Male	7.0	10.9	19.7	11.5	51.0	100
Female	9.9	5.0	31.8	11.4	42.0	100

Note: To approximate the contribution of each group of variables, we simply compare the upper class coefficient of two models: (1) the full model, and (2) the full model without the variables whose contribution we want to assess (call this A). We would do this 5 times, one for each group of variables. Then we add up the former differences (call this B). The contribution of each group of variables would then be equal to  $(A/B)*100$ .

Thus, running separate analyses for men and women shows that there are indeed important differences in the association between class and negative emotions by gender. That is, not only does the former association vary across countries (object of analysis of Chapter 3), but it also varies substantially across gender. In almost every country the class gap is much larger for women than for men. Although the analyses displayed in this appendix do not invalidate the story told in Chapter 3 – since the same variables seem to explain both gaps successfully – it shows that the class gaps observed in Chapter 3 hide important gender differences.

### 6.3 APPENDIX OF CHAPTER 4

Table A19: Subjective well-being questions in the French dataset

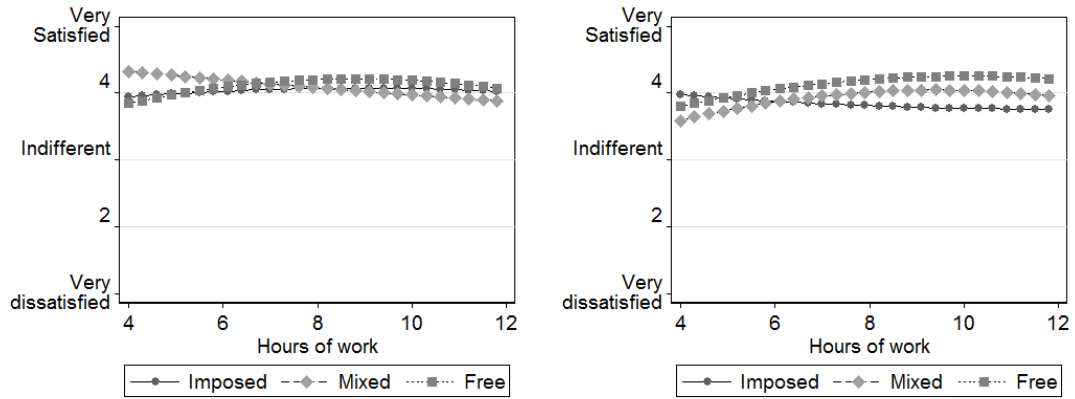
Concept	Question	Possible answers
Enjoyment of activities	How pleasant was the activity?	1(very unpleasant) -7(very pleasant)
Time pressure	How often do you feel rushed? Would you say it is ...?	Every day, A few times a week, About once a week, About once a month, Less than once a month
Busyness	All in all, where would you say you stand in terms of busyness?	1(not much to do) - 10(never have time).
Cutting back on sleep	When you need more time, do you tend to cut back on your sleep, to do with?	Often, From time to time, Never
Skipping meals	When you need more time, do you sometimes skip a meal or eat a quick snack in order to have the time to do something else?	Often, From time to time, Never
Life satisfaction	All things considered, how satisfied would you say you are with your current life in general?	1(Very dissatisfied) - 10(Very satisfied)
Job satisfaction	How satisfied would you say you are with your job?	1(Very dissatisfied) - 10(Very satisfied)
Satisfaction with leisure	How satisfied would you say you are with your leisure?	1(Very dissatisfied) - 10(Very satisfied)
Social satisfaction	How satisfied would you say you are with your relationship with your family, your relatives, friends and neighbours?	1(Very dissatisfied) - 10(Very satisfied)



Table A20: What paid work includes

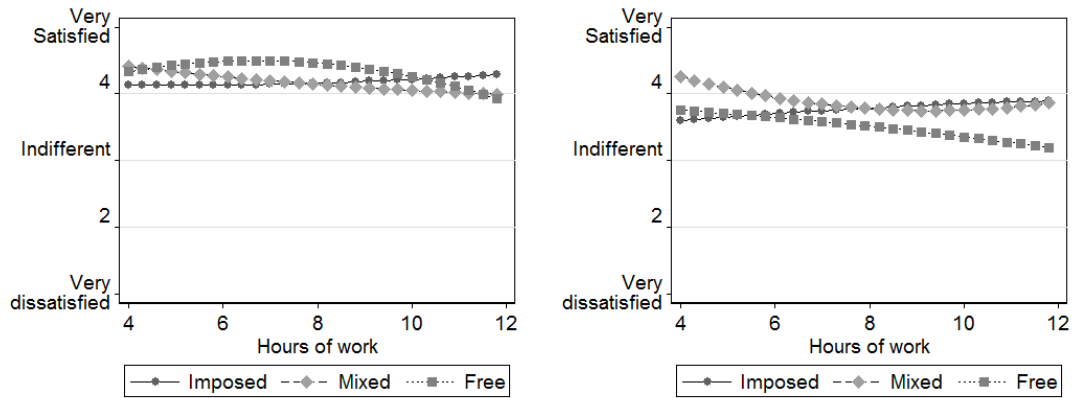
Work or related	Job search or trainings
<ul style="list-style-type: none"> <li>• normal paid work outside home</li> <li>• normal paid work at home</li> <li>• travel during work (excluding commute to work)</li> <li>• work connected with agriculture</li> <li>• participation in the activity–work–of another hh member</li> <li>• other paid work second job, undeclared</li> <li>• strikes and walkouts</li> <li>• non work at workplace, preparing, changing, waiting to start</li> <li>• meetings, union activities</li> </ul>	<ul style="list-style-type: none"> <li>• job search activities</li> <li>• occupational or professional education</li> <li>• normal school</li> <li>• homework, study</li> <li>• internships as part of formal education</li> <li>• training outside profession, self-chosen, or to change job</li> <li>• other courses: driving school, cooking, dressmaking etc</li> </ul>
	<b>Commuting</b> <ul style="list-style-type: none"> <li>• school or work commuting</li> <li>• other travel excluding work travel</li> <li>• child-related travel</li> <li>• travel for another household</li> </ul>

Figure A3: Hours of work and satisfaction by schedule type



(a) Satisfaction with life

(b) Job satisfaction

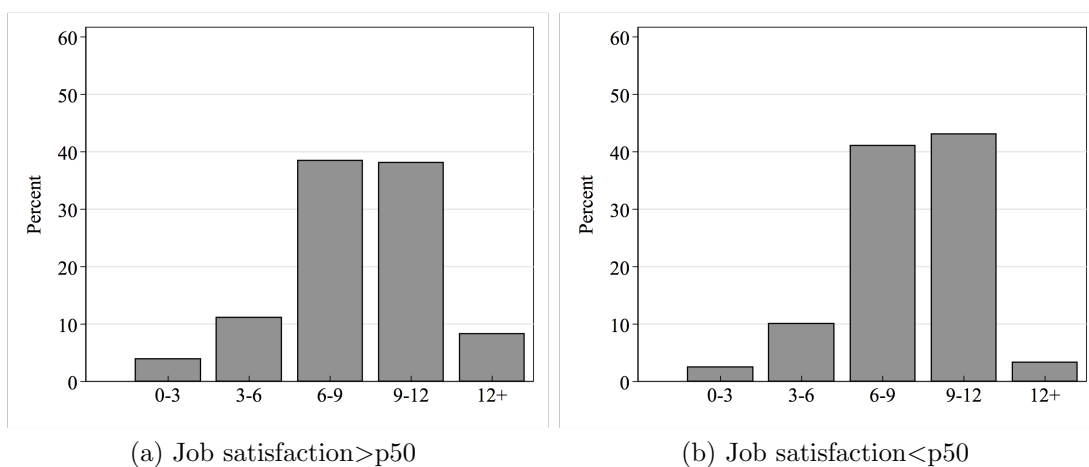


(c) Satisfaction with social relationships

(d) Satisfaction with leisure time

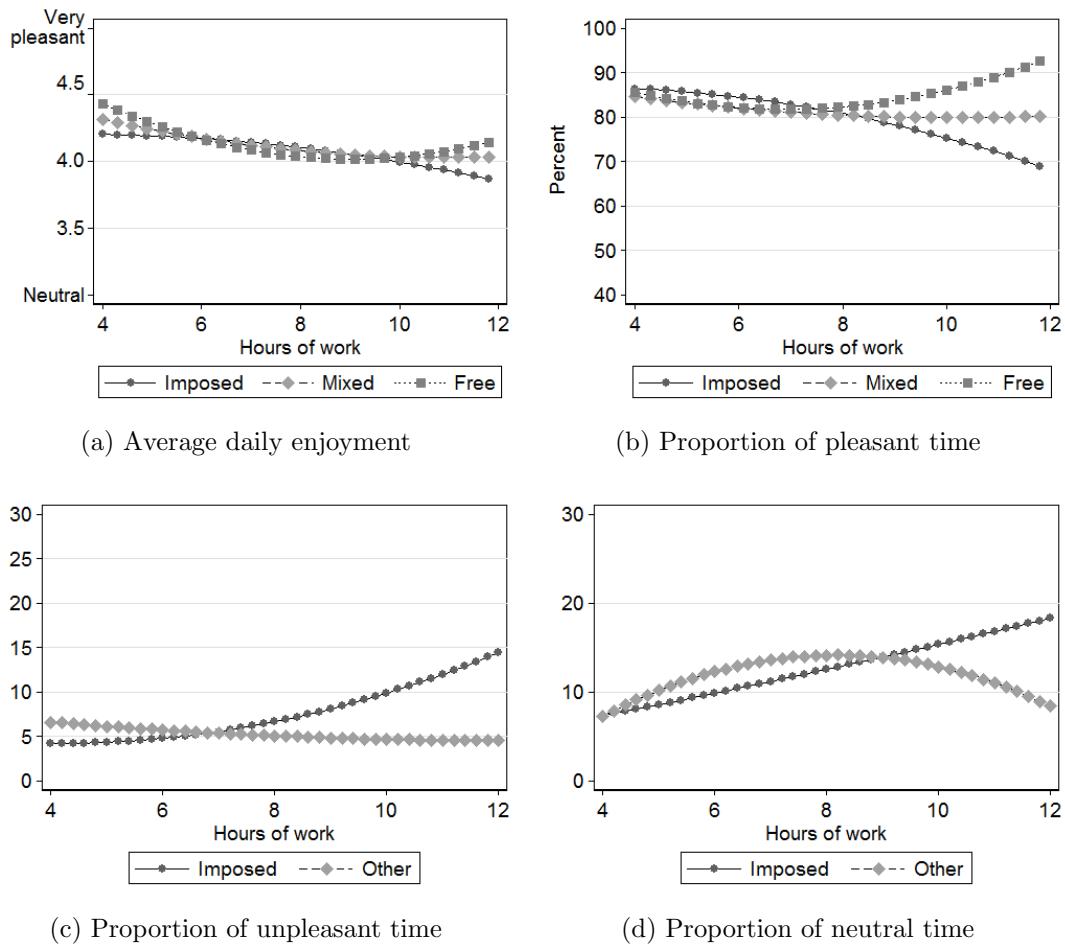
Note: These estimates are based on 249 employees with an imposed schedule, 95 with a mixed schedule, some mixed arrangement where the employee has some choice, and 50 employees with a free schedule.

Figure A4: Hours of paid work for *likes* and *not likes*



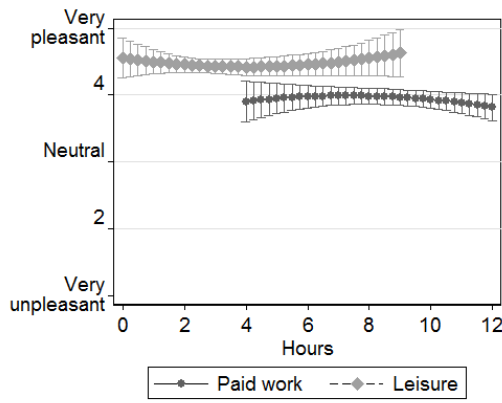
The *likes* are individuals with job satisfaction above the median, and the *not likes* are individuals with job satisfaction below the median.

Figure A5: The relationship between working hours and affect by schedule type

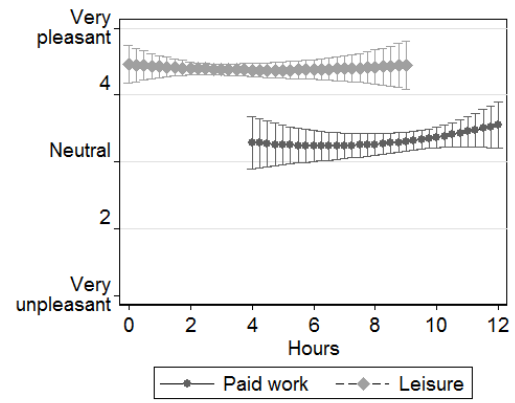


These marginal effects have been build with 212 individuals with imposed schedule, 77 with some mixed schedule type and 42 with free schedule. Note that the margins in this figure are a bit smaller than in previous ones this is because CI were very wide below 2 hours and therefore I decided to just show a narrower interval/bracket of hours. Still the CI are very wide for the extremes.

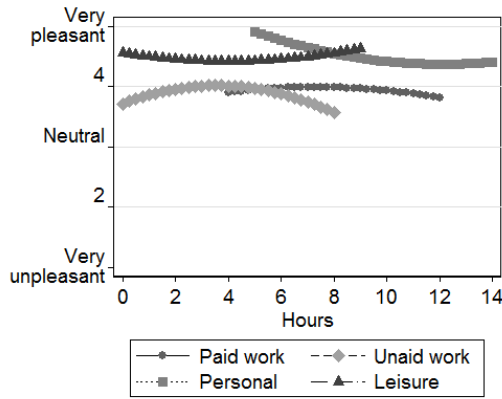
Figure A6: Enjoyment of work and leisure for *likes* and *not likes*



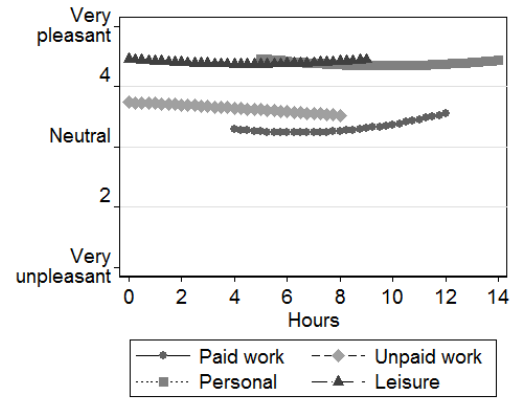
(a) Employees with job satisfaction > p50



(b) Employees with job satisfaction < p50



(c) Employees with job satisfaction > p50



(d) Employees with job satisfaction < p50

Table A21: Daily enjoyment

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid	-0.059 (0.044)	-0.013 (0.053)	-0.035 (0.059)	0.059 (0.080)	-0.079 (0.084)
PaidXPaid	0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.004 (0.004)	0.001 (0.005)
Age		-0.032 (0.018)	-0.028 (0.019)	-0.027 (0.033)	-0.052* (0.023)
AgeXAge		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001* (0.000)
Male		0.010 (0.056)	0.024 (0.066)	-0.007 (0.085)	0.017 (0.080)
Dependant		0.135* (0.062)	0.120 (0.065)	0.142 (0.095)	0.199* (0.089)
Partner		0.035 (0.098)	0.083 (0.101)	0.315* (0.146)	-0.260 (0.142)
Partner employed		0.032 (0.088)	-0.013 (0.092)	-0.125 (0.130)	0.224 (0.124)
log(Salary)		-0.115* (0.057)	-0.042 (0.071)	-0.146 (0.075)	-0.075 (0.100)
Unpaid		-0.024 (0.021)	-0.032 (0.022)	-0.019 (0.031)	-0.068* (0.031)
Weekend		0.112 (0.069)	0.089 (0.077)	0.046 (0.113)	0.118 (0.091)
Timing		0.008 (0.010)	0.009 (0.012)	-0.042 (0.021)	0.020 (0.012)
TimingXTiming		-0.000 (0.000)	-0.000 (0.000)	0.000* (0.000)	-0.000 (0.000)
Works office+home		-0.065 (0.123)	-0.075 (0.131)	0.099 (0.173)	-0.221 (0.187)
Works at home		0.029 (0.157)	-0.123 (0.179)	0.077 (0.210)	0.101 (0.268)
Job satisfaction		0.230*** (0.035)	0.234*** (0.037)		
Constant	4.490*** (0.182)	4.385*** (0.630)	3.950*** (0.723)	7.106*** (1.061)	5.249*** (0.931)
N	347	331	331	158	173

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A22: Frequency of pleasant moments

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hrs)	-1.009 (1.867)	-0.371 (2.318)	-1.333 (2.582)	1.241 (3.144)	-3.268 (3.928)
PaidXPaid	-0.007 (0.115)	-0.067 (0.130)	-0.042 (0.142)	-0.122 (0.165)	0.026 (0.240)
Age		-0.848 (0.774)	-0.715 (0.818)	-0.504 (1.312)	-1.540 (1.074)
AgeXAge		0.011 (0.009)	0.009 (0.010)	0.007 (0.016)	0.020 (0.013)
Male		-1.631 (2.448)	-0.000 (2.877)	-1.807 (3.348)	-2.586 (3.735)
Dependant		3.100 (2.734)	2.573 (2.820)	2.217 (3.757)	6.681 (4.151)
Partner		2.298 (4.286)	5.109 (4.402)	13.106* (5.770)	-8.943 (6.645)
Partner employed		1.803 (3.837)	-0.347 (3.997)	-1.796 (5.120)	6.988 (5.792)
log(Salary)		0.509 (2.519)	1.199 (3.105)	-1.257 (2.965)	2.453 (4.663)
Unpaid (hrs)		-0.626 (0.925)	-1.224 (0.966)	-0.418 (1.236)	-2.717 (1.456)
Weekend		1.353 (3.008)	1.776 (3.367)	2.433 (4.441)	-0.676 (4.266)
Timing		0.491 (0.431)	0.452 (0.502)	-0.204 (0.836)	0.535 (0.565)
TimingXTiming		-0.003 (0.003)	-0.003 (0.003)	0.001 (0.005)	-0.003 (0.004)
Works office+home		-4.366 (5.390)	-4.340 (5.722)	5.240 (6.838)	-16.316 (8.748)
Works at home		4.193 (6.875)	-2.021 (7.783)	-2.180 (8.287)	17.066 (12.501)
Job satisfaction		8.771*** (1.513)	7.913*** (1.622)		
Constant	89.257*** (7.771)	39.944 (27.596)	50.894 (31.514)	100.390* (41.885)	91.001* (43.453)
N	347	331	331	158	173

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A23: Frequency of unpleasant moments

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.453 (1.153)	-1.078 (1.413)	-0.988 (1.551)	-2.480 (1.467)	2.060 (2.709)
PaidXPaid	0.046 (0.071)	0.106 (0.079)	0.115 (0.086)	0.170* (0.077)	-0.058 (0.165)
Age		-0.074 (0.472)	-0.444 (0.491)	0.079 (0.612)	0.269 (0.740)
AgeXAge		-0.000 (0.006)	0.004 (0.006)	-0.002 (0.007)	-0.004 (0.009)
Male		0.956 (1.492)	-0.390 (1.728)	-0.580 (1.563)	2.037 (2.576)
Dependant		-2.037 (1.666)	-0.954 (1.694)	-0.623 (1.753)	-5.615 (2.863)
Partner		1.692 (2.613)	0.277 (2.644)	-8.627** (2.693)	13.413** (4.583)
Partner employed		-3.544 (2.339)	-1.843 (2.401)	1.579 (2.390)	-9.864* (3.995)
log(Salary)		-0.295 (1.535)	-0.444 (1.865)	1.257 (1.384)	-2.809 (3.216)
Unpaid (hours)		0.574 (0.564)	0.716 (0.580)	0.154 (0.577)	1.734 (1.004)
Weekend		-1.408 (1.834)	-1.240 (2.023)	0.339 (2.073)	-2.360 (2.942)
Timing		-0.355 (0.263)	-0.161 (0.302)	0.346 (0.390)	-0.452 (0.390)
TimingXTiming		0.001 (0.002)	0.000 (0.002)	-0.003 (0.002)	0.002 (0.002)
Works office+home		2.966 (3.285)	2.549 (3.437)	1.134 (3.191)	4.143 (6.034)
Works at home		-0.902 (4.190)	2.396 (4.675)	0.819 (3.867)	-6.730 (8.622)
Job satisfaction		-5.070*** (0.922)	-4.299*** (0.975)		
Constant	7.450 (4.798)	54.716** (16.820)	51.156** (18.930)	0.613 (19.548)	34.449 (29.970)
N	347	331	331	158	173

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.



Table A24: Frequency of neutral moments

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	1.462 (1.606)	1.449 (2.101)	2.322 (2.366)	1.239 (2.709)	1.208 (3.679)
PaidXPaid	-0.038 (0.099)	-0.039 (0.118)	-0.072 (0.131)	-0.048 (0.142)	0.032 (0.225)
Age		0.921 (0.701)	1.159 (0.749)	0.424 (1.130)	1.271 (1.006)
AgeXAge		-0.011 (0.008)	-0.014 (0.009)	-0.005 (0.013)	-0.016 (0.012)
Male		0.675 (2.219)	0.390 (2.636)	2.387 (2.885)	0.549 (3.499)
Dependant		-1.063 (2.478)	-1.619 (2.584)	-1.594 (3.237)	-1.066 (3.888)
Partner		-3.989 (3.885)	-5.386 (4.033)	-4.480 (4.972)	-4.470 (6.224)
Partner employed		1.741 (3.479)	2.190 (3.662)	0.217 (4.412)	2.876 (5.425)
log(Salary)		-0.215 (2.283)	-0.755 (2.845)	0.001 (2.555)	0.356 (4.367)
Unpaid (hours)		0.052 (0.838)	0.508 (0.885)	0.264 (1.065)	0.983 (1.363)
Weekend		0.055 (2.727)	-0.536 (3.085)	-2.772 (3.827)	3.037 (3.996)
Timing		-0.136 (0.391)	-0.291 (0.460)	-0.142 (0.720)	-0.083 (0.529)
TimingXTiming		0.001 (0.002)	0.003 (0.003)	0.001 (0.004)	0.001 (0.003)
Works office+home		1.400 (4.886)	1.791 (5.242)	-6.374 (5.892)	12.173 (8.195)
Works at home		-3.291 (6.232)	-0.375 (7.130)	1.361 (7.140)	-10.336 (11.710)
Job satisfaction		-3.701** (1.372)	-3.614* (1.486)		
Constant	3.292 (6.685)	5.340 (25.016)	-2.050 (28.872)	-1.003 (36.092)	-25.450 (40.702)
N	347	331	331	158	173

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A25: Extra regressors for the employees

	Daily enjoyment	Rushed feel.	Freq. unpleasant moments	Life satisfaction	Job satisfaction	Social satisfaction
Qualified worker or highly skilled	0.079 (0.143)	0.551 (0.389)	-7.844* (3.749)	0.073 (0.163)	-0.006 (0.195)	0.181 (0.186)
Technician	-0.127 (0.159)	0.632 (0.440)	-4.483 (4.164)	0.064 (0.184)	0.319 (0.220)	0.076 (0.210)
Staff category B or equivalent	-0.072 (0.176)	0.615 (0.486)	-4.075 (4.611)	-0.029 (0.203)	0.503* (0.242)	0.169 (0.231)
Foreman, administrative or commercial control	-0.035 (0.169)	0.612 (0.468)	-6.767 (4.435)	0.138 (0.196)	0.321 (0.234)	0.163 (0.223)
Category A staff or equivalent	-0.221 (0.178)	0.578 (0.496)	-4.269 (4.659)	0.118 (0.208)	0.247 (0.248)	0.173 (0.237)
Engineer or executive	-0.134 (0.166)	0.873 (0.464)	-6.240 (4.350)	0.030 (0.194)	0.356 (0.232)	-0.022 (0.221)
Staff category C or D or equiv.	-0.051 (0.161)	0.425 (0.451)	-4.368 (4.217)	-0.182 (0.187)	0.377 (0.224)	-0.261 (0.213)
Employee of office, trade, personal services	0.079 (0.141)	0.624 (0.385)	-8.070* (3.683)	-0.002 (0.161)	0.202 (0.193)	0.122 (0.183)
knows if works the next day	0.049 (0.122)	0.075 (0.356)	0.303 (3.188)	0.269 (0.149)	0.269 (0.178)	0.135 (0.170)
knows if works the next week	-0.122 (0.121)	-0.092 (0.348)	-1.326 (3.156)	0.036 (0.146)	-0.049 (0.175)	0.120 (0.167)
knows if works the next month	-0.005 (0.082)	-0.329 (0.232)	4.187 (2.137)	0.025 (0.097)	-0.044 (0.116)	0.045 (0.111)
Occasionally works evenings	-0.041 (0.085)	0.308 (0.239)	3.308 (2.234)	0.006 (0.100)	-0.096 (0.120)	-0.180 (0.114)
Occasionally works nights	0.138 (0.094)	-0.240 (0.280)	-1.385 (2.473)	0.115 (0.117)	0.353* (0.139)	0.204 (0.133)
Occasionally works Saturdays	-0.077 (0.084)	-0.122 (0.241)	1.910 (2.201)	0.026 (0.101)	0.135 (0.121)	0.068 (0.115)
Occasionally works Sundays	0.198* (0.087)	-0.229 (0.249)	-5.775* (2.266)	-0.155 (0.104)	-0.167 (0.124)	-0.006 (0.118)
Working hours are controlled	-0.045 (0.061)	-0.165 (0.175)	4.277** (1.585)	-0.180* (0.072)	-0.267** (0.086)	-0.070 (0.082)
Can be absent from work easily	-0.005 (0.062)	-0.008 (0.177)	1.706 (1.612)	0.050 (0.074)	-0.095 (0.088)	-0.127 (0.084)
Some choice in schedule	0.020 (0.069)	0.306 (0.201)	-2.166 (1.796)	0.108 (0.084)	0.160 (0.100)	0.032 (0.095)
Free to choose working hours	0.028 (0.102)	0.304 (0.292)	0.114 (2.671)	0.155 (0.121)	0.148 (0.144)	0.229 (0.137)
N	331	389	331	391	391	391

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Note that this table does not include the main controls, but they are part of the regression.

Table A26: Feeling rushed

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.064 (0.036)	-0.115 (0.157)	-0.013 (0.173)	-0.158 (0.234)	-0.188 (0.233)
PaidXPaid	0.008*** (0.002)	0.011 (0.009)	0.006 (0.010)	0.014 (0.013)	0.012 (0.014)
Age		-0.030 (0.053)	-0.002 (0.055)	0.056 (0.098)	-0.076 (0.064)
AgeXAge		0.000 (0.001)	-0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)
Male		-0.712*** (0.162)	-0.655*** (0.188)	-0.605* (0.248)	-0.822*** (0.216)
Dependant		-0.015 (0.183)	-0.114 (0.190)	0.213 (0.288)	-0.341 (0.241)
Partner		-0.066 (0.290)	-0.015 (0.301)	-0.234 (0.445)	-0.072 (0.387)
Partner employed		0.422 (0.255)	0.380 (0.266)	0.629 (0.391)	0.225 (0.334)
log(Salary)		0.655*** (0.172)	0.378 (0.212)	0.454 (0.233)	0.850** (0.273)
Unpaid (hours)		0.131* (0.062)	0.133* (0.064)	0.145 (0.095)	0.156 (0.084)
Weekend		0.215 (0.198)	0.297 (0.223)	0.022 (0.309)	0.562* (0.255)
Timing		0.034 (0.027)	0.010 (0.032)	0.155** (0.056)	0.019 (0.031)
TimingXTiming		-0.000 (0.000)	-0.000 (0.000)	-0.001* (0.000)	-0.000 (0.000)
Works office+home		0.434 (0.338)	0.609 (0.355)	0.268 (0.508)	0.345 (0.460)
Works at home		0.060 (0.465)	-0.406 (0.516)	0.207 (0.673)	-0.894 (0.672)
Job satisfaction		-0.438*** (0.099)	-0.501*** (0.106)		
Constant	3.422*** (0.145)	-0.486 (1.851)	1.469 (2.127)	-7.830** (2.957)	-0.942 (2.614)
N	4616	389	389	190	199

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A27: Feeling busy

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.067*** (0.017)	-0.021 (0.073)	0.085 (0.079)	0.008 (0.120)	-0.064 (0.097)
PaidXPaid	0.006*** (0.001)	0.002 (0.004)	-0.003 (0.004)	0.001 (0.006)	0.003 (0.006)
Age		-0.051* (0.025)	-0.033 (0.025)	-0.035 (0.051)	-0.052 (0.027)
AgeXAge		0.001* (0.000)	0.000 (0.000)	0.000 (0.001)	0.001* (0.000)
Male		-0.194* (0.076)	-0.129 (0.086)	-0.240 (0.128)	-0.161 (0.091)
Dependant		0.006 (0.086)	-0.038 (0.087)	0.050 (0.147)	-0.097 (0.104)
Partner		0.346* (0.138)	0.406** (0.139)	0.127 (0.237)	0.556*** (0.165)
Partner employed		-0.235 (0.122)	-0.295* (0.123)	-0.037 (0.211)	-0.417** (0.141)
log(Salary)		0.345*** (0.081)	0.215* (0.097)	0.294* (0.121)	0.390*** (0.116)
Unpaid (hours)		0.048 (0.029)	0.057 (0.030)	0.045 (0.049)	0.043 (0.036)
Weekend		-0.039 (0.093)	-0.015 (0.102)	-0.010 (0.161)	-0.077 (0.108)
Timing		0.009 (0.012)	-0.015 (0.015)	0.018 (0.029)	0.016 (0.013)
TimingXTiming		-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Works office+home		0.071 (0.158)	0.175 (0.162)	0.161 (0.261)	-0.036 (0.194)
Works at home		0.219 (0.217)	0.087 (0.236)	0.005 (0.346)	0.466 (0.285)
Job satisfaction		0.020 (0.047)	-0.014 (0.049)		
Constant	3.741*** (0.067)	1.464 (0.863)	2.439* (0.971)	1.023 (1.519)	1.460 (1.095)
N	4603	387	387	188	199

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A28: Cutting back on sleep

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.098*** (0.018)	-0.143 (0.081)	-0.047 (0.085)	-0.060 (0.118)	-0.223 (0.121)
PaidXPaid	0.008*** (0.001)	0.011* (0.005)	0.006 (0.005)	0.008 (0.006)	0.012 (0.007)
Age		-0.020 (0.027)	0.003 (0.027)	-0.015 (0.049)	-0.028 (0.034)
AgeXAge		0.000 (0.000)	-0.000 (0.000)	-0.000 (0.001)	0.000 (0.000)
Male		0.030 (0.084)	0.047 (0.092)	0.024 (0.125)	0.081 (0.114)
Dependant		-0.057 (0.094)	-0.121 (0.092)	0.135 (0.144)	-0.280* (0.128)
Partner		-0.007 (0.150)	-0.038 (0.147)	-0.397 (0.223)	0.272 (0.205)
Partner employed		-0.063 (0.132)	-0.055 (0.130)	0.191 (0.197)	-0.244 (0.177)
log(Salary)		0.232** (0.089)	0.037 (0.104)	0.107 (0.117)	0.475** (0.144)
Unpaid (hours)		0.072* (0.032)	0.102** (0.032)	0.082 (0.048)	0.078 (0.044)
Weekend		-0.038 (0.102)	-0.085 (0.109)	-0.035 (0.155)	-0.043 (0.136)
Timing		-0.018 (0.014)	-0.003 (0.016)	-0.007 (0.028)	-0.013 (0.016)
TimingXTiming		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Works office+home		-0.136 (0.174)	-0.183 (0.174)	0.040 (0.256)	-0.338 (0.243)
Works at home		0.703** (0.240)	0.504* (0.253)	0.835* (0.339)	0.466 (0.356)
Job satisfaction		0.015 (0.051)	0.004 (0.052)		
Constant	1.920*** (0.072)	1.658 (0.952)	1.776 (1.040)	1.798 (1.488)	0.383 (1.362)
N	4620	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A29: Skipping meals

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.075*** (0.018)	-0.063 (0.078)	-0.030 (0.083)	-0.018 (0.111)	-0.055 (0.116)
PaidXPaid	0.007*** (0.001)	0.006 (0.004)	0.004 (0.005)	0.006 (0.006)	0.000 (0.007)
Age		-0.023 (0.026)	0.000 (0.027)	-0.011 (0.046)	-0.041 (0.032)
AgeXAge		0.000 (0.000)	-0.000 (0.000)	-0.000 (0.001)	0.000 (0.000)
Male		-0.225** (0.080)	-0.236** (0.090)	-0.126 (0.118)	-0.256* (0.109)
Dependant		0.027 (0.090)	0.028 (0.091)	0.020 (0.136)	-0.001 (0.122)
Partner		-0.020 (0.144)	-0.025 (0.145)	-0.246 (0.210)	0.077 (0.196)
Partner employed		-0.107 (0.127)	-0.120 (0.128)	0.072 (0.186)	-0.216 (0.169)
log(Salary)		0.264** (0.085)	0.240* (0.102)	0.066 (0.111)	0.588*** (0.138)
Unpaid (hours)		0.001 (0.031)	0.011 (0.031)	0.054 (0.045)	-0.018 (0.043)
Weekend		-0.004 (0.098)	-0.110 (0.107)	0.122 (0.146)	-0.089 (0.130)
Timing		-0.009 (0.013)	-0.005 (0.015)	0.029 (0.027)	-0.007 (0.016)
TimingXTiming		0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
Works office+home		-0.218 (0.167)	-0.242 (0.171)	-0.193 (0.241)	-0.251 (0.233)
Works at home		0.349 (0.231)	0.058 (0.249)	0.600 (0.320)	-0.123 (0.341)
Job satisfaction		0.019 (0.049)	0.006 (0.051)		
Constant	1.858*** (0.072)	1.117 (0.914)	0.762 (1.024)	0.195 (1.405)	-0.370 (1.304)
N	4620	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A30: Life satisfaction

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	0.084 (0.054)	0.065 (0.067)	0.012 (0.072)	0.151 (0.085)	0.084 (0.106)
PaidXPaid	-0.006 (0.003)	-0.005 (0.004)	-0.002 (0.004)	-0.008 (0.005)	-0.006 (0.006)
Age		0.004 (0.023)	0.005 (0.023)	-0.023 (0.036)	0.014 (0.030)
AgeXAge		-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Male		0.213** (0.069)	0.222** (0.078)	0.213* (0.090)	0.251* (0.100)
Dependant		0.015 (0.078)	-0.038 (0.079)	-0.016 (0.104)	0.078 (0.112)
Partner		0.012 (0.124)	-0.022 (0.126)	0.037 (0.161)	0.001 (0.179)
Partner employed		0.044 (0.109)	0.050 (0.112)	-0.048 (0.142)	0.126 (0.155)
log(Salary)		-0.026 (0.074)	-0.085 (0.089)	-0.072 (0.085)	0.102 (0.126)
Unpaid (hours)		-0.010 (0.027)	0.001 (0.027)	0.015 (0.034)	-0.008 (0.039)
Weekend		0.048 (0.085)	0.060 (0.093)	-0.045 (0.112)	0.093 (0.119)
Timing		-0.041*** (0.011)	-0.029* (0.013)	-0.091*** (0.021)	-0.023 (0.014)
TimingXTiming		0.000*** (0.000)	0.000* (0.000)	0.001*** (0.000)	0.000 (0.000)
Works office+home		-0.080 (0.145)	-0.082 (0.149)	-0.145 (0.185)	0.111 (0.212)
Works at home		-0.048 (0.199)	-0.099 (0.216)	0.063 (0.245)	-0.055 (0.311)
Constant	3.805*** (0.223)	5.568*** (0.770)	5.400*** (0.859)	8.101*** (1.075)	3.520** (1.191)
N	409	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Table A31: Job satisfaction

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid	-0.039 (0.068)	-0.073 (0.081)	-0.074 (0.086)	0.019 (0.049)	-0.062 (0.094)
PaidXPaid	0.002 (0.004)	0.003 (0.005)	0.004 (0.005)	-0.001 (0.003)	0.002 (0.006)
Age		-0.009 (0.027)	-0.004 (0.028)	-0.060** (0.021)	-0.026 (0.026)
AgeXAge		0.000 (0.000)	0.000 (0.000)	0.001** (0.000)	0.000 (0.000)
Male		0.052 (0.084)	0.191* (0.093)	0.085 (0.052)	-0.048 (0.088)
Dependant		0.053 (0.095)	0.069 (0.095)	0.082 (0.060)	0.185 (0.099)
Partner		-0.162 (0.151)	-0.108 (0.150)	-0.092 (0.093)	-0.168 (0.159)
Partner employed		0.115 (0.133)	0.059 (0.133)	0.077 (0.082)	0.161 (0.137)
log(Salary)		0.045 (0.090)	-0.105 (0.106)	-0.101* (0.049)	0.273* (0.112)
Unpaid		-0.035 (0.032)	-0.038 (0.032)	0.003 (0.020)	-0.058 (0.034)
Weekend		-0.047 (0.103)	0.008 (0.112)	0.014 (0.065)	-0.096 (0.105)
Timing		0.001 (0.014)	-0.017 (0.016)	-0.018 (0.012)	0.007 (0.013)
TimingXTiming		-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Works office+home		0.080 (0.176)	0.133 (0.178)	0.307** (0.107)	-0.156 (0.188)
Works at home		0.205 (0.242)	0.149 (0.258)	0.221 (0.142)	0.210 (0.275)
Constant	4.030*** (0.286)	4.074*** (0.937)	5.332*** (1.026)	7.080*** (0.624)	2.076 (1.053)
N	404	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.



Table A32: Social satisfaction

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	-0.058 (0.060)	-0.036 (0.075)	-0.080 (0.082)	0.043 (0.090)	-0.112 (0.128)
PaidXPaid	0.002 (0.004)	0.001 (0.004)	0.003 (0.005)	-0.002 (0.005)	0.004 (0.008)
Age		0.017 (0.025)	0.014 (0.026)	-0.063 (0.037)	0.046 (0.036)
AgeXAge		-0.000 (0.000)	-0.000 (0.000)	0.001 (0.000)	-0.000 (0.000)
Male		-0.006 (0.078)	0.020 (0.089)	0.010 (0.095)	-0.036 (0.121)
Dependant		0.060 (0.088)	0.023 (0.090)	0.039 (0.110)	0.134 (0.135)
Partner		-0.566*** (0.139)	-0.561*** (0.143)	-0.309 (0.170)	-0.823*** (0.217)
Partner employed		0.411*** (0.123)	0.397** (0.127)	0.209 (0.150)	0.645*** (0.187)
log(Salary)		-0.072 (0.083)	-0.089 (0.101)	-0.181* (0.089)	0.134 (0.152)
Unpaid (hours)		-0.034 (0.030)	-0.024 (0.031)	0.019 (0.036)	-0.078 (0.047)
Weekend		0.082 (0.095)	0.101 (0.106)	0.064 (0.118)	0.110 (0.143)
Timing		-0.004 (0.013)	0.004 (0.015)	-0.039 (0.022)	0.011 (0.017)
TimingXTiming		0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Works office+home		-0.188 (0.162)	-0.245 (0.170)	0.097 (0.195)	-0.400 (0.257)
Works at home		-0.302 (0.224)	-0.297 (0.246)	-0.395 (0.258)	-0.035 (0.376)
Constant	4.507*** (0.246)	4.804*** (0.865)	4.604*** (0.978)	8.312*** (1.134)	2.502 (1.439)
N	409	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

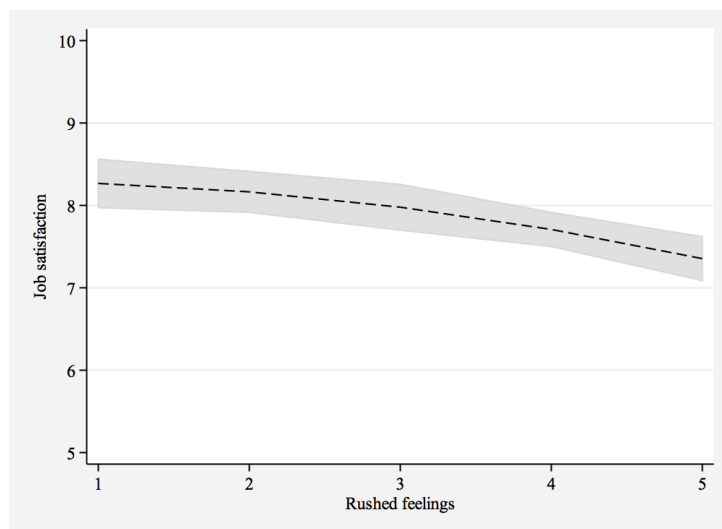
Table A33: Satisfaction with leisure time

	Empty model	Basic controls	Extra controls	Likes	Not likes
Paid (hours)	0.123 (0.077)	0.031 (0.093)	0.039 (0.102)	0.086 (0.145)	0.144 (0.128)
PaidXPaid	-0.006 (0.005)	-0.001 (0.005)	-0.000 (0.006)	-0.002 (0.008)	-0.011 (0.008)
Age		0.081* (0.031)	0.066* (0.033)	0.054 (0.061)	0.088* (0.036)
AgeXAge		-0.001** (0.000)	-0.001* (0.000)	-0.001 (0.001)	-0.001** (0.000)
Male		0.226* (0.097)	0.291** (0.110)	0.208 (0.154)	0.288* (0.120)
Dependant		-0.280* (0.109)	-0.291** (0.111)	-0.400* (0.178)	-0.172 (0.135)
Partner		-0.305 (0.173)	-0.310 (0.177)	-0.278 (0.275)	-0.242 (0.217)
Partner employed		0.302* (0.152)	0.319* (0.157)	0.338 (0.243)	0.219 (0.187)
log(Salary)		0.034 (0.103)	0.013 (0.125)	-0.053 (0.145)	0.186 (0.152)
Unpaid (hours)		-0.040 (0.037)	-0.016 (0.038)	0.015 (0.059)	-0.070 (0.047)
Weekend		-0.023 (0.118)	0.056 (0.131)	0.002 (0.191)	-0.119 (0.143)
Timing		-0.033* (0.016)	-0.043* (0.019)	-0.087* (0.035)	-0.007 (0.017)
TimingXTiming		0.000 (0.000)	0.000* (0.000)	0.001* (0.000)	0.000 (0.000)
Works office+home		0.089 (0.202)	0.131 (0.210)	0.240 (0.315)	0.124 (0.256)
Works at home		-0.673* (0.277)	-0.266 (0.304)	-0.638 (0.418)	-0.608 (0.376)
Constant	3.163*** (0.319)	3.360** (1.074)	3.645** (1.208)	6.008** (1.835)	1.060 (1.437)
N	409	391	391	191	200

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Note that the regression for employees with extra regressors –“Employees + extras”– does include additional variables that are not shown in the table due to space limitations. Those variables are: type of job, schedule, how predictable working hours are, whether the person works in the evenings, nights or weekends, whether the jobs is or not controlled and how easy it is for the person to be absent.

Figure A7: Time crunch and job satisfaction



Source: 2008-2009 French Time Use survey. Includes employees for whom there is information about their job satisfaction and time crunch, N=402. The correlation between time crunch and job satisfaction is -0.22.

### 6.3.1 Who are the *likes*?

Table A34 shows the cross tabulation between job satisfaction and education level, and it doesn't show a very clear relationship between the two. Individuals of higher, medium and lower education are almost equally likely to be above and below the median in terms of job satisfaction. For instance, 53% of the individuals with higher education are above the median in terms of job satisfaction, and 47% are below. The same Figures for the medium educated and reversed (47% versus 53%) for the lower educated.

Table A34: Job satisfaction and education level

Job satisfaction	Education level											
	Lower			Medium			Higher			Total		
	No.	Col %	Row %	No.	Col %	Row %	No.	Col %	Row %	No.	Col %	Row %
Below p50	21	42.9	10.0	105	53.0	50.2	83	52.9	39.7	209	51.7	100.0
Above p50	28	57.1	14.4	93	47.0	47.7	74	47.1	37.9	195	48.3	100.0
<b>Total</b>	49	100.0	12.1	198	100.0	49.0	157	100.0	38.9	404	100.0	100.0

Source: 2008/2009 French Time Use survey. This table includes employees only for whom there is information about their job satisfaction and their education level, N=404.

Looking at it from another angle, if we explore the composition of the individuals highly satisfied with their jobs we see that 14.4% come from the lower educated, 47.7% of the very satisfied come from the medium educated, and almost 38% from the highly educated. Thus, it does not seem necessary to have higher education to be very satisfied with one's job.

Table A35: Job satisfaction and salary

Job satisfaction	Salary (euros per month)											
	0-1,000			1,000-2,000			2,000+			Total		
	No.	Col %	Row %	No.	Col %	Row %	No.	Col %	Row %	No.	Col %	Row %
Below p50	29	48.3	14.5	139	54.7	69.5	32	41.6	16.0	200	51.2	100.0
Above p50	31	51.7	16.2	115	45.3	60.2	45	58.4	23.6	191	48.8	100.0
<b>Total</b>	60	100.0	15.3	254	100.0	65.0	77	100.0	19.7	391	100.0	100.0

Source: 2008/2009 French Time Use survey. This table includes employees for whom there is information about their job satisfaction and their salary, N=391. The correlation between log(salary) and job satisfaction is 0.03.

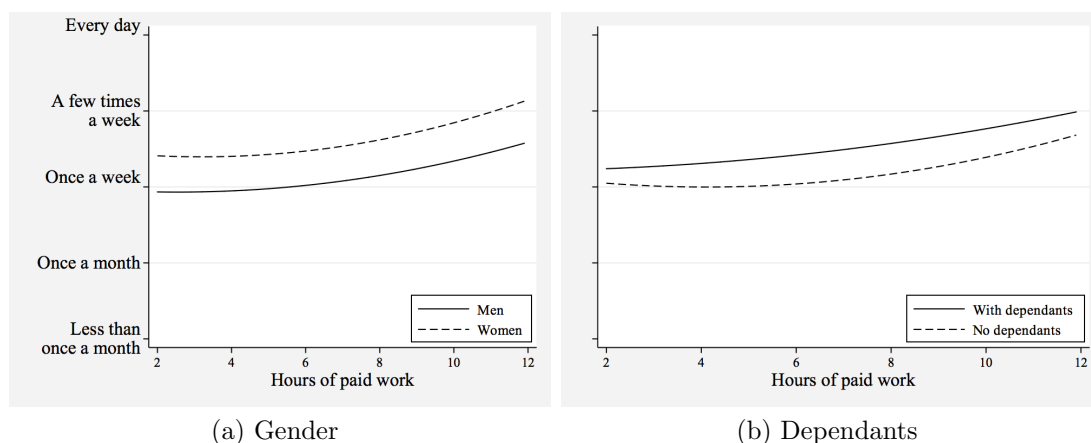
The relationship between salary and job satisfaction is not very strong either. For instance, if we consider the individuals with the highest monthly salaries, that is 2,000

euros upwards, we find that 41.6% are below the median in terms of job satisfaction, and 51.7% is above. Among the individuals in the lower salary category, 48.3% are below the median in job satisfaction and 51.7% are above. The correlation coefficient between  $\log(\text{salary})$  and job satisfaction is just 0.03.

### 6.3.2 Time crunch by gender and the presence of dependants

The main result displayed in section 4.5.2, ‘Hours of work and time crunch’, showed that time pressure feelings increased with hours of paid work. This was the case before and after controlling for some socio-demographics, gender among those. Nothing much changed before and after controls, although some of the socio-demographics had some effect on time pressure. For instance, women were, *ceteris paribus*, more rushed than men, 0.71 on average, this is half a standard deviation approximately. Yet one could wonder whether women are just more rushed for every level of work, or whether the relationship between hours of paid work and time crunch is different for men and women. Figure A8 suggests that this is not the case because the curves for the two groups are almost parallel.

Figure A8: Time crunch by gender and dependant status.



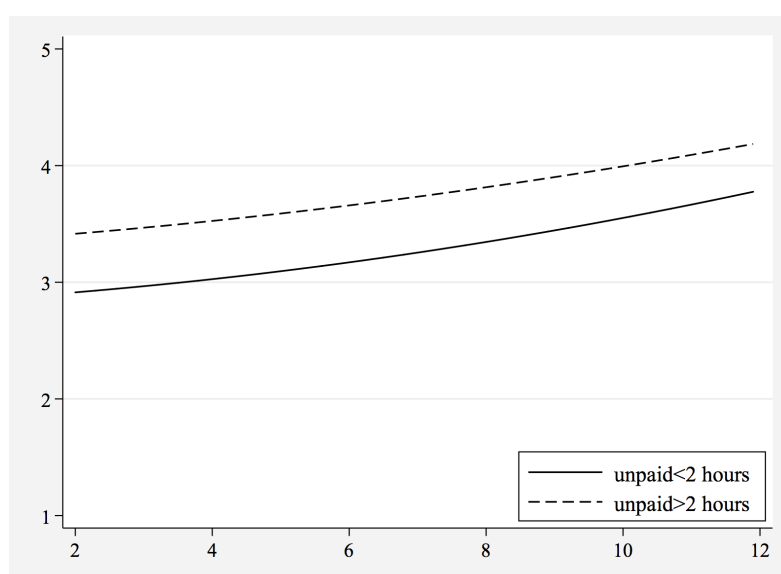
Source: INSEE, 2008-09 Time Use Survey. Sample size for the gender graph is 4,616, with roughly the same number of men and women. The graph by dependant status contains 4,616 individuals, 55% of which have dependants. These figures are based on a regression with the following controls: age, partner and their occupational status, salary, work place, and whether it is a weekend.

Another variable that we could suspect to have an important effect on time pressure is whether one has children or not, or dependants more generally, to take care of. Figure A8b compares the relationship between hours of work and time crunch for employees with dependants and those without, and here we see some differences between the two. Individuals with dependants are on average more rushed than people without. However, whereas individuals with dependants immediately start to feel more rushed as they do more hours of paid work, individuals without children do start to experience increasing levels of time crunch until 5 hours of paid work. From that point onwards both experience a very similar increase in time pressure for every additional hour of paid work.

In the analysis made in Chapter 4, we controlled also for the amount of time spent in unpaid work, since it seemed important to take into account that not all time spent out of work is leisure time, the amount of leisure would depend on how much unpaid work one

carries out. The regression analysis showed that every hour of unpaid work would increase time pressure by 0.13, which is less than one tenth of a standard deviation. However here again one could question whether the effect on unpaid work is the same at all levels of work. In particular, we are going to explore whether that is the case for a special group, which could seem in principle to be at greater risk of time pressure (and therefore of not achieving balance): individuals with dependants. Figure 6.3.2 tries to shed light on this by comparing the relationship of interest for individuals with dependants, above and below the median in terms of hours of unpaid work. It turns out that the effect seems quite constant across levels of paid work since the two curves are quite parallel. As expected, the curve for individuals doing more unpaid work is above the one for individuals doing little unpaid work, and the difference between the two groups is non negligible.

Figure A9: Time crunch for employees with dependants by amount of unpaid work



Source: INSEE, 2008-09 Time Use Survey. The sample size is 2,525. 2 hours of unpaid work is the median of unpaid work. These figures are based on a regression with the following controls: age, partner and their occupational status, salary, work place, and whether it is a weekend.

Figures A8 and suggest that the results presented in Chapter 4, at least those concerning time pressure, are quite robust, and therefore applicable to not only the general sample of French employees, but also to specific population subgroups like men and women, caregivers and adults living alone, and individuals doing different amounts of unpaid work. I find this last result particularly interesting because it is suggestive of what things may be like in other countries.

