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## Self-reported satisfaction and the economic crisis of 2007-10: Or how people in the UK and Germany perceive a severe cyclical downturn

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Antje Mertens and Miriam Beblo

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# **Self-reported Satisfaction and the Economic Crisis of 2007-10**

## **Or How People in the UK and Germany Perceive a Severe Cyclical Downturn**

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## Abstract

Self-reported satisfaction measures respond to a great variety of socio-demographic characteristics as well as the job and living environment. In this paper we ask whether the recent financial market crisis has caused a deterioration of satisfaction not only for the unemployed but also for those out of the labour force and especially those in employment. The focus of our analyses is on the pattern of life, job and health satisfaction over time and the influence of unemployment rates, inflation rates and GDP growth. We compare the UK and Germany, two countries with different employment protection regulations and different consequences of the crisis for the labour market. For our analysis we use data from the German Socio-Economic Panel (SOEP) and the British Household Panel Study (BHPS) for the period 1996 to 2010 and supplement this with annual information on macroeconomic indicators. We estimate Ordered Logit and OLS models, both with individual fixed effects.

We were somewhat surprised to find significant differences between the formerly separated parts of Germany even twenty years after re-unification – not only in satisfaction but also its determinants. While people living in the western part of Germany report somewhat lower satisfaction in 2009 compared to the previous years, those living in the eastern part report higher levels than in 2006, the year before the financial crisis started. This could be due to the largely different employment structures in both parts of Germany. As exports and not so much services were hit by the crisis, western German federal states were facing stronger negative demand pressures. Our findings for the UK are similar to the East German evidence, as year dummies for the crisis years 2008 to 2010 do not show any sign of a decrease, except for a fall in job satisfaction in 2010. Looking at the impact of macroeconomic indicators such as GDP growth, inflation and unemployment, we find mostly diverse effects between the two German regions but similar between West Germany and the UK. First of all, satisfaction with life is related to the business cycle, we observe positive reactions to an increase in GDP in the whole of Germany and negative reactions to rising inflation in the UK and Germany. However, the strongest and most robust result concerns the relationship between self-reported satisfaction and the regional unemployment rate: The higher regional unemployment the more satisfied people in East Germany seem to be irrespective their current labour market status. Both unemployed and employed seem to be more satisfied with their lives, jobs and health when unemployment is rising around them. At the same time, the overall level of unemployment has a significantly negative effect. In West Germany and the UK, on the contrary, the reverse is true: overall unemployment is positively related to satisfaction and regional unemployment in West Germany is negatively related. Interestingly, we get similar though somewhat weaker results when looking at job and health satisfaction. Hence, though the direct costs of the financial and economic crisis in form of falling GDP seem to have been by far larger than the psychological costs, we find some limited additional costs in the crisis years, and a considerable impact of regional and national unemployment rates.

## 1. Introduction

The latest economic crisis – considered as the worst recession since the Second World War – has caused severe macroeconomic consequences with falling GDP and increasing unemployment in most countries. However, the crisis may have led to even higher welfare costs when taking the psychological effects into account, as well. Due to the severity of the shock, the well-being of the working and non-working population might have been negatively affected as cyclical downturns tend to increase the general perception of job insecurity – especially in countries with low employment protection. Thus, not only displaced workers, who were directly affected by the crisis, but also those in employment or out of the labour force, potentially had to incur psychological costs (for recent studies see e.g. Garz 2013 and Geishecker 2010).

In this paper we investigate these psychological costs by analysing the influence of macroeconomic indicators on life, job and health satisfaction in the UK and Germany. These two countries are interesting to study, not only because of their different levels of legal employment protection, but also because the macroeconomic responses have been different so far. Although both states have suffered from the latest economic crisis, the shock to employment and GDP has been somewhat stronger in the UK, where the public very soon became aware of what was at stake during the Northern Rock crisis in autumn 2007. And although trouble started in Germany at around the same time, with Sachsen LB and IKB facing collapse, it was labour markets in the UK that faced stronger pressures through what was to come, while official unemployment rates in Germany even decreased between 2007 and 2009 from 8.4% down to 7.5% as UK unemployment rose from 5.3% to 7.6%.

Much of the previous work on life satisfaction has focused on whether economic growth is driving life satisfaction (or happiness) or the influence of socio-demographic and job characteristics (see Dolan et al. 2008 for an overview). Di Tella et al. (2001, 2003) amongst others have analyzed the macroeconomics of happiness and found macro variables to be of great importance in the United States and a cross section of European countries. In this paper, we re-investigate this issue and try to broaden the understanding of relevant mechanisms. In particular, we do this by (i) focusing on two European countries with different employment protection legislation, (ii) analysing the effects of business cycle indicators on employment, (iii) investigating whether national or regional unemployment levels are more influential, (iv) exploring whether there are significantly negative year effects present for the crisis years and finally (v) comparing results for life, job and health satisfaction. Although the focus of our paper is on those in dependent employment, we compare our results to estimations including all active and inactive respondents.

The next section 2 summarizes what is known about the influence of macroeconomic variables on self-reported satisfaction measures from a theoretical and empirical perspective. In section 3 we describe our data, the German Socio-Economic Panel (SOEP) and the British Household Panel Study (BHPS), our selection criteria and methodology before presenting the results in section 4. We estimate OLS Fixed Effects and compare our results to Ordered Logit Models with Fixed Effects. Finally, section 5 concludes.

## **2. Macroeconomic Indicators and Life Satisfaction – Evidence and Hypotheses**

### **2.1. Unemployment and the Macro Economy in the UK and Germany 2007 – 2010**

Undoubtedly, there has been an overwhelming flow of information on the causes and consequences of the macroeconomic situation over the past years, so not much needs to be added here. Figure 1 shows the basic indicators that we are going to use in our microeconomic analysis. It is well known, that all European countries suffered a deep crisis with a drop in GDP unprecedented since the end of the Second World War. As discussed elsewhere (see Möller 2010; Eichhorst et al. 2010), labour markets reacted differently across countries. In almost all EU countries, except Germany, unemployment increased during the crisis years. In Germany, and particularly East Germany, unemployment had started to decrease just before the crisis (it fell from 9.9 to 7.5 percent in the Western part and from 18.7 to 15.1 percent in the East) and continued to do so even until 2009 in East Germany (Bundesagentur für Arbeit 2011). The opposite happened in the UK (though from a much lower level) (Eurostat 2010). Moreover, recovery in 2010 was stronger in Germany in terms of GDP growth so unemployment has decreased even further lately. At the same time inflation rates decreased in Germany but tended to increase in the UK.

Figure 1 about here

Especially the development of atypical employment is interesting for our empirical analysis where we control for different working hours and fixed-term contracts. In the UK, atypical employment got stronger as part-time employment increased from January 2008 to September 2009 by around 2 percent. At the same time full-time employment decreased by around 3 percent (Office for National Statistics 2011). Even though the drop in employment has come to a halt in 2009, permanent and full time jobs both decreased further by 0.2 percent during recovery and the slow recovery was driven by temporary and part-time jobs. In Germany, temporary employment decreased during the crisis so there was no shift towards employment relationships that are more insecure, it was rather the case

that workers in temporary jobs were carrying the burden of cyclical adjustment (Statistisches Bundesamt 2011).

## **2.2. Macro Indicators in Research on Self-reported Satisfaction Measures**

In recent years, the number of studies on self-reported satisfaction measures has rapidly increased and today not only psychologists and social scientists but also a growing part of the economists profession believe that such an analysis is worthwhile and necessary for the design and evaluation of economic and social policies (see e.g. Bruni and Porta 2005 and 2007, Diener et al. 1999, Dolan and White 2007, Frey 2008, Veenhoven 2002). Even though self-reported life satisfaction does not measure utility as incorporated in economic models, it is useful to study as it is likely to influence economic outcomes (compare e.g. Hamermesh 2001). Workers who are more satisfied will be less likely to shirk or quit their jobs voluntarily and are more likely to invest into firm specific human capital. And as Hamermesh (2001, p.3) puts it: "One might even reasonably imagine that the fluctuations in the "animal spirits" that are a major Keynesian motivation for business cycles arise in part from variations in workers' perceptions of their well-being." Darity and Goldsmith (1996) have even developed a model that incorporates the influence of the business cycle on well-being and the effect of psychological well-being on productivity and labour force attachment. Others have argued that business cycles influence satisfaction (Di Tella et al. 2001, Blanchflower 2007), that is, life satisfaction and business cycles potentially influence each other. In the following, our review of the literature focuses on those papers that look at the impact of business cycle fluctuations.<sup>1</sup> We are going to discuss the likely influences of unemployment, GDP growth and inflation in turn, taking into account the links between job, health and life satisfaction where appropriate.<sup>2</sup>

### **2.2.1 Personal Unemployment and Self-reported Satisfaction**

Obviously, business cycle fluctuations are likely to concern especially those who are directly affected, namely the unemployed. This is why many studies have investigated whether business cycles affect health and life satisfaction. Especially health satisfaction has been an issue primarily in unemployment research and we are going to discuss this important issue in the following. Clark/Oswald (1994) and Gerlach/Stephan (1996) were the first to study the influence of unemployment in the UK and Germany using the BHPS and SOEP data. They found that unemployed workers report lower mental well-being than those in work. For Germany Gerlach/Stephan report

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<sup>1</sup> For overviews of the quickly growing literature on life satisfaction see e.g. Frey/Stutzer (2002), Di Tella/MacCulloch (2006), Dolan et al. (2008), Blanchflower and Oswald (2011).

<sup>2</sup> Gerdtham/ Johannesson (2001) have looked at this question using Swedish data.



that it is middle aged men who suffer most from unemployment. Winkelmann and Winkelmann (1998) support these findings for Germany and find significant negative – though lower – effects for those out of the labour force, as well. Many others provide similar results like Frey/ Stutzer (2000, 2002), Helliwell (2003), Winkelmann (2005), Georgellis et al. (2008), Murphy and Athanasou (1999), Nordenmark and Strandh (1999), Shields and Wheatley Price (2005), Knabe et al. (2012). In fact, Clark et al. (2008b) report that although there are habituation effects to most life events, there is little evidence of adaption to unemployment.

Using a large cross section of countries, however, Helliwell (2003) identifies stronger effects in OECD countries in comparison to non-OECD countries. Clark et al. (2001) find for Germany that there are even scarring effects, as those with higher unemployment in the past report lower levels of life satisfaction. Yet, the negative effect on well-being seems to be lower for those who have experienced unemployment before. On the other hand, they also find 'habituation' effects: unemployment tends to reduce well-being by less if unemployment has been experienced previously. Although Lucas et al. (2004) do not support the latter finding they also find large negative effects of unemployment, which are reversed as unemployment persists.

Along the same lines, health measures and psychological well-being have been shown to deteriorate when people become unemployed and to increase once a new job has been found (e.g. Kasl / Jones 1998, Korpi 1997, Murphy/Athanasou 1999, Romeu Gordo 2006, Theodossiou 1998). We all know that a negative correlation between health and unemployment does not necessarily imply a causal link, but the effect seems to be relatively robust to different specifications and methods, for example it can still be found to have considerable effects when controlling for selection or individual fixed effects (compare e.g. Korpi 1997). Some have studied class differences in well-being with mixed results. While Strandh (2000) found no such differences at all, Whelan (1994) found differences for men but not for women. Andersen (2009), however, shows using the BHPS that the negative effect of job loss on subjective well-being is highest for individuals who have been members of the middle classes prior to becoming unemployed.

In the psychological literature, these negative health effects of unemployment have been related to the loss of work as a social institution that fulfils basic psychological needs (Jahoda 1982) and the loss of social status and therefore an important part of a person's identity (Warr 1987) – though these explanations are not undisputed. Some argue that the psychological effects are driven by material deprivation rather than a loss of the latent functions of unemployment (compare Fryer 1996).

As set out in section 2.1, the current crisis led to completely different unemployment patterns in Germany and the UK. While the number and rate of unemployment increased remarkably in the UK

between 2008 and 2009, in Germany there was no general increase, just a slight one in West Germany – although not a single day went by without at least one newspaper predicting an early increase. So presumably, a general feeling of insecurity might have arisen, which could affect life and health satisfaction measures, as well. Indeed, there are several studies showing that job insecurity as caused by expected downsizing or fixed-term contracts have similar effects on life satisfaction or health like being made redundant (Burchell 1994, 1999, De Witte 1999, as well as Ferrie et al. 1995). Analyzing workers switching from unemployment back to work, Gash/Mertens/Romeu-Gordo (2007)<sup>3</sup> find that unemployed workers show positive health effects at job acquisition, and also that the positive effect is smaller for workers who obtain a fixed-term job. In our empirical study we will take this phenomenon into account by controlling for contract type and tenure. Moreover, potentially different results for the two countries under analysis may be caused by the strictness of employment protection. We test whether the shock caused different responses in the UK and Germany.

### **2.2.2 Unemployment Rates, Self-reported Satisfaction and Social Norms**

While much of the literature is on the direct effects of unemployment, there have also been studies analyzing indirect effects of the national or regional unemployment rate on well-being or life satisfaction<sup>4</sup> and health. Di Tella et al. (2001), Blanchflower (2007) and Wolfers (2003) - while also testing for the influence of other macroeconomic variables - have found negative effects of the national unemployment rate on well-being not only of those unemployed. The typical methodology used in these publications is to include the national unemployment rate in OLS regressions on Eurobarometer survey data, i.e. a cross country panel. Wolfers (2003) also proposes that business cycle volatility exerts an additional though moderate negative effect on self-reported well-being. Also Alesina et al. (2004) find negative effects for the United States, especially for those who are poor and those with a left wing political orientation. However, they do not find negative effects of the unemployment rate for a set of European countries. In Finland, even an increase in unemployment from 3 to 17 percent was not associated with a significant decrease in the mean level of subjective well-being (Böckermann and Ilmakunnas 2006). Lately, Becchetti et al. (2013) have also shown for Germany that increases in the unemployment rate do indeed increase the inequality in happiness, which can be interpreted as another aspect of how unemployment threatens social cohesion.

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<sup>3</sup> See also references to the medical literature therein.

<sup>4</sup> Early studies using the BHPS use the GHQ-12 measure rather than self-reported life satisfaction, the measure we use in this study.

Another strand of the literature has focused on regional rather than national unemployment rates. In correspondence with his results on the national unemployment rate, Wolfers (2003) finds in a ten year panel of BHPS data "that a rise in unemployment in a region lowers average feelings of usefulness, confidence and happiness, and raises depression and feelings of worthlessness in that region" (see p. 11). In a more recent study Oesch and Lipps (2011) report for Germany and Switzerland, that unemployment hurts alike in regions with high and low unemployment. Luechinger et al. (2010) on the contrary report for a cross section of countries (including German SOEP data), that unemployment has negative effects even on workers in employment, but more so for workers in the private than in the public sector.

However, a considerable number of studies come up with contradicting results. Clark and Oswald (1994) - using the BHPS, as well - show, that the difference in the GHQ-12 (a measure of psychological well-being) between the employed and unemployed were lower in regions with relatively high unemployment. Also Clark (2003) has studied the influence of regional unemployment on unemployed workers in the UK and found that the well-being (again as measured by GHQ-12) of the unemployed *rises* with regional unemployment. His findings suggest that a regional unemployment of more than 20 percent may compensate the personal affliction. However, though Clark (2003) finds a significant interaction term between regional and personal unemployment, the regional unemployment itself is not shown to have a general effect in micro regressions. Another study by Shields and Wheatley Price (2005) also identifies a link between unemployment in the area and the GHQ-12 of unemployed workers. Similar results have been found for Germany (Clark/Knabe/Rätzel 2009). In fact, German men report lower levels of life satisfaction on average if regional unemployment is high, but unemployed men are less affected.

Such effects may be the result of unemployed workers being less affected by their situation as it becomes more common. Gallie and Russel (1998) propose that if the chances of obtaining employment are very low, i.e. in situations of high and long-term unemployment, people may decide to "reject" the importance of paid employment in one's life. Higher regional unemployment facilitates social contacts within the unemployed peer group and does not violate social norms as in low unemployment areas. A social norm in general is a common belief of how people ought to behave. With respect to work Lindbeck et al. (1999, p.1) "assume that to live off one's own work is a social norm, and that the larger the population share adhering to this norm, the more intensely it is felt by the individual." Stutzer and Lalive (2001) find that if social norms to work are relatively high in a community, then the subjective well-being of unemployed people is relatively low. Social norms may even influence search efforts as high unemployment leads to unemployment being more

accepted (Kolm 2005).<sup>5</sup> Usually, the regional unemployment rate is used to control for social norms, but also the national unemployment rate has been proposed as an adequate measure, especially when several countries are compared (Stavrova et al. 2011). Stavrova et al.' study supports the social norm view by showing that unemployment hurts less in countries with a more tolerant attitude towards being out of work.

In sum, the previous literature has shown that national unemployment seems to decrease satisfaction, though some studies also report insignificant effects. Regional unemployment on the other hand has sometimes been shown to *increase* satisfaction. Overall, results are still relatively ambiguous, and further analyses of the links between life satisfaction or well-being and regional unemployment seem warranted.

### **2.2.3 Further Macro Indicators and Self-reported Satisfaction**

One of the most discussed issues in the economic literature on satisfaction is the question of how income and life satisfaction are related. Easterlin wrote his seminal article in 1974 and since then the question hasn't unequivocally been resolved. Clark et al. (2008a) provide a thorough overview of this issue and we will just briefly summarize some of the most important facts relevant for our analysis of business cycles. While in cross sections income and happiness tend to be positively correlated (e.g. Diener et al. 1993, Gerlach and Stephan 1996, Winkelmann and Winkelmann 1998, Frijters et al. 2004a and 2004b, Frey and Stutzer 2002; Deaton 2008), an increase in income over time does not always raise happiness (Easterlin 1974, 1995 and 2001, Blanchflower and Oswald 2004). Lately, the so-called Easterlin paradox has again been challenged. Stevenson and Wolfers (2008) argue that the availability of new data has made possible to identify the link between GDP growth and life satisfaction. They even go so far as to argue that the estimated income-happiness gradient is similar across countries, across people and over time even if GDP grows. Moreover, Sacks et al. (2010, 2013) suggest that subjective well-being grows alongside living standards, though they find the marginal impact of a unit of extra income diminishing and Powdthavee (2010) also finds larger income effects than previous studies using instrumental variables techniques. In a recent paper Easterlin (2013)

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<sup>5</sup> Also see the literature on social capital and life satisfaction, which shows a clear and positive link between these variables (see Becchetti et al. 2008 and 2009, Bartolini 2007 and 2008, Helliwell and Putnam 2004, Tkach and Lyubomirsky (2006), Winkelmann 2009 for Germany and Powdthavee 2008 for the UK). As life satisfaction increases with the level of social involvement, increasing regional unemployment may create possibilities for social interaction and thereby influence life satisfaction positively.

responded to these new findings, "restoring" the Easterlin paradox. So the discussion on the link between GDP growth and happiness will continue.

The most important studies looking at business cycles and well-being (or life satisfaction) use as macro indicators GDP growth and inflation rates alongside unemployment rate measures. DiTella et al. (2001, 2003) estimate cross country regressions and find positive effects for GDP (growth) and negative effects for unemployment and inflation. The influence is found to be relatively large: "It is not just that GDP drops and that some citizens lose their jobs. On top of those costs to society, we estimate that individuals would need 200 extra dollars of annual income to compensate for a typical U.S.-size recession" (DiTella et al. 2003, p. 823). Wolfers (2003) supports these findings and additionally argues that greater macroeconomic volatility undermines well-being. Alongside the positive effects of GDP growth, both studies find additional negative effects of the inflation rate. These findings are supported by Alesina et al. (2004) who did not find negative effects of unemployment on life satisfaction but attested inflation to have a significant negative effect on well-being. Summarizing, it has been shown that the negative effect of unemployment is typically stronger than the negative one of inflation, while the effect of GDP growth on life satisfaction and well-being is still to some extent disputed

#### **2.2.4 Assessing the Influence of the Economic Crisis**

To our knowledge only Bell and Blanchflower (2010), Blanchflower and Oswald (2011) and Deaton 2012 have so far considered the question of satisfaction or happiness in the financial crisis.<sup>6</sup> Deaton (2012) analyses life satisfaction in daily data collected by the Gallup Organization in the United States and shows that that between fall 2008 and 2009 Americans experienced significant declines in life satisfaction. Looking at the implications of the increase in UK unemployment since the beginning of the crisis, Bell and Blanchflower (2010) report (amongst other indicators) that levels of well-being and life satisfaction are particularly low for the unemployed, who are also more likely to feel depressed. We look at these processes in some more detail, trying to understand whether severe business cycle shocks have effects not only on the unemployed but also on employed workers and the inactive population. We specifically test, whether life and job satisfaction changed during the crisis. Additionally, we also look at health satisfaction, as job and health satisfaction have been found to be strongly correlated in other studies, especially in occupational medicine (see Fisher and Sousa-Poza 2009 and Faragher et al. 2005 for a meta study of medical studies). If effects on job satisfaction are detected, it will be interesting to see whether this correlation also persists in an economic crisis.

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<sup>6</sup> Shapiro (2010) analyses financial well-being and consumption of older Americans.

Moreover, we are interested in better understanding the role of levels of unemployment since in 2009, Germany and the UK had about the same level of unemployment (roughly 7 percent) but from then on, Germany experienced falling and the UK increasing unemployment rates.

In order to answer our main research question, whether the crisis has caused a deterioration of life, job and health satisfaction, we will now investigate the following main hypotheses based on the evidence from the literature cited above:

- (i) The severe shock caused by the crisis has had negative effects on life satisfaction of the working and non-working population.
- (ii) National unemployment rates and GDP growth influence life satisfaction of those in employment because cyclical downturns (upturns) increase (decrease) the general perception of job insecurity. This effect is stronger in countries with lower employment protection like the UK in comparison to countries with high unemployment protection like Germany.
- (iii) Social norm effects are driving the influence of the regional unemployment rates.

As life, job and health satisfaction are linked closely, we expect job and health satisfaction of the working and non-working population to be affected by the crisis through the same channels as life satisfaction.

### **3. Data and Empirical Setting**

#### **3.1 Life and Health Satisfaction in the BHPS and the SOEP**

The SOEP is a representative annual survey of German households and their members aged 17 and above. It started in 1984 with about 12,300 West German individuals (of which 6,200 were left in 2006) and was enriched in 1990 with 4,500 East Germans (2006: 3,500 left). A couple of other enlargements followed (1994's sample D, 1998's to 2002's sample G). The SOEP collects information on current living conditions in Germany and their development over time (for details see Wagner et al. 2007). The BHPS has a similar structure and logic like the SOEP. It started in 1991 and is an annual survey consisting of a nationally representative sample of originally 5,500 households and a total of approximately 10,000 interviewed individuals. Over the years there have been extensions of the original data set which now covers about 10,00 households. The last wave of the BHPS proper was collected in 2008/09 and as of 2010 it has been part of the much larger longitudinal study "Understanding Society" that follows 40,000 households (see Taylor et al. 2010).

For our analysis we select the data that covers the years 1997 to 2010 in both surveys and include all individuals that are between 20 and 80 years old. Due to the re-organization of the UK data there is an unusually long gap of 1.5 years between the last BHPS wave (2008/09) and the first time that the

BHPS sample was interviewed in the Understanding Society study (2010). As a consequence we hardly have any UK observations for the year 2009. The few observations are pooled with the 2010 observations. We only drop those individuals with missing values on important covariates like for example income, labour force status or life and health satisfaction. In both surveys, information on the health status is collected via direct questions for example on invalidity and disability. Information on health provision is collected via questions on the type of health insurance and hospital stays. In the SOEP questionnaire, satisfaction with life is measured as the response to the final question "In conclusion, we would like to ask you about your satisfaction with your life in general. How satisfied are you with your life, all things considered?" The response scale varies from 0 (completely dissatisfied) to 10 (completely satisfied). Health satisfaction is inquired at the beginning of the interview by asking "How satisfied are you today with the following areas of your life?" And among those: "How satisfied are you with your health?" The scale also ranges from 0 (totally unhappy) to 10 (totally happy). In the BHPS, satisfaction with life and health is measured as the response to the question 'How satisfied are you with your health?' and likewise 'How satisfied are you with your life overall?'. Answers range on a scale from 1 (not satisfied at all) over 4 (not satisfied/dissatisfied) to 7 (completely satisfied'). For this reason we estimate countries separately and will only compare patterns between countries. Absolute outcomes cannot be compared.

### **3.2. Methodology**

To answer our research question whether the crisis has caused a deterioration of life, job, and health satisfaction for those in unemployment as well as those in employment or out of the labour force, we run two regression models: first *Ordered Logit regressions with Fixed Effects (FE)*, separately for Germany (East and West) and the UK using the BUC (Blow Up and Cluster) estimator proposed by Baetschmann et al. (2011) and discussed by Dickerson et al. (2011). Secondly we estimate *Ordinary Least Squares with FE*. Our results confirm the findings of Ferrer-i-Carbonell/Frijters (2004, p.642) that: "... assuming cardinality or interpersonal ordinality of the satisfaction answers makes little difference to the results...". For this reason and to ease interpretation we decided to display the OLS FE coefficient estimates in the text while mirroring all tables with the respective Ordered Logit regression results in the Appendix. Furthermore, to investigate whether temporarily employed have been affected differently in the crisis years, we also check a simple Ordered Logit regression with clusters while controlling for interactions of temporary contracts in the recession years. To capture the current state of the labour market and the economy as a whole in both countries and in view of the empirical relationship between macro indicators and life satisfaction cited above, we use the respective national and regional unemployment rates, the growth rates of gross domestic product and inflation rates as explanatory variables.

We need to make clear, that the methodologies typically used in life satisfaction studies identify correlations rather than causal links. With regard to our variables capturing the (macro-)economic environment, however, many have interpreted the link to be running causally from macro variables to satisfaction, although certainly both are determined together (see e.g. Hamermesh 2001). With respect to the shock of the great depression, we assume that causality is running from macro variables to satisfaction as for example in Di Tella et al. (2001), Blanchflower (2007) and Wolfers (2003).

We therefore choose the following model specifications:

- 1) To test whether the crisis has had a negative effect on life satisfaction in general, we set off with testing the significance of the crisis year dummies 2007-2010 in regressions that include all labour force status groups in the UK and Germany, thereby distinguishing between the two former parts of Germany. For 2007 we expect potential effects for the UK only, as the bulk of interviews coincided with the Northern Rock crisis in September and October. In Germany the majority of interviews are usually run in spring, thus prior to the crisis.
- 2) To test whether the accompanying economic circumstances of the crisis have had negative effects on life satisfaction, we test the significance of the macroeconomic indicator variables GDP growth rate, inflation rate, overall unemployment and regional unemployment.<sup>7</sup>
- 3) To test whether the effects are the same for those (still) in employment, particularly those in precarious employment, we apply the same regression analyses as in 1) and 2) to the subgroup of employees holding constant job characteristics.
- 4) To test whether job satisfaction has been similarly affected by the crisis as life satisfaction, we apply the same analyses as in 3) to job satisfaction.
- 5) To test whether health satisfaction has been similarly affected by the crisis as life satisfaction, we apply the same analyses as in 3) to health satisfaction of those in employment, considering changes in health status and health provision.

#### **4. Results**

Figure 2 illustrates general life satisfaction as well as job and health satisfaction in the UK and in East and West Germany over time considering all residents of age 20 to 80 years. Apart from the country differences in levels, that cannot be compared because of a different scale, all time series show some variation over the years, with a spread of roughly 0.2 units in the UK and up to 0.3 or 0.5 in West and

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<sup>7</sup> We control for regional dummies because of potentially biased standard errors (Moulton 1990).



East Germany respectively. Interestingly, this is also true for satisfaction with health that tends to fluctuate alongside life and job satisfaction. Moreover, there are remarkable differences in levels for East and West Germany. Even 20 years after reunification West Germans still report a much higher level of all three satisfaction measures, although the East German numbers are on the rise – particularly for life satisfaction in most recent years.<sup>8</sup> Another difference regards the relation between life, job and health satisfaction. In the West, respondents seem to be more satisfied with their lives in general than with their jobs or health, though the job and health satisfaction curves follow very similar patterns. In the East, the picture is not as clear cut. Job satisfaction is highest until 2005 and satisfaction with health ranges somewhere between the other two curves. Overall, satisfaction seems rather unrelated to GDP growth and shows an even more remarkable drop in the year 2004 than in West Germany. An effect of the crisis on life satisfaction can only be interpreted in a short dip of both regions' curves in 2009, while satisfaction with health shows a greater reaction. In both parts of the country this measure has been falling since 2006, particularly for those in employment. The picture observed in the UK is similar: overall life satisfaction is higher on average in the population but also for those who are in employment for most observation periods. Like in East Germany job satisfaction is higher than life and health satisfaction. With respect to the crisis years, both job and health satisfaction drop, though in 2010 only.

Figure 2 about here

In order to see, whether the descriptive patterns persist in a conditional setting we now turn to our multivariate estimations. Table 1 shows the coefficient estimates of the crisis year dummies 2007, 2008, 2009 and the post-crisis year 2010 in the first specification (left-hand columns) on our full sample of the active and inactive population in East and West Germany and the UK. As explained in section 3.2., we present OLS regressions with Fixed Effects.<sup>9,10</sup> If any, a negative effect of the

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<sup>8</sup> Compare Frijters et al. 2004a and 2004b for a detailed analysis of the East/West difference in the first decade after reunification and Vatter (2012) for a more recent study.

<sup>9</sup> Appendix Table A1 shows the full results for this estimation. Personal characteristics influence life satisfaction as reported in the literature: the largest effects can be found for life events and personal unemployment as well as low individual health. The latter have a large negative impact on life satisfaction. Cohabiting and positive life events like having a baby and getting married influence life satisfaction positively (though the number of children has a negative influence), while negative events like breaking up a relationship or death of the partner show strong negative effects. Dummies for age categories indicate that rising age tends to have positive rather than negative effects in the UK. As we estimate FE regressions, we cannot control for sex, nationality and education as there are hardly any changes in those variables.

<sup>10</sup> We checked our results for robustness and found the Ordered Logit FE results to match exactly the results from OLS FE regressions, see tables in Appendix B. We also estimated Ordered Logits without fixed effects clustering standard errors for years or individuals. While the results on the macro variables were pretty similar, the year variables produced different results. In Table 3b below we will report some results from these models.

recession on overall life satisfaction can be observed for West Germany only, where we find significantly lower life satisfaction in 2009 than in the reference year 2006. In the other crisis years, we find no effect at all in West Germany, controlling for our set of covariates and individual FE. In East Germany, on the other hand, life satisfaction has increased between 2006 and 2010, while there was no significant effect in the UK. We were somewhat taken by surprise by this finding, as the crisis was (and still is) a severe issue influencing the lives, jobs and savings of many, especially in the UK. However, looking at the complete set of time dummies (see Appendix Table A1) we find that the pre-crisis years 2005 and 2006 have been especially bad years with respect to life satisfaction. In all the previous years, higher levels were reported.

**Table 1: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – OLS Fixed Effects: Year effects**

	Germany		UK
	West	East	
<b>Year 2007</b>	0.028* (0.015)	0.035 (0.026)	0.012 (0.015)
<b>Year 2008</b>	0.020 (0.016)	0.018*** (0.027)	0.002 (0.015)
<b>Year 2009</b>	-0.089*** (0.016)	0.062** (0.028)	
<b>Year 2010</b>	0.062*** (0.017)	0.262*** (0.030)	0.014 (0.021)
<b># obs</b>	164,369	56,462	132,015

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%, \*\*\* < 1%. Standard errors are in parenthesis.

The results of testing the impact of the accompanying economic circumstances of the crisis on life satisfaction are displayed in Table 2. From the macroeconomic indicator variables used, the unemployment rate is significantly related to life satisfaction in both German subsamples – though with differing signs. While an increase in the overall unemployment rate will make it more likely to report a higher satisfaction level in West Germany, it is related to a lower probability to report higher life satisfaction in East Germany. Higher regional unemployment on the other hand significantly decreases satisfaction in West Germany and leads to an increase in East Germany. In the UK, notwithstanding lower employment protection, national unemployment is observed to have a positive effect like in West Germany. The level of regional unemployment does not exert a

statistically significant effect. In West Germany, the drop in satisfaction more than outweighs the rise due to national unemployment, as the coefficient on the regional unemployment rate is somewhat larger than that one on national unemployment in absolute terms. How can this finding be explained? It seems that as overall unemployment rises people tend to become more satisfied with their own situation in comparison to others, respectively less annoyed with their situation as others are "worse off". Remember that personal unemployment has a strong negative effect, so this effect is by no means outweighed by the macro variables. In the literature this psychological effect was rather attributed to the regional than the national unemployment, as it is "closer" to the individuals. Quite a few authors have found positive effects for regional unemployment but others have also found negative effects, so our results concerning the regional unemployment are rather in line with Wolfers (2003) who reported negative effects, as well. On the other hand we also find evidence of the contradicting effect on the national unemployment. Surprisingly, for East Germans it is exactly the other way round, national unemployment makes them less satisfied – most probably caused by a general feeling of insecurity – while the smaller coefficient estimate on the regional unemployment rate supports the social norm hypothesis. Again, as with the general level of life satisfaction, East and West Germans still differ twenty years after re-unification.

Finally, a positive correlation with GDP growth is observed for Germany and inflation is negatively linked to life satisfaction of in all our sub-samples.

**Table 2: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – OLS Fixed Effects: Macroeconomic effects**

	Germany		UK
	West	East	
<b>GDP growth rate</b>	0.023*** (0.002)	0.027*** (0.003)	-0.003 (0.004)
<b>Inflation rate</b>	-0.050*** (0.006)	-0.089*** (0.010)	-0.030*** (0.008)
<b>National unemployment rate</b>	0.075*** (0.008)	-0.087*** (0.010)	0.028*** (0.010)
<b>Regional unemployment rate</b>	-0.105*** (0.008)	0.017*** (0.005)	0.003 (0.007)
<b># obs</b>	164,211	56,462	131,783

Note: SOEP and BHPS waves 1996 to 2010. Control variables include standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status (see full list of results in Appendix Table 1) and regional dummies. \* = indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

Summarizing the results for our full sample of the active and inactive population, we find hardly any influence of the crisis years per se but significant effects of macro variables, especially regional and national unemployment as well as inflation rates and GDP growth.

In the following we focus on three central questions (see above), that is, (i) whether we find similar results for the subsample of employed workers, (ii) whether the reactions for employed workers are different in our two countries that have considerably different employment protection legislation, and (iii) whether other self-reported satisfaction measures (w.r.t. job and health) show the same pattern for the employed. First, we restrict our analysis to those in employment and ask whether job insecurity generated by the crisis led to a decrease in life satisfaction for those in precarious employment as they might fear losing their jobs in the near future. In Table 3a, we test the potential impact of the recession while controlling for job characteristics such as the type of contract (temporary vs. permanent), number of work hours, firm size and occupations, which are all known to influence the risk of losing one's job. In order to analyze closer the effect of the crisis years on the feeling of (in-)security we also present interactions of the crisis year dummies with temporary employment. Due to a lack of variation of the interesting explanatory variables over time we report results for pooled Ordered Logit models in Table 3b. In both tables the first specification (see left-hand columns) controls for years and the second specification (see right-hand columns), includes the macroeconomic indicators as above.

Lower reported life satisfaction in the recession year 2009 is confirmed for the subsample of employees in West Germany. Also the other results carry over to the employment sample. In East Germany respondents are again more satisfied over the crisis-years period compared to 2006 (except for a non-significant estimate for 2009) while there is no difference in the UK. As regards the impact of the macro variables on the employed, effects are identical to the ones observed for the complete sample. The social norm effect seems to apply to the East German sample only. Still, employees obviously feel better about their situation when unemployment rises around them. This does not seem to be directly linked to different employment protection legislations though, as the UK and West German results are very close regarding direction, statistical significance and even size of the national unemployment rate coefficient estimate<sup>11</sup>.

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<sup>11</sup> When we include regional unemployment only, the effect is also positive.

In order to better understand the linkages between life satisfaction and the crisis, we investigate the issue of economic and job security by adding interaction terms of the crisis year dummies with the status of being in temporary fixed-term employment. In the simple Ordered Logit we uncover a surprisingly positive relationship of being in temporary employment within this period and reported life satisfaction. While the average effect of being temporarily employed is significantly negative, holding this type of work contract in the time period of 2007 to 2010 implies even more satisfaction according to this estimate. In the UK, the net effect is indeed strongly positive, as the interaction terms considerably outweigh the negative effect of temporary employment. In Germany, we observe a positive net effect for the whole period in East Germany and from 2009 in West Germany. We may conclude that, as the economy struggles, people are happy to be in employment at all, even if it is only temporary. Yet, the interactions turn insignificant in sensitivity checks with OLS FE models, so much of the effect is most likely to be part of the individual fixed effect.

**Table 3a: Life satisfaction in Germany and the UK, employees age 20 to 65 (with job controls) – OLS Fixed Effects : Year and macroeconomic effects**

	Germany				UK	
	West		East			
<b>Year 2007</b>	0.075*** (0.022)		0.021 (0.039)		-0.002 (0.020)	
<b>Year 2008</b>	0.050** (0.023)		0.223*** (0.040)		-0.013 (0.020)	
<b>Year 2009</b>	-0.053** (0.023)		0.023 (0.041)			
<b>Year 2010</b>	0.108*** (0.025)		0.201*** (0.044)		0.018 (0.025)	
<b>GDP growth rate</b>		0.021*** (0.003)		0.026*** (0.004)		0.001 (0.006)
<b>Inflation rate</b>		-0.045*** (0.009)		-0.068*** (0.015)		-0.026** (0.011)
<b>National unemployment rate</b>		0.051*** (0.012)		-0.088*** (0.014)		0.046*** (0.013)
<b>Regional unemployment rate</b>		-0.086*** (0.012)		0.020** (0.008)		-0.013 (0.009)
<b># obs</b>	73,961	73,888	24,498	24,498	63,066	62,904

Note:: SOEP and BHPS waves 1996 to 2010 . Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status and job characteristics (see full list of results in the appendix). \* = indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

**Table 3b: Life satisfaction in Germany and the UK, employees age 20 to 65 (with job controls) – Ordered Logit (without Fixed Effects): Interactions**

	Germany		UK
	West	East	
<b>Year 2007</b>	1.122*** (0.004)	1.096*** (0.009)	0.052*** (0.002)
<b>Year 2008</b>	1.093*** (0.004)	1.405*** (0.013)	0.047*** (0.002)
<b>Year 2009</b>	0.964*** (0.003)	1.175*** (0.011)	0.377*** (0.014)
<b>Year 2010</b>	1.206*** (0.023)	1.515*** (0.043)	0.377*** (0.014)
<b>Temporary job</b>	0.801*** (0.027)	0.773*** (0.031)	-0.170*** (0.034)
<b>Year 2007 * temporary</b>	1.161*** (0.039)	1.320*** (0.046)	0.242*** (0.034)
<b>Year 2008 * temporary</b>	1.160*** (0.038)	1.298*** (0.048)	0.396*** (0.034)
<b>Year 2009 * temporary</b>	1.265*** (0.046)	1.265*** (0.044)	-
<b>Year 2010 * temporary</b>	1.345*** (0.046)	1.248*** (0.043)	0.345*** (0.035)
<b># obs</b>	73,961	24,498	63,066

Note: : SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status and job characteristics (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

So far we have only looked at overall life satisfaction. In the following we ask whether the crisis years had a stronger impact on job satisfaction. Potentially, the fear of job loss matters more for job satisfaction than life satisfaction, if it affects the working climate in firms negatively. In Table 4 we therefore estimate the same specifications controlling for socio-demographic and job characteristics, now with job satisfaction as the dependent variable. As in Table 3a, the estimation results presented in the left-hand columns include the crisis year dummies and those in the right-hand columns include the macroeconomic indicators. Similar to life satisfaction, the German respondents – both East and West – perceived their jobs less satisfying in 2009 but also in 2010. Satisfaction is particularly low in 2010. Also in the UK, respondents are found to be significantly less satisfied with their jobs in 2010 than in 2006. The prolonged crisis seems after all to have had an effect in the UK. The

macroeconomic effects resemble those of the life satisfaction model, though significances are less pronounced and, hence, results turn out to be less robust. In West and East Germany, the differing effects of regional and overall unemployment are strongly confirmed, whereas in the UK, there is surprisingly no effect of unemployment detected on job satisfaction.

Summarizing, our results so far show that though workers' satisfaction depends primarily on the personal situation the relative position in the labour market matters especially for life satisfaction but also for job satisfaction. The two satisfaction measures move closely in line and can be explained by very much the same covariates. Individual fixed effects seem to play a large role, as results change considerably once fixed effects are introduced. Irrespective of the method applied, unemployment influences satisfaction, although the pattern differs between East and West Germany. To our great surprise, different employment protection legislations do not seem to matter as suggested by the similar results in West Germany and the UK.

**Table 4: Job satisfaction in Germany and the UK, employees age 20 to 65 (with job controls)  
OLS Fixed Effects : Year and macroeconomic effects**

	Germany				UK	
	West		East			
<b>Year 2007</b>	-0.004 (0.029)		-0.068 (0.052)		0.028 (0.025)	
<b>Year 2008</b>	-0.033 (0.030)		-0.094* (0.054)		-0.001 (0.026)	
<b>Year 2009</b>	-0.119*** (0.031)		-0.014** (0.055)			
<b>Year 2010</b>	-0.128*** (0.034)		-0.293*** (0.059)		-0.086*** (0.032)	
<b>GDP growth rate</b>		0.003 (0.003)		-0.002 (0.006)		0.004 (0.007)
<b>Inflation rate</b>		-0.0001 (0.012)		-0.010 (0.020)		0.016 (0.013)
<b>National unemployment rate</b>		0.119*** (0.016)		-0.024 (0.019)		-0.004 (0.016)
<b>Regional unemployment rate</b>		-0.118*** (0.016)		0.047*** (0.011)		0.009 (0.011)
<b># obs</b>	73,124	73,052	24,186	24,186	71,382	71,201

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status and job characteristics (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

Our final analysis is dedicated to health satisfaction. As discussed in Section 2, personal unemployment and increasing job insecurity have been shown to affect individual health and job satisfaction negatively. As just presented, the employed tend to be happier in their temporary jobs during the years 2008-2010 (at least if not controlling for fixed effects), even though unemployment rises. However increasing insecurity and potentially related stress symptoms may still be accompanied by decreasing health satisfaction. Table 5 shows the respective estimation results. The specification is slightly different from the previous one, as we add controls for health status and health provision, such as accidents in the preceding year, care responsibilities, days spent in hospital and private health insurance.

**Table 5: Health satisfaction in Germany and the UK, employees age 20 to 65 (with job and health controls) – OLS Fixed Effects: Year and macroeconomic effects**

	Germany				UK	
	West		East			
<b>Year 2007</b>	-0.089*** (0.027)		-0.054 (0.046)		0.058** (0.024)	
<b>Year 2008</b>	-0.168*** (0.028)		-0.071 (0.048)		0.069*** (0.025)	
<b>Year 2009</b>	-0.263*** (0.029)		-0.187*** (0.049)			
<b>Year 2010</b>	-0.320*** (0.031)		-0.295*** (0.052)		0.242* (0.126)	
<b>GDP growth rate</b>		0.003 (0.003)		0.002 (0.005)		-0.001 (0.008)
<b>Inflation rate</b>		0.014 (0.011)		0.0002 (0.018)		-0.056*** (0.014)
<b>National unemployment rate</b>		0.186*** (0.014)		-0.023 (0.017)		0.131*** (0.021)
<b>Regional unemployment rate</b>		-0.153*** (0.015)		0.045*** (0.010)		-0.027** (0.013)
<b># obs</b>	73,941	73,869	24,480	24,480	60,860	60,860

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in health satisfaction analyses such as socio-demographic characteristics as well as changes in family life, employment status, health status and health provision (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%.



Results on the year dummies (left hand columns) qualitatively resemble those presented in Table 4 for Germany. In Eastern and Western Germany, health satisfaction was significantly lower (in statistical and economic terms) during most crisis years with increasingly larger coefficients. In the UK, the effect is turned on its head: employees report rising satisfaction levels, despite increasing unemployment and a higher risk of job loss as in Germany. Yet, the macroeconomic effects of health satisfaction are similar to the previous estimation results, as well. So all three different satisfaction measures are highly correlated, with the correlation being stronger between life and health satisfaction as can be seen from the nearly identical results presented in Tables 4 and 5 and the summarizing Table 6.

**Table 6: Summary results of life, job and health satisfaction determinants for employees in Germany and the UK – OLS Fixed Effects**

	Life satisfaction			Job satisfaction			Health satisfaction			
	Germany		UK	Germany		UK	Germany		UK	
	West	East		West	East		West	East		
<b>Crisis year(s)</b>	- (09)	+		- (09,10)	- (08,09, 10)	- (10)	- (07,08, 09,10)	- (09,10)	+	(07,08, 10)
<b>GDP growth rate</b>	+	+								
<b>Inflation rate</b>	-	-	-							-
<b>National unemployment rate</b>	+	-	+	+			+			+
<b>Regional unemployment rate</b>	-	+		-	+		-	+		-

Note: Summary of qualitative results of Tables 3 to 5. + indicates statistically significant positive relationship, - indicates statistically significant negative relationship.

**5. Conclusions**

Despite generally higher employment protection in Germany than in the UK and despite Germany’s subsidized short-hour work program to keep people in employment, it was Germans – and here especially West Germans – who showed relatively strong and negative emotional reactions during the crisis years . While life satisfaction was only weakly affected, job and health satisfaction reacted more strongly – though the absolute sizes of the coefficients are considerably smaller than the

coefficients on important life events, so after all individual circumstances and events matter more than macroeconomic events. In the UK, dependent employees report even higher levels of health satisfaction during the crisis years, which comes as a real surprise. Increases in unemployment do not directly translate into changing health satisfaction here. There is also some indication that instead, particularly those with a temporary job contract are more satisfied during the crisis years, even considering the negative impact of a temporary employment in general in other years.

With respect to the macroeconomic variables, there is a strong impact of the regional and national unemployment rate but also inflation and GDP growth matter. Positive reactions to an increase in GDP are observed for life satisfaction in Germany only, corresponding to the much quoted Easterlin paradox. Unemployment is much stronger influence on satisfaction than GDP growth. However, household income does have a positive influence on life satisfaction. As illustrated in the summary Table 6, the most interesting result across all the subsamples is detected for the relationship between self-reported satisfaction (regarding all aspects, life, job and health) and the national and regional unemployment rates: For East Germany we find support for the social norms hypothesis, that the higher regional unemployment the more satisfied people are irrespective of their current labour market status. Not only unemployed workers feel better when unemployment rises – a potential result of changing social norms in times of rising unemployment – but also employed workers who seem to be more satisfied with their lives and jobs when unemployment is rising around them. At the same time, the overall level of unemployment has a significantly negative effect. For West Germany we find exactly the opposite. People are less satisfied, if unemployment increases around them while overall unemployment is positively related to well-being. The latter is true also for the UK. Interestingly, we get similar results when looking at job and health satisfaction. We conclude that although it appears that the psychological costs in terms of lower satisfaction with life have been rather low in Germany and the UK, the total costs of the financial and economic crisis have not been limited to the well-documented fall in the domestic products. At least in Germany, a considerably lower average satisfaction with job and health since 2007 reflects a rather negative perception of the crisis years of those in employment.

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## Appendix A – Full table

**Table A1: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80**  
 – Macroeconomic effects (Odds Ratios) / corresponds to Tables 1 and 2 in the text

	Germany				UK	
	West		East			
Age 20-29	-0.012	0.884***	-0.116	0.904***	-0.186***	-0.041
Age 30-39	-0.010	0.693***	-0.101	0.695***	-0.192***	-0.075**
Age 40-49	-0.035	0.482***	-0.130**	0.463***	-0.217***	-0.136***
Age 50-59	-0.052	0.289***	-0.040***	0.352***	-0.138***	-0.088***
Age 60-69	0.089***	0.265***	0.160***	0.365***	0.010	0.035*
Cohabit	0.065***	0.072***	-0.007	0.006	0.178***	0.178***
# of kids < 5 years	-0.019	0.004	-0.018	0.008	-0.029***	-0.028***
# of kids 5-11 years	-0.008	0.007	-0.010	0.036*	0.008	0.008
# of kids 12-15 years	-0.001	0.006	-0.016	0.024	-0.010	-0.010
Recently married	0.299***	0.309***	0.190***	0.210***	0.161***	0.167***
Baby born	0.222***	0.246***	0.329***	0.337***	0.070***	0.074***
Partner died	-0.823***	-0.832***	-0.994***	-1.008***	-0.231***	-0.226***
Relationship ended	-0.303***	-0.304***	-0.191***	-0.177***	-0.228***	-0.225***
Self-employed	0.028	0.015	0.039	0.015	0.008	0.005
Unemployed	-0.567***	-0.582***	-0.534***	-0.550***	-0.311***	-0.317***
Retired	-0.016	-0.105***	0.065*	-0.037	-0.021	-0.032*
At home / caring	-0.134***	-0.129***	-0.297***	-0.296***	-0.070***	-0.072***
Full-time education	0.011	0.045*	-0.101**	-0.067	0.085***	0.089***
Sick	-	-	-	-	-0.479***	-0.484***
Disabled	-0.304***	-0.339***	-0.285***	-0.318***	-0.202***	-0.206***
Log (household income)	0.293***	0.263***	0.370***	0.337***	0.026***	0.022***
House owner	0.029*	-0.001	-0.062**	-0.094***	0.026*	0.017
Debt	-0.073***	-0.068***	-0.033**	-0.023	-0.034***	-0.031***
Year 1996	omitted		omitted		0.116***	
Year 1997	0.325***		0.409***		0.119***	
Year 1998	0.388***		0.454***		0.198***	
Year 1999	0.428***		0.512***		0.071***	
Year 2000	0.343***		0.441***		0.010	
Year 2001	0.428***		0.438***		0.056***	
Year 2002	0.215***		0.246***		0.070***	
Year 2003	0.149***		0.158***		0.097***	
Year 2004	-0.025*		-0.035		0.041***	

<b>Year 2005</b>	0.094***		0.099***		-0.038***	
<b>Year 2007</b>	0.028*		0.035		0.012	
<b>Year 2008</b>	0.020		0.179***		0.002	
<b>Year 2009</b>	-0.089***		0.062**			
<b>Year 2010</b>	0.062***		0.262***		0.014	
<b>GDP growth rate</b>		0.023***		0.027***		-0.003
<b>Inflation rate</b>		-0.050***		-0.089***		-0.030***
<b>National unemployment rate</b>		0.075***		-0.087***		0.028***
<b>Regional unemployment rate</b>		-0.105***		0.017***		0.003
<b>reg1</b>		omitted (B)		omitted (B)		-0.111 (North East)
<b>reg2</b>		-0.337** (SH)		-		0.047 (North West)
<b>reg3</b>		-0.204 (HH)		-		0.117* (Yorkshire & Humber)
<b>reg4</b>		-0.254* (NS)		-		0.170*** (East Midlands)
<b>reg5</b>		-0.061 (HB)		-		-0.024 (West Midlands)
<b>reg6</b>		-0.514*** (NRW)		-		0.074 (East of England)
<b>reg8</b>		-0.395*** (H)		-		0.054 (South East)
<b>reg9</b>		-0.628*** (RP_SL)		-		0.054 (South West)
<b>reg10</b>		-0.885*** (BW)		-		0.152** (Wales)
<b>reg11</b>		-		0.118 (MV)		0.031 (Scotland)
<b>reg12</b>		-		0.109 (BR)		0.375 (Northern Ireland)
<b>reg13</b>		-		0.052 (SA)		-
<b>reg14</b>		-		0.145 (T)		-

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006, reference regions are Bavaria in West Germany, Saxony in East Germany and London in the UK, reference age category 70-80, reference labour force status is employment. \*= indicates significance level < 10%, \*\* < 5%, \*\*\* < 1%.

## Appendix B – Robustness analysis

**Table B1: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – Ordered Logit Fixed Effects: Year effects (corresponds to Table 1 in the text)**

	Germany		UK
	West	East	
<b>Year 2007</b>	0.048** (0.024)	0.053 (0.042)	0.035 (0.032)
<b>Year 2008</b>	0.033 (0.026)	0.299*** (0.044)	0.008 (0.34)
<b>Year 2009</b>	-0.157*** (0.028)	0.097** (0.047)	-
<b>Year 2010</b>	0.099*** (0.031)	0.438*** (0.052)	0.22 (0.060)
<b># obs</b>	502,693	180,526	132,015

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%, \*\*\* < 1%. Standard errors are in parenthesis.

**Table B2: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – Ordered Logit Fixed Effects: Macroeconomic effects (corresponds to Table 2 in the text)**

	Germany		UK
	West	East	
<b>GDP growth rate</b>	0.038*** (0.003)	0.449*** (0.005)	-0.009 (0.010)
<b>Inflation rate</b>	-0.083*** (0.011)	-0.148*** (0.018)	-0.072*** (0.021)
<b>National unemployment rate</b>	0.134*** (0.017)	-0.144*** (0.018)	0.067** (0.029)
<b>Regional unemployment rate</b>	-0.183*** (0.017)	0.028*** (0.018)	0.005 (0.019)
<b># obs</b>	502,107	180,526	131,783

Note: SOEP and BHPS waves 1996 to 2010. Control variables include standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status (see full list of results in Appendix Table 1) and regional dummies. \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

**Table B3a: Life satisfaction in Germany and the UK, employees age 20 to 65 (with job controls) – Ordered Logit Fixed Effects : Year and macroeconomic effects (corresponds to Table 3a in the text)**

	Germany				UK	
	West		East			
<b>Year 2007</b>	0.142*** (0.038)		0.033 (0.069)		-0.003 (0.046)	
<b>Year 2008</b>	0.102** (0.041)		0.410*** (0.074)		-0.028 (0.049)	
<b>Year 2009</b>	-0.088** (0.044)		0.037 (0.077)		-	
<b>Year 2010</b>	0.199*** (0.049)		0.358*** (0.088)		0.051 (0.078)	
<b>GDP growth rate</b>		0.038*** (0.005)		0.048*** (0.008)		0.003 (0.015)
<b>Inflation rate</b>		-0.081*** (0.017)		-0.125*** (0.029)		-0.066** (0.029)
<b>National unemployment rate</b>		0.097*** (0.026)		-0.161*** (0.029)		0.121*** (0.042)
<b>Regional unemployment rate</b>		-0.162*** (0.027)		0.037** (0.017)		-0.036 (0.029)
<b># obs</b>	74,188	74,115	24,538	24,538	63,066	62,904

Note:: SOEP and BHPS waves 1996 to 2010 . Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status and job characteristics (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

**Table B4: Job satisfaction in Germany and the UK, employees age 20 to 65 (with job controls) – Ordered Logit Fixed Effects : Year and macroeconomic effects (corresponds to Table 4 in the text)**

	Germany				UK	
	West		East			
<b>Year 2007</b>	-0.005 (0.037)		-0.085 (0.065)		0.063 (0.050)	
<b>Year 2008</b>	-0.042 (0.041)		-0.128* (0.070)		0.002 (0.052)	
<b>Year 2009</b>	-0.156*** (0.044)		-0.185** (0.074)		-	
<b>Year 2010</b>	-0.171*** (0.047)		-0.384*** (0.082)		-0.173*** (0.067)	
<b>GDP growth rate</b>		0.004 (0.005)		-0.002 (0.008)		0.009 (0.014)
<b>Inflation rate</b>		0.001 (0.016)		-0.011 (0.027)		0.037 (0.030)
<b>National unemployment rate</b>		0.164*** (0.025)		-0.033 (0.029)		-0.010 (0.038)
<b>Regional unemployment rate</b>		-0.162*** (0.026)		0.064*** (0.018)		0.019 (0.027)
<b># obs</b>	74,188	74,115	24,538	24,538	71,382	71,201

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in life satisfaction analyses such as socio-demographic characteristics as well as changes in family life and employment status and job characteristics (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

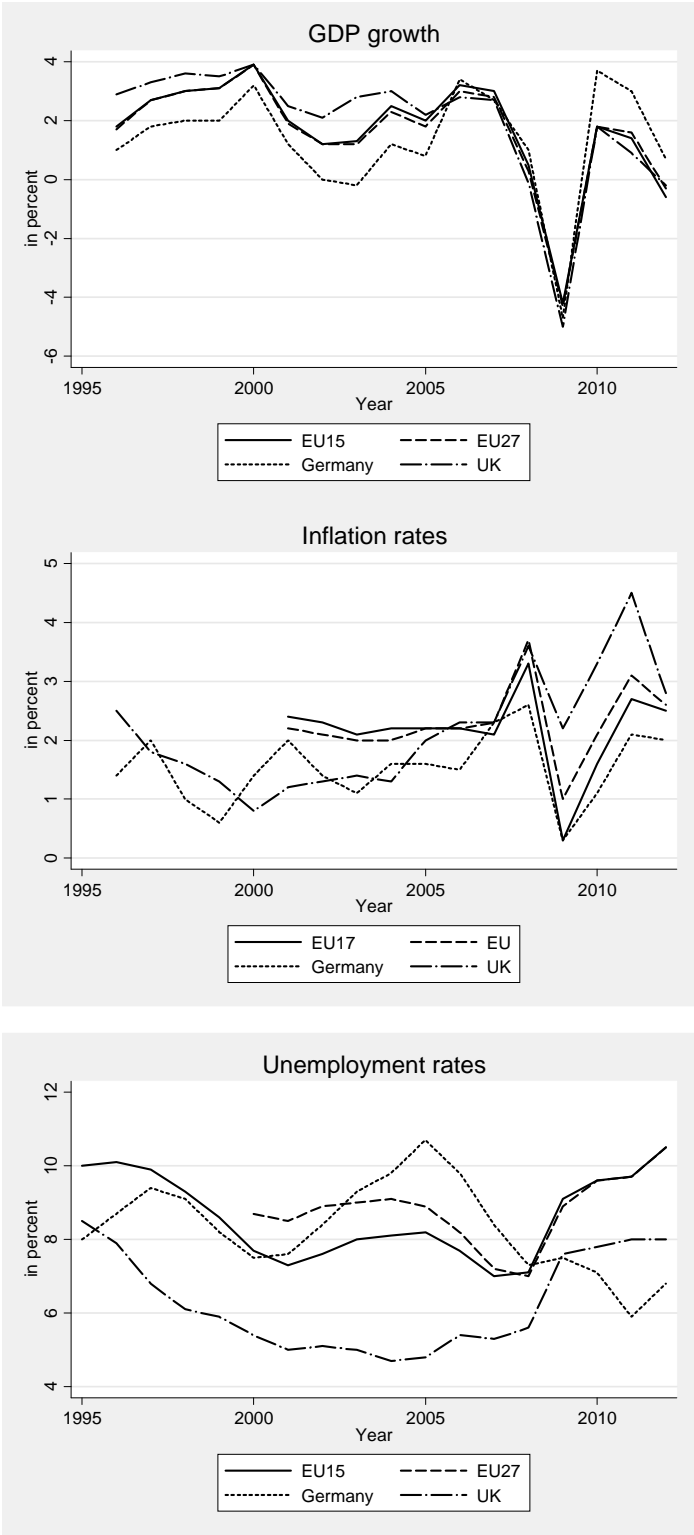
**Table B5: Health satisfaction in Germany and the UK, employees age 20 to 65 (with job and health controls) – Ordered Logit Fixed Effects: Year and macroeconomic effects (corresponds to Table 5 in the text)**

	Germany				UK	
	West		East			
<b>Year 2007</b>	-0.131*** (0.038)		-0.076 (0.069)		0.118** (0.047)	
<b>Year 2008</b>	-0.250*** (0.040)		-0.103 (0.070)		0.143*** (0.049)	
<b>Year 2009</b>	-0.385*** (0.043)		-0.290*** (0.074)		-	
<b>Year 2010</b>	-0.474*** (0.046)		-0.446*** (0.082)		0.597** (0.257)	
<b>GDP growth rate</b>		0.006 (0.005)		0.004 (0.008)		-0.005 (0.016)
<b>Inflation rate</b>		0.018 (0.016)		-0.0001 (0.028)		-0.125*** (0.032)
<b>National unemployment rate</b>		0.282*** (0.025)		-0.035 (0.030)		0.283*** (0.049)
<b>Regional unemployment rate</b>		-0.234*** (0.026)		0.070*** (0.0172)		-0.059 (0.031)
<b># obs</b>	74,188	74,115	24,538	24,538	60,860	60,860

Note: SOEP and BHPS waves 1996 to 2010. Reference year is 2006. Control variables include the remaining year dummies and standard covariates in health satisfaction analyses such as socio-demographic characteristics as well as changes in family life, employment status, health status and health provision (see full list of results in the appendix). \*= indicates significance level < 10%, \*\* < 5%. Standard errors are in parenthesis.

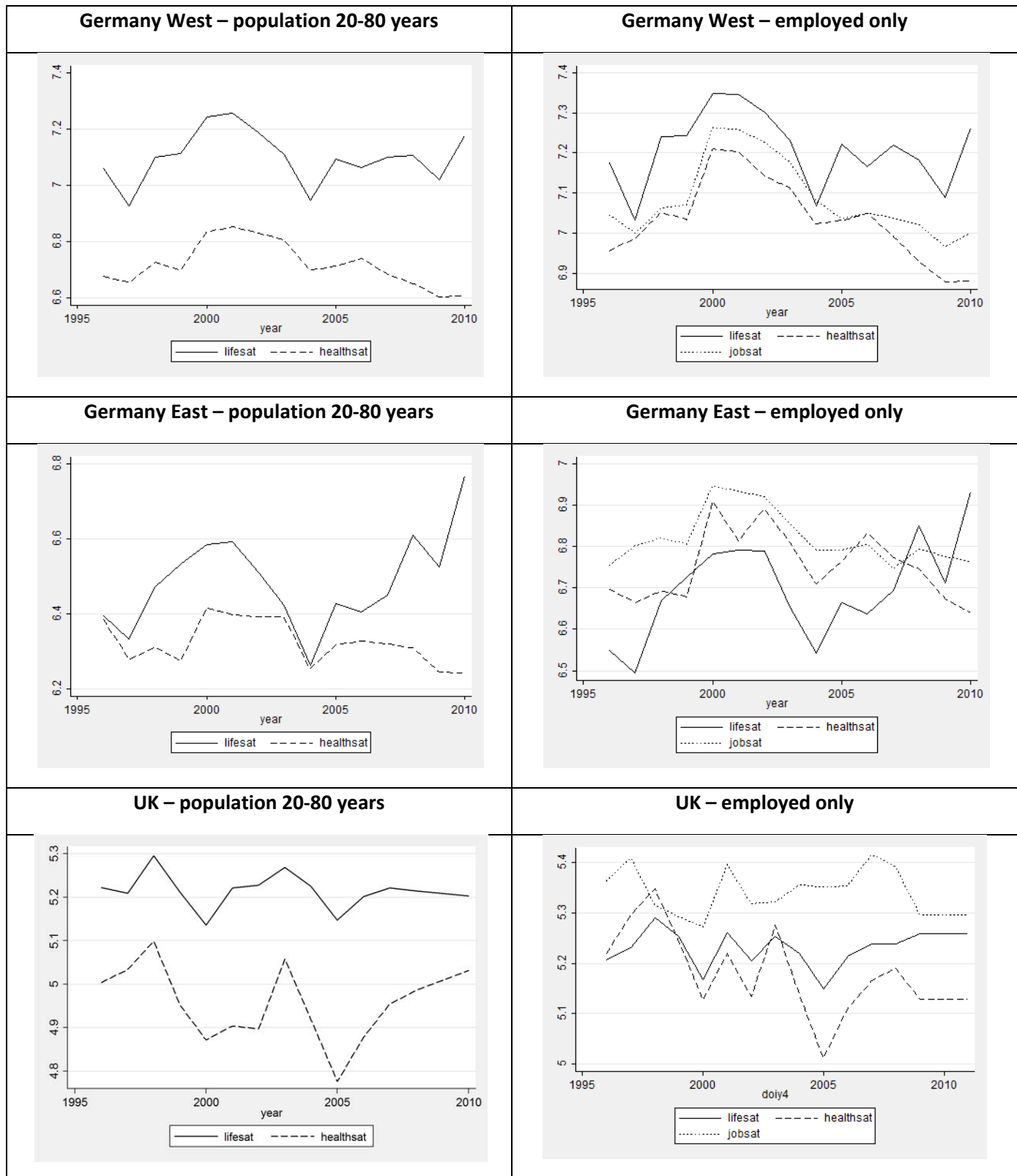
Appendix C – Figures

Figure 1 – Unemployment, GDP growth and Inflation



Source: Own calculations based on data from Eurostat.

**Figure 2 – Life, job and health satisfaction**



Source: Own calculations based on SOEP and BHPS data.