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Antje Mertens and Miriam Beblo

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Antje Mertens and Miriam Beblo*

Berlin School of Economics and Law

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* Corresponding author: Antje Mertens, Berlin School of Economics and Law, Faculty 2, Alt-Friedrichsfelde 60, 10315 Berlin, Fon: +49-30-30877-2419, Mail: antje.mertens@hwr-berlin.de.

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 2009 and supplement this with annual information on macroeconomic indicators. We estimate Ordered Logit models, controlling for clustered standard errors. Sensitivity analyses with fixed and random effects yield qualitatively similar results.

We were somewhat surprised to find significant differences between the formerly separated parts of Germany even twenty years after re-unification. 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 2007 and 2008 do not show any sign of a decrease. Looking at the impact of macroeconomic indicators such as GDP growth, inflation and unemployment, we find diverse effects for Germany and the UK. Positive reactions to an increase in GDP are observed in West Germany only. The strongest and most robust result across all subsamples has yet been found for the relationship between self-reported satisfaction (regarding all aspects, life, job and health) and the regional unemployment rate: The higher regional unemployment the more satisfied people seem to be irrespective 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, though for Germans only and, when it comes to employees, even for East Germans only. Interestingly, we get similar results when looking at job and health satisfaction. All aspects of self-reported satisfaction are related to the business cycle. Hence, the costs of the financial and economic crisis have not been limited to the well-documented fall in the domestic products but comprise lower satisfaction with life in general as well as job and health in particular. These hidden costs concern West Germans in particular.

1. Introduction

We all know that 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 also the psychological effects into account. 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.

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 so 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 ordered Logit models with clustered standard errors and compare our results to alternative estimation methods using random and 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.¹ 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.²

2.2.1 Personal Unemployment and Self-reported Satisfaction

Obviously, business cycle fluctuations are likely to concern especially those who are directly affected, 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 that it is middle aged men who

¹ 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 (2011).

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

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 (2004), Georgellis et al. (2008), Murphy and Athanasou (1999), Nordenmark and Strandh (1999), Shields and Wheatley Price (2004).

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 fulfills 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)³ 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 satisfaction⁴ 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).

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

³ See also references to the medical literature therein.

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

region" (see p. 11). Clark and Oswald (1994) - using the same UK data - 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. Similarly, Luechinger/Meier/Stutzer (2008) report for German SOEP data and a cross section of countries, that unemployment has negative effects even on workers in employment, but more so for workers in the private than in the public sector.

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).⁵ 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

⁵ 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, 2009, 2010, Bartolini 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.

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/Frijters/Shields (2008) 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/Stephan 1996, Winkelmann/Winkelmann 1998, Frijters et al. 2004a and 2004b), 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) 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.

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 Testing the Influence of the Economic Crisis

To our knowledge only Bell and Blanchflower (2010), Blanchflower and Oswald (2011) have so far considered the question of satisfaction or happiness in the financial crisis.⁶ Looking at the implications of the increase in UK unemployment since the beginning of the crisis, Bell and Blanchflower 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. 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. Taking together all the evidence we have got so far in the literature and in order to answer our research question whether the crisis has caused a deterioration of life, job and health satisfaction, we will now investigate the following main hypotheses:

- (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.

⁶ Shapiro analyses financial well-being and consumption of older Americans.

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 2009 in both surveys and include all individuals that are between 20 and 80 years old. We only drop those individuals with missing values on important covariates like income, gender, education, labor force status or life and health satisfaction. In both surveys, information on the health status is collected via questions e.g. on invalidity/ 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').

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 pooled ordered logit estimations with corrected standard errors, separately for Germany (East and West) and the UK. We decided to use ordered logit instead of probit because of the possibility to calculate easy-to-interpret odds ratios. 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. To account for the potential bias in standard errors induced by within-group residual correlation (Moulton 1990) we consider standard errors with 13 clusters for the sample years.

Since Ferrer-i-Carbonell/Frijters (2004, p.642) conclude that:"... assuming cardinality or interpersonal ordinality of the satisfaction answers makes little difference to the results...", we also undertake sensitivity analyses to compare our results to alternative estimation methods using OLS random and fixed effects. (Further sensitivity analyses include corrected standard errors by clustering for individuals and ordered logit with random effects.) 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, 2008 and 2009 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 crisis has had a negative effect on life satisfaction for those with low job security, we use interactions of the crisis year dummies 2007, 2008 and 2009 with the individual unemployment status, recent job loss and temporary employment contract.

- 3) 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.
- 4) 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 2) and 3) to the subgroup of employees holding constant job characteristics and controlling for interactions of temporary contracts in the recession years.
- 5) To test whether job satisfaction has been similarly affected by the crisis as life satisfaction, we apply the same analyses as in 4) to job satisfaction.
- 6) To test whether health satisfaction has been similarly affected by the crisis as life satisfaction, we apply the same analyses as in 4) 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, self-reported satisfaction seems to be more sensitive to the business cycle in Germany. Interestingly, this is also true for satisfaction with health. 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.⁷ Another difference regards the relation between life, job and health satisfaction. In the West, respondents seem to be more satisfied with their jobs and their lives in general than with their health though the job and health satisfaction curves have a very similar pattern. In the East, the picture is not as clear cut. Job satisfaction is highest throughout the whole observation period and satisfaction with life in general ranges somewhere between job and health satisfaction. Overall, satisfaction seems rather unrelated to GDP growth and shows a remarkable drop in the year 2004. In the UK, all three satisfaction follow the same pattern and, as in Germany, life satisfaction is somewhat higher than health satisfaction. In stark contrast to Germany, job satisfaction is the lowest throughout the observation window. Surprisingly, average life, job and health satisfaction have even increased during the crisis years in the UK while a decline has taken place in 2009 in Germany.

Figure 2 about here

⁷ Compare Frijters et al. 2004a and 2004b for a detailed analysis of the East/West difference in the first decade after reunification.

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 and 2009 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 estimate ordered logit regressions.⁸ If any, a negative effect of the recession on overall life satisfaction can be observed for West Germany only, where the odds to report a higher level of life satisfaction was 5 percent lower in 2009 than in the reference year 2006.⁹ The other two years, even higher levels of satisfaction were reported (and the odds of reporting higher outcomes are 6 to 7 percent larger). Also in East Germany and the UK, the odds to report higher levels of life satisfaction have increased between 2006 and 2009. 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. 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 unemployed, a recent job loss and a temporary fixed-term employment (second specification of Table 1, see right-hand columns). While the coefficient estimates of the years 2007 to 2009 hardly change, we uncover a surprisingly positive relationship of being unemployed within this period and reported life satisfaction. Though the experience of personal unemployment has significant and relatively large negative effects (see Appendix Table A1), this effect was remarkably lower during the crisis years in Germany and the UK. The odds for reporting higher levels of life satisfaction are roughly 7 percent larger in East Germany, 15 percent in West Germany and 11 percent in the UK. This finding may be the result of a social norm effect as discussed in section 2.2.2. When unemployment is expected to rise, the personal situation may seem relatively less disturbing. The results for job loss and temporary employment are rather mixed. A significantly lower satisfaction level following a job loss is found in 2008 for Western Germany only (8 percent lower odds). For temporary contracts we

⁸ 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, which has a large negative impact. Age has a negative influence, though the quadratic term is positive. Women are generally happier and the number of children is negatively related to life satisfaction. Finally, education has a positive effect in Germany, but not in the UK, an unusual result that has been found with BHPS data before by Clark (2003) who argues it could be the result of a "comparison effect, where education raises expectations at the same time as outcomes" (p.7). Ferrante (2009) has also argued along these lines.

⁹ More precisely, we report proportional odds ratios, which can be interpreted as follows: For a one unit increase, i.e. going from 0 to 1 on the dummy for 2007, the odds of high life satisfaction (category 10) versus the combined lower outcomes (1-9) are 5 percent smaller. Likewise, the odds to be in the combined outcome classes 9 and 10 versus the combined lower outcomes (1-8) are also 5 percent smaller. In general, we compare people who are in groups greater k versus those who are in groups less than or equal to k.

observe a similar, but somewhat smaller, effect.¹⁰ However, this pattern complies with the macroeconomic situation. In 2007, Germans saw unemployment rates falling after a period of relatively high and persistent unemployment. In 2008, as the financial crisis was turning into a real crisis, insecurity increased with potential effects on people fearing to lose their jobs, particularly those in temporary employment.

Table 1: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – Year effects (Odds Ratios)

	Germany				UK	
	West		East			
Year 2007	1.072**	1.063**	1.098**	1.094**	1.056**	1.050**
Year 2008	1.063**	1.061**	1.301**	1.287**	1.027**	1.015**
Year 2009	0.952**	0.945**	1.169**	1.166**	1.093**	1.094**
Interactions						
Year 2007 * unemployed		1.084**		0.985		1.107**
Year 2008 * unemployed		1.155*		1.067*		1.110**
Year 2009 * unemployed		1.084*		1.018		
Year 2007 * job loss		.984		1.104		1.050**
Year 2008 * job loss		0.922**		1.016**		0.999
Year 2009 * job loss		1.043*		1.049		-
Year 2007 * temporary		1.103**		1.001		1.069**
Year 2008 * temporary		.972**		1.052**		1.298**
Year 2009 * temporary		1.025**		0.987		-
# obs	153,806		52,517		129,935	

Note: SOEP and BHPS waves 1996 to 2009. Reference year 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%.

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 regional unemployment rate is significantly related to life satisfaction in both German subsamples. While a 1

¹⁰ Unfortunately, the number of observations for the year 2009 is very small in the UK, so interactions are impossible to estimate. The data cannot be updated, as the new “Understanding society sample” will not include the BHPS sample before 2010, so there is a gap in the BHPS sample data for 2009.

percentage point rise of the regional unemployment rate implies higher odds (ranging from 5 percent in West Germany to 2 percent in the East) of switching to a higher satisfaction level, higher overall unemployment significantly decreases satisfaction – at least in Germany. There, the drop in satisfaction largely outweighs the rise due to regional unemployment, as the odds to be in a higher satisfaction class decrease by up to roughly 10 percent for each percentage point increase in the overall unemployment rate. How can this finding be explained? It seems that as regional unemployment rises, people tend to become more satisfied, respectively less annoyed. Yet, this positive effect can only partially compensate the feeling of insecurity that increasing national unemployment generates.

In the UK on the contrary, unemployment does not seem have much of an effect. Notwithstanding lower employment protection, the level of unemployment, national or regional, does not exert a statistically significant effect.¹¹ Finally, a positive correlation with GDP growth is not observed for either country and inflation is weakly linked to life satisfaction of UK respondents only. This result is most probably due to the relatively low and stable inflation in Germany over the observation period.

Table 2: Life Satisfaction in Germany and the UK, all Respondents Age 20 to 80 – Macroeconomic effects (Odds Ratios)

	Germany		UK
	West	East	
GDP growth rate	1.024	1.001	0.984
Inflation rate	0.972	0.992	0.931*
National unemployment rate	0.907*	0.899**	1.061
Regional unemployment rate	1.054**	1.023**	1.024
# obs	153,806	52,517	129,935

Note: SOEP and BHPS waves 1996 to 2009. 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). *= indicates significance level < 10%, ** < 5%.

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 in Germany.

¹¹ We experimented with changes in unemployment, which had a highly significant and negative coefficient estimate in the UK but not in Germany. As other macro variables changed sign rather counter intuitively when including changes in the unemployment rate, we decided not to report these results.

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 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 3, 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, tenure within the firm, firm size and sector attachment, which are all known to influence the risk of losing one's job. We also present the respective interactions of the crisis year dummies with temporary employment in the left-hand columns of Table 3. The second specification in Table 3 (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. In East Germany and the UK, respondents are again more satisfied over the crisis-years period compared to 2006. While the average effect of being temporarily employed is still significantly negative, holding this type of work contract in the time period of 2007 to 2009 implies even more satisfaction. In the UK, the net effect is indeed strongly positive. While temporary employment as such induces the odds of being in a higher satisfaction category to be 15 percent lower, the odds of the interaction terms considerably outweigh the negative effect in 2007 and 2008. In Germany, we observe a positive net effect for the East and basically no effect for the West. We may conclude that, as the economy struggles, people are happy to be in employment at all, even if it is only temporary.

As regards the impact of the macro variables on the employed, effects are quite similar to the ones observed for the complete sample. Yet, there are some important differences: in West Germany, only national unemployment is significantly related to life satisfaction (at the 10 percent significance level) and it turns positive and significant in the UK.¹² That regional unemployment in East Germany and national unemployment in the UK has positive effects, can not be explained with social norm effects this time. 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 effect is considerable larger in the UK than in Eastern Germany. In fact, the influence of unemployment seems to be particularly strong in the UK. We can only guess here, but we suspect that the unemployment insurance system could play a role. The less generous an

¹² When we include regional unemployment only, the effect is also positive.

unemployment compensation system is, the stronger might be the influence of unemployment on those in employment. Whether this is also the case for job satisfaction will be examined in the following.

Table 3: Life satisfaction in Germany and the UK, employees age 20 to 65 (with job controls) – Year effects and macroeconomic effects (odds ratios)

	Germany				UK	
	West		East			
Year 2007	1.122**		1.099**		1.054**	
Year 2008	1.089**		1.398**		1.040**	
Year 2009	0.966**		1.168**		1.348**	
Year 2007 * temporary	1.172**		1.286**		1.313**	
Year 2008 * temporary	1.160**		1.322**		1.488**	
Year 2009 * temporary	1.279**		1.262**			
Temporary	0.820**		0.811**		0.848**	
GDP growth rate		1.025*		1.006		0.989
Inflation rate		0.969		0.989		0.924*
National unemployment rate		0.907*		0.859**		1.139**
Regional unemployment rate		1.039		1.032**		1.002
# obs	69,486		22,824		62,229	

Note: SOEP and BHPS waves 1996 to 2009. Reference year 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%.

In Table 4 we estimate the same specifications controlling for socio-demographic and job characteristics, now with job satisfaction as the dependent variable. As in Table 3, the estimation results presented in the left-hand columns include the crisis year dummies and interactions with temporary employment, those in the right-hand columns include the macroeconomic indicators.

In contrast to life satisfaction, the German respondents perceived their jobs less satisfying throughout all crisis years as compared to 2006. Satisfaction is particularly low in 2009 West

Germany. However, in the UK, respondents are more satisfied than in 2006. A temporary work contract is rated even more enthusiastically, with a positive net effect in almost of the cases.

The macroeconomic effects resemble those of the life satisfaction model, though significances are more pronounced and, hence, results turn out to be more robust. In West and East Germany, the differing effects of regional and overall unemployment are strongly confirmed, whereas in the UK, not only the regional but also the national unemployment rate is positively related to job satisfaction. Summarizing, our results show that workers' satisfaction does not only depend on the personal situation but also on the relative position in the labour market. Rising (regional) unemployment increases the odds of reporting higher life satisfaction.

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

	Germany				UK	
	West		East			
Year 2007	0.981**		0.950**		1.027**	
Year 2008	0.970**		0.950**		1.065**	
Year 2009	0.934**		0.994		1.344**	
Year 2007 * temporary	1.148**		1.279**		1.096**	
Year 2008 * temporary	1.280**		1.409**		1.387**	
Year 2009 * temporary	1.439**		1.362**			
Temporary	0.815**		0.774**		0.630**	
GDP growth rate		1.010		0.990		0.990
Inflation rate		0.986		0.998		0.970
National unemployment rate		0.932*		0.938**		1.082**
Regional unemployment rate		1.054**		1.045**		1.044*
# obs	68,669		22,534		62,268	

Note: SOEP and BHPS waves 1996 to 2009. Reference year 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%.

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 job satisfaction negatively. As just presented, the employed are happier in their jobs when unemployment rises, but 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 (see Appendix 4), as we add controls of health status and health provision, such as accidents in the past year, care responsibilities, days spent in hospital, private health insurance and the number of weeks unemployed in the previous year. Since health is our dependent variable now we leave out the indicator variable of whether health deteriorated in the previous year, that was used as a control variable in the estimations on overall and job satisfaction.

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

	Germany				UK	
	West		East			
Year 2007	.973**		.929**		1.176**	
Year 2008	.913**		.956**		1.238**	
Year 2009	.852**		.924**		1.512**	
Year 2007 * temporary	1.007**		1.196**		1.005	
Year 2008 * temporary	1.090**		1.108**		1.352**	
Year 2009 * temporary	1.217**		1.082**		-	
Temporary	0.875**		0.858**		0.876**	
GDP growth rate		1.019		0.993		0.986
Inflation rate		0.972		1.025		0.942
National unemployment rate		1.020		0.962**		1.131
Regional unemployment rate		0.963*		1.023*		1.068
# obs	69,471		22,809		62,105	

Note: SOEP and BHPS waves 1996 to 2009. Reference year 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 and interactions (left hand columns) quantitatively resemble qualitatively those presented in Table 4. In Eastern and Western Germany, health satisfaction was significantly lower during the crisis years with increasingly lower odds of reporting a higher satisfaction category in West Germany (from 3 percent to 15 percent). And as before, UK employees report rising satisfaction levels, despite increasing unemployment and a higher risk of job loss as in Germany.

The macroeconomic effects of health satisfaction are also similar to the previous estimation results, except for West Germany where regional unemployment is negatively related to satisfaction with health whereas it was positively or not related to job and life satisfaction.

5. Conclusions

Despite Germany’s subsidized short-hour work programs to keep people in employment and despite higher employment protection in Germany than in the UK, only Germans – and here especially West Germans – showed relatively strong emotional reactions during the crisis years (as summarized in Table 6).

Table 6: Summary results of life, job and health satisfaction determinants for employees in Germany and the UK

	Life satisfaction			Job satisfaction			Health satisfaction		
	Germany		UK	Germany		UK	Germany		UK
	West	East		West	East		West	East	
Crisis years	+/-	+	+	-	-	+	-	-	+
Temporary job in crisis years	+	+	+	+	+	+	+	+	+
GDP growth rate	+								
Inflation rate			-						
National unemployment rate	-	-	+	-	-			-	
Regional unemployment rate		+		+	+		+	+	
# obs	69,486	22,824	62,229	68,669	22,534	62,268	68,669	22,534	62,268

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

The odds for higher self-reported job satisfaction were 1-7 percent lower between 2007 and 2009 in West Germany, and the odds for health satisfaction even 15 percent lower in 2009. At the same time, life satisfaction has hardly been influenced, as we find positive odds for 2007 and 2008 for West Germany and negative odds in 2009 only. In the UK, dependent employees report even higher levels of overall, job and health satisfaction during the crisis years, which comes as a real surprise. Increases in unemployment do not directly translate into changing satisfaction here. Instead, particularly those with a temporary job contract are more satisfied during the crisis years, 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 whereas inflation and GDP growth hardly seem to matter. Positive reactions to an increase in GDP are observed in West Germany only. As illustrated in the summary table 6, the strongest and most robust result across all the subsamples is detected for the relationship between self-reported satisfaction (regarding all aspects, life, job and health) and the regional unemployment rate: The higher regional unemployment the more satisfied people seem to be irrespective 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, though for Germans only. Interestingly, we get similar results when looking at job and health satisfaction. In the UK, the significance varies with the strongest effects on job satisfaction. We conclude that the costs of the financial and economic crisis have not been limited to the well-documented fall in the domestic products but include psychological costs such as lower satisfaction with life in general as well as job and health in particular – especially of West Germans.

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Appendix

A1 Brief Chronology of the Crisis from 2007-2009 with a Focus on Germany and the UK

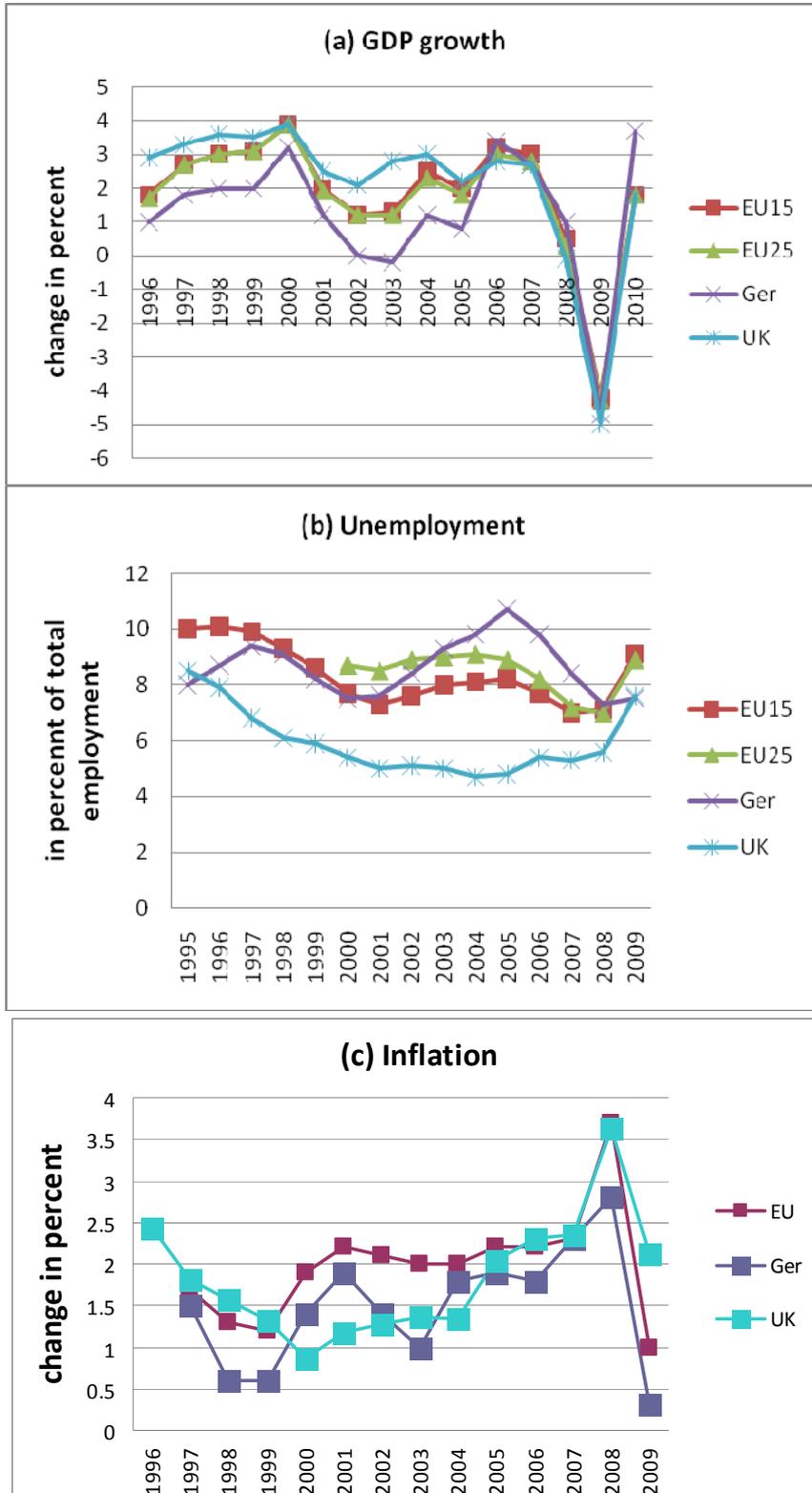
June 2007	Two Bear Stearns-run hedge funds with large holdings of subprime mortgages run into large losses.
July/August 2007	Some German banks like IKB and Sachsen LB announce large losses due to investments in US sub-prime market.
August 2007	Fed starts cutting interest rates. ECB, Fed and other central banks start to intervene and supply more liquidity.
September 2007	Northern Rock crisis in the UK. Bank of England grants emergency support.
October 2007	Many other banks start to announce losses.
September 2007	Bank of England starts to provide additional liquidity to markets.
December 2007	Bank of England starts cutting interest rates.
January 2008	Global stock markets, including London's FTSE 100 index, suffer their biggest falls since 11 September 2001.
February 2008	UK government nationalizes Northern Rock.
April 2008	Bank of England announces details of an ambitious £50bn plan designed to help credit-squeezed banks by allowing them to swap potentially risky mortgage debts for secure government bonds.
April 2008	The first UK house builder announces major cutbacks, citing the lack of affordable mortgages and a fall in consumer confidence.
July 2008	UK house prices show their biggest annual fall since the Nationwide began its housing survey in 1991, a decline of 8.1 percent. The average home now costs £169,316. That is nearly £15,000 cheaper than in the same month last year.
July 2008	ECB increases interest rates by 0.25 percentage points to 4.25 percent
August 2008	Investment bank BNP Paribas tells investors they will not be able to take money out of two of its funds because it cannot value the assets in them, owing to a "complete evaporation of liquidity" in the market. The European Central Bank pumps € 95 million in to the banking market to try to improve liquidity. It adds a further € 108.7 billion over the next few days.
August 2008	Chancellor Alistair Darling warns that the economy is facing its worst crisis for 60 years in an interview with the Guardian newspaper, saying the current downturn would be more "profound and long-lasting" than most had feared.
September 2008	The pound falls to record lows of 81.21 pence against the euro and two-year lows of \$1.80.
September 2008	Office for National Statistics reports that

	manufacturing output fell by 0.2 percent between June and July. Negative growth rates prevail from Q2 2008 to Q3 2009.
October 2008 to May 2009	ECB reduces rates from 4.25 percent to 1 percent
September 2008 to March 2009	Bank of England reduces rates from 5 percent to 0.5 percent
March 2009	The Monetary Policy Committee of the Bank of England announces that, in addition to setting Bank Rate at 0.5 percent, it would start quantitative easing.

Sources: Bank of England (2011), Office for National Statistics (2011), Guillén (2009),

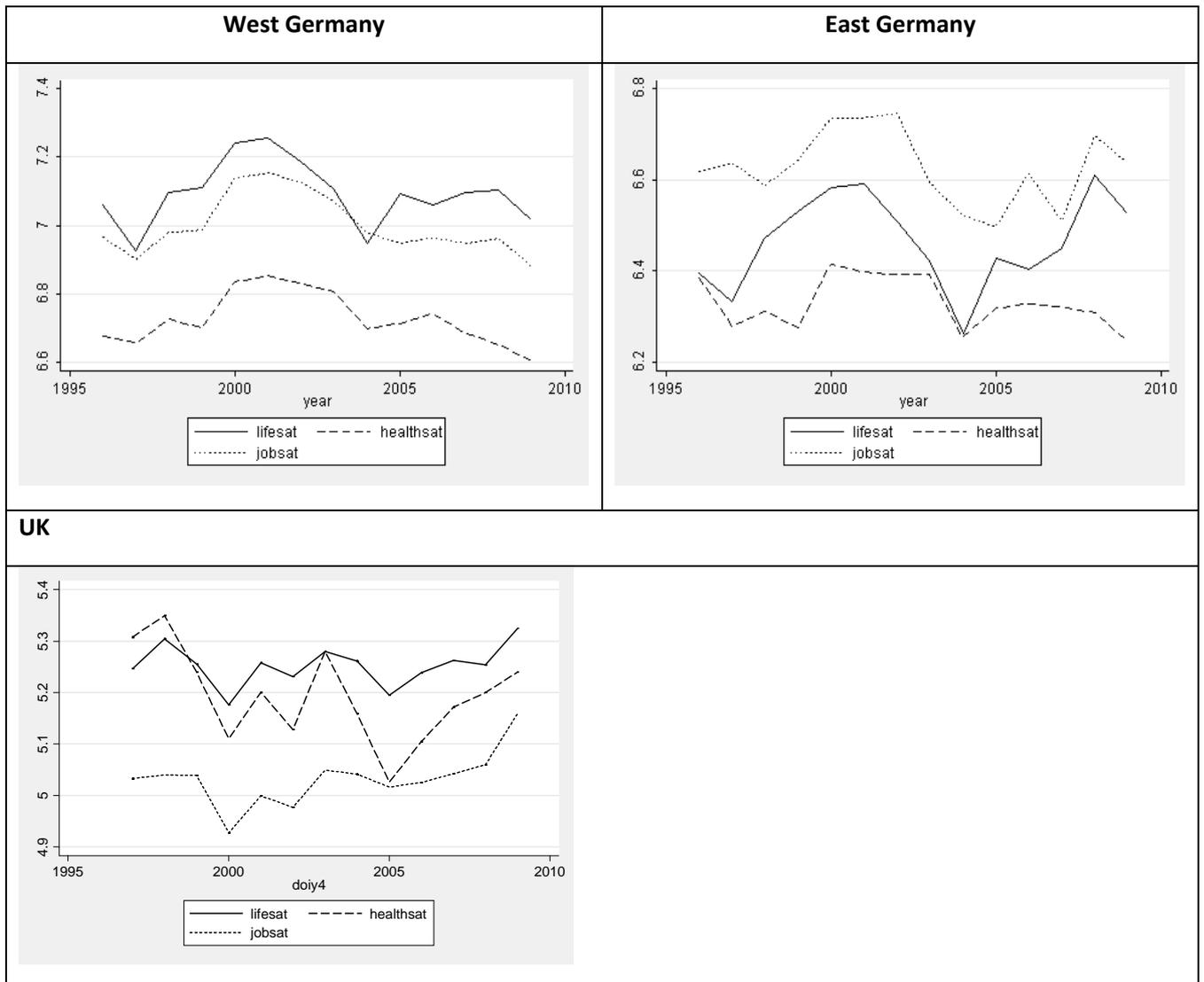
Figures

Figure 1 – Unemployment, GDP growth and Inflation



Source: Own calculations based on data from Eurostat.

Figure 2 – Life satisfaction and health satisfaction



Source: Own calculations based on SOEP and BHPS data.