The Relationship Between Homeownership and Life Satisfaction in Germany

Timo Zumbro[*]

April 7, 2011

Abstract

The article investigates the relationship between life satisfaction and homeownership in Germany using, SOEP data from 1992 to 2009. While controlling for personal characteristics as well as various regional and dwelling attributes, ordered logit models support a marginal, though positive relationship. In addition, other household attributes such as the condition of the dwelling and the neighborhood area, exert a significant effect on life satisfaction. Further, the results confirm a significant interaction between homeownership and the condition of the dwelling as well as homeownership and the financial burden of the household. However, regression models with fixed effects also reveal, unobserved differences between homeowners and renters.

JEL classification: D1, R20, R21

Key words: homeownership, housing, subjective well-being, life satisfaction

[*]Institute of Spatial and Housing Economics, University of Muenster, Am Stadtgraben 9, Germany, 48143 Muenster E-mail: zumbro@insiwo.de.

1   Introduction

Homeownership in Germany has been relatively constant over the last few decades. In 2009, Germany's homeownership rate was about 43 percent, which is relatively low, in comparison to other developed countries. Yet, it has often been claimed that a high home-ownership rate is a desirable goal for various reasons. For example, many people associate homeownership with freedom and independence. Furthermore, residential property is an important means of accumulating wealth and an indicator of societal status. Property also allows homeowners to hedge against fluctuations in future rent payments and can generate additional profits from preferential taxation. However, the financial burden as well as the reduced mobility and flexibility in the labor market may limit the advantages of owning a house. Consequently, the effect of homeownership on life satisfaction is controversial, as the advantages and disadvantages of homeownership cannot be weighed against each other in a straightforward manner. This becomes even more difficult, when taking into consideration people's individual circumstances and preferences.

In recent years, happiness research, based on survey data, has contributed greatly to discovering and understanding various determinants of subjective well-being or life sat-isfaction.[1] However, the relationship between homeownership and subjective well-being has been under-researched. While some studies tend to support a positive relationship between homeownership and life satisfaction in Anglo-American regions (e.g. Rohe and Stegman, 1994; Rossi and Weber, 1996), the relationship has never been investigated for Germany.[2] Findings in the Anglo-American context cannot simply be transferred to Germany, since the living circumstances in Germany differ substantially. For example, Germany has a long tradition of subsidized rental living, as well as a pronounced tenant protection law, due to the massive destruction of housing during the two world wars.

Even within Germany, there are substantial regional differences, for example, between the territory of the former Federal Republic of Germany (FRG) and that of the German Democratic Republic (GDR). Before reunification, homeownership in the former GDR was virtually non-existent, due to the 'property-hostile' policy of the Communist regime. Despite a rapid increase of homeownership rates in the 1990s, East Germany's homeown-ership rate remains significantly lower than in West Germany (Figure 1).

---

[1]The terms *life satisfaction*, *subjective well-being* and *happiness* are used interchangeably.

[2]An exception to this is an unpublished working paper of Dick and Rotfuß (2009).
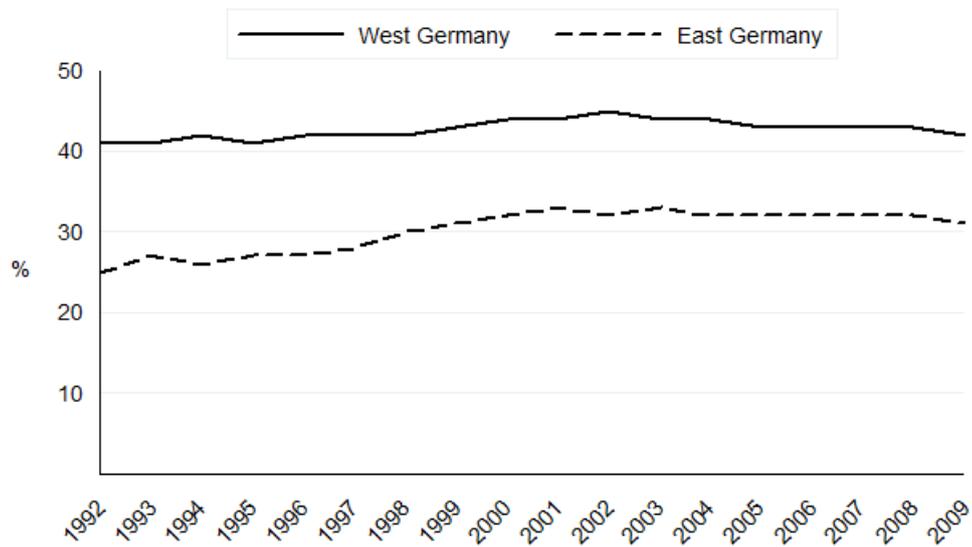
Figure 1: Homeownership of households in West and East Germany. Source: GSOEP, 1992 to 2009, own calculations.
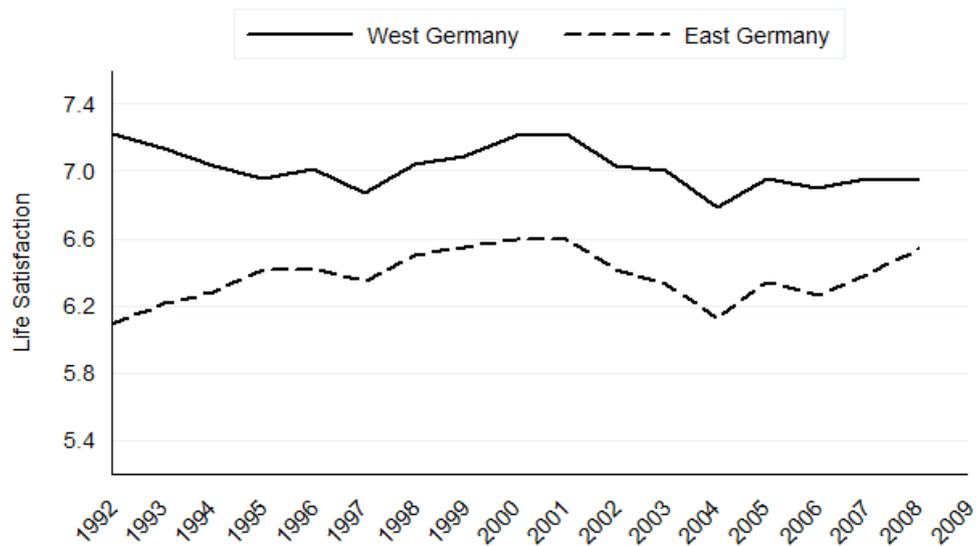

Figure 2: Life satisfaction in West and East Germany. Source: GSOEP, 1992 to 2009, own calculations.

In addition, the average life satisfaction in East Germany is lower than in West Germany, even though the gap has narrowed over time (Figure 2).[3] Potential causes of continuously lower life satisfaction in East Germany include the lower economic performance, more

---

[3]Overall life satisfaction is measured on a 11-point-scale from 0 (*totally dissatisfied*) to 10 (*totally satisfied*).

widespread unemployment and continuing migration of people from East to West.

Since the effect of homeownership on life satisfaction is controversial and has not been investigated for Germany so far, the present study aims to address this gap and contribute to the growing literature on the determinants of life satisfaction.[4]

The article is structured as follows. Section two provides a brief literature review, on the relationship between homeownership and life satisfaction. In addition, it highlights the most important channels, through which owner-occupied homeownership affects life satisfaction. The next section describes the data set and research methodology. Section four presents the empirical results. Finally, in section five I discuss the findings and highlight some directions for future research.

2 Previous research

Literature review The literature dealing with homeownership and life satisfaction is surprisingly scant.[5] More importantly, the majority of the literature available to date not only considers the relationship between homeownership and life satisfaction, but between homeownership and various other characteristics. These include social aspects like neighborhood stability or social involvement. Dietz and Haurin (2003) provide a literature review on various important social and economic benefits of homeownership. They highlight fundamental differences in the behavior of homeowners and renters, but emphasize the need for further research, using more advanced econometric methods. Overall, however, the limited empirical evidence indicates a positive relationship between homeownership and life satisfaction (Rohe et al., 2002).

For example, Rohe and Stegman (1994) found that low-income homeowners in Baltimore experienced a statistically significant increase in life satisfaction one and a half years after purchasing their homes, and revealed significantly higher levels of life satisfaction, compared to continuing renters with similar characteristics. In a follow-up survey, the same

---

[4]The data used in this analysis were made available by the German Socio Economic Panel Study (SOEP) at the German Institute for Economic Research (DIW), Berlin. Data from the German socio-Economic Panel Study (GSOEP) is especially suitable for the analysis, as it contains very detailed information on housing conditions, location and personal characteristics.

[5]There is much more literature on the relationship between homeownership and housing satisfaction (see e.g. Diaz-Serrano, 2006).

sample still reported higher ratings of life satisfaction (see Rohe and Basolo, 1997). However, as criticized by other researchers, the analysis should be interpreted with caution, due to a small sample size and limited geographical representativeness. Furthermore, their study did not control for changing life events or unobserved heterogeneity between homeowners and renters (see Rossi and Weber, 1996).[6]

Another study by Rossi and Weber (1996) used several data sources to assess differences in life satisfaction between homeowners and renters. According to their findings, homeowners are marginally happier then renters. However, the control variables used in their study were confined to age and socioeconomic status, and the authors acknowledge that unobserved variables could account for this finding. However, a major contribution of Rossi and Weber's study is the extensive range of research questions they identified and which paved the way for various follow up studies.

Rohe et al. (2002), for example, examined previous research on claims that homeownership entails certain benefits, including higher levels of individual well-being for individuals. They point out that empirical evidence tends to support a positive relationship.

Yet, a recent study by Bucchianeri (2009) did not find any evidence of a positive relationship between homeownership and life satisfaction, after controlling for household income, housing quality, and health. In contrast, Bucchianeri (2009) found a negative effect of homeownership on life satisfaction, which resulted from the work load and time expenditure related to homeownership. In particular, the author concludes that homeowners have little time for happiness-promoting activities. However, this study was also confined to Colombus Ohio and further limited to a sample of women only (n=805).

Thus, the available studies present mixed findings on the relationship between homeownership and life satisfaction. More importantly, it is subject to methodological shortcomings and generally limited to Anglo-American regions, providing a rationale to extend the research to other regional contexts.

Channels of influence   In the literature on homeownership and life satisfaction four different *channels of influence* are frequently identified: quality, economic reasons, prestige, and freedom.

---

[6]For an overview of the trends in low-income homeownership and the effects of low-income homeownership in the USA see Shlay (2006).

For example, Rossi and Weber (1996) emphasize that the quality of a dwelling depends very much on the ownership status. Owner-occupied dwellings are usually characterized by other quality conditions than rental properties (e.g. size in square meters, number of rooms) and are therefore believed not to be directly comparable. Moreover, there are different incentives between homeowners and renters with respect caring for property. Henderson and Ioannides (1983) were among the first to define a rental externality in a theoretical model. Unlike homeowners, renters tend to over-utilize dwellings, since they do not reap the economic benefits and since they are less attached to their units. For the same reason, Saunders (1990) argues that renters are less committed to maintaining and improving their homes. Consequently, rental housing property reveals poorer quality conditions than owner-occupied dwellings. Empirical studies confirm rental externalities in the USA (Galster, 1983; Gatzlaff et al., 1998; Shilling et al., 1991), Japan (Iwata and Yamaga, 2008), and Germany (Takakura, 2009). Accordingly, it is important to control for qualitative characteristics, as well as the condition of a dwelling, when measuring the effect of homeownership on life satisfaction.

Beside the qualitative features of self-occupied homes, homeowners are regarded as reaping several economic benefits. A key advantage is that homeownership is an important way to accumulate wealth. In Germany, owner-occupied housing is the most important wealth component for private households (see Frick et al., 2007). In addition, homeownership can offer financial security with respect to rent rises. In a model of tenure choice with endogenous house prices, Sinai and Souleles (2005) showed that homeowners are hedged against fluctuations in future rent payments. Further, homeowners enjoy tax advantages as rent savings are not taxed, in contrast to interest on capital. In a model Van Suntum (2009) showed that the tax advantage of owner-occupied housing is not fully removed, even if imputed rents are subject to income taxation. However, tax conditions for homeowners in Germany are not as favorable as in many other developed countries.[7] Additional financial benefits arise, since the monthly encumbrances of homeowners usually decrease and rents typically increase over time. According to Becker (1986), the costs of homeownership in Germany is already lower than the cost of a comparable rental dwelling after about seven years. However, buying a home can also be an enormous financial burden and figures show that real estate property often accounts for a disproportionately high share of people's financial portfolio. Thus, high levels of dept and mortgage repayments

---

[7]For example, in the USA, debit interest on property loans or mortgages are tax deductible.

may increase people's concerns about their current and future financial situation. A trend that might exacerbate this, is long-term demographic change, that is an aging population which results in a lower demand for property and a depreciation of property prices.

As Diaz-Serrano (2006) point out, homeownership is one of the most important symbols of personal success and status. The ability to signal higher social status in turn clearly increases happiness (see Rohe et al., 2002). Accordingly, homeownership should increase subjective well being, even after controlling for various qualitative and quantitative features of self-occupied homes.

Further, homeownership affects an individual's sense of freedom. On the one hand, homeowners are not in danger of being involuntary moved from their home and can alter their living conditions more freely than renters.[8] On the other hand, homeownership can reduce mobility. Thus, homeowners are restricted in their reaction to unexpected problems with their home, the surrounding neighborhood or employment situation and are more often forced to commute or accept unemployment than renters (see e.g. Oswald, 1996, 1997).

Besides the above mentioned channels of influence, the relationship between homeownership and life satisfaction is often more complex in nature. Often, changing policies or circumstances can reverse the above described relationships. For example, renters may also be relatively immobile, if they enjoy high rent subsidies and strong legal protection. There may also be other restraints to changing residence, such as leaving one's social environment, i.e. family and friends. Yet, homeowners are a very heterogeneous group. For example, the restraint on mobility is likely to be less important for high income households, since they can afford to relocate, while for low income households, the financial burden of relocating might be prohibitive.

Overall, there does not seem to be an unambiguous relationship between homeownership and life satisfaction. In addition, the effect of homeownership on life satisfaction is likely to be different across social groups. Using German panel data, the present study unbundles various socio-economic and housing characteristics from tenure status in order to the net effect of homeownership on life satisfaction.

---

[8]In Germany this argument might be of minor importance, since renters in Germany enjoy very substantial legal protection (see Frick and Grimm, 2009).

3 Data and methodology

The data   The data was taken from the German socio-economic panel (GSOEP), which has been conducted annually since 1984. The panel contains detailed information on many socio-economic and demographic variables, both at the household and individual level.[9]

The information used is confined to the period between 1992 and 2009 for two reasons. First, the regime of the former German Democratic Republic (GDR) was hostile to private property and private occupied housing was virtually nonexistent. Secondly, some variables included in the analysis as controls were not available before 1992. For the analysis, I use information on individuals aged $\geq$ 18, since the housing situation of children and teenagers depends mainly on their parents. People living in nursing homes, or homes of the elderly are excluded, since their living situation is very different from that of people in the private housing market.

Life satisfaction is measured on an 11-point scale and ranges from 0 (*completely dissatisfied*) to 10 (*completely satisfied*), while respondents answer the following question: *All things considered, how satisfied are you overall with your life as a whole these days?* Figure 3 shows the nearly bell-shaped distribution of the life satisfaction scores. The distribution of the pooled life satisfaction responses is slightly skewed to the right, with a mean value of 7.45 and a modal response value of 8.

In happiness research, the personal characteristics of *sex*, *age*, *family status*, *education*, *employment status*, *health status* and *income* have often been found to exert a significant effect on life satisfaction and are also considered in the analysis conducted here.[10] Yet, I assume that these personal characteristics not only determine life satisfaction, but also correlate with homeownership. For example, individuals with a high income are more likely to be homeowners than those with a low income. At the same time, these people enjoy higher life satisfaction. In order to isolate the effect of homeownership on life satisfaction, it is necessary to control for income. Research has found a U-shaped relationship between age and life satisfaction. In other words, younger and older individuals are more satisfied with their lifes than middle-agers (see e.g. Horley and Lavery, 1995; Diener et al., 1997). Unemployment constitutes one of the most established (negative) effects on life

---

[9]See SOEP group (2001) for a general description of the survey.

[10]For the determinants on life satisfaction in Germany, see for example, Frijters et al. (2004).
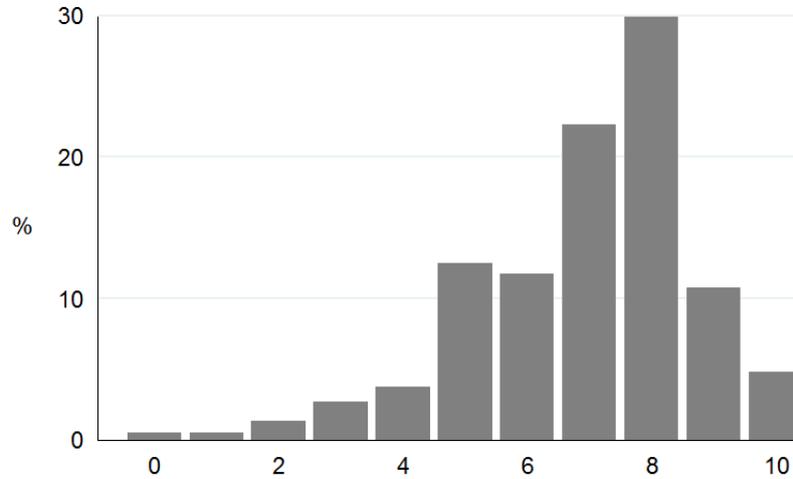
Figure 3: Distribution of reported life satisfaction. Source: GSOEP, 1992 to 2009, own calculations.

satisfaction. Furthermore, family status is likely to have a significant impact. Singles and married people are generally happier than separated or widowed people (Lee et al., 1991; Frey and Stutzer, 2002). Moreover, I control for education, using school leaving certificates as a proxy. The categorical variable education thus ranges from from *no qualification* to *Abitur* (university entrance qualification). The state of a person's health is measured straightforwardly with two indicators: the self-assessed general health condition, which is measured on a scale from *very bad* to *very good* as well as a respondent's disability status, i.e. the presence of any form of disabilities.[11] Finally, net household income quintiles control for the wealth situation of an individual.

The housing situation is described by the number of person per household[12], the condition of the dwelling, the living area in square meters, crowding (number of persons per room), the year moved into the dwelling (as a proxy variable for the length of residence), the type of the dwelling as well as the residential area. These housing characteristics are often correlated with the ownership status. Disregarding such relationships is a major shortcoming of many previous studies in this area.

In addition, the data set allows controlling for regional differences. Apart from the West

---

[11]Observation for health status in 1993 are completely missing. I imputed the missing values by the mean of health status for each individual in 1992 and 1994.

[12]The correlation coefficient between children and persons per household reveal a high degree of association. Accordingly, the variable also serves as a control for children.

and East Germany split, I take municipality size into account, in order to control for urban and rural areas. Urban and rural areas differ in population structure, industry, outdoor activities and culture, the range of local public services, and local tax rates. Thus, these factors are indirectly controlled for in our analysis by accounting for the municipality size. Table 1 provides an overview of the variables used in this study.[13]

The methodology Since life satisfaction is measured on an ordinal scale, regression models for ordinal dependent variables are widely used in happiness research (Ferrer-i Carbonell and Frijters, 2004). Such models recognize the ordering of alternative answers to the life satisfaction question. Here, an ordered logit model is applied to measure the effect of homeownership on life satisfaction. Such a model is based on maximum likelihood estimators (MLE) and calculates the probability of a high life satisfaction being expressed by the respondents. A k-category ordered logit model can be defined as

$$logit(p_{ij} = log(p_{ij}/1 - p_{ij}) = \alpha_j - \beta' x_i, i = 1, 2, \ldots, k - 1 \qquad (1)$$

where p_{ij} is the cumulative probability that the *ith* individual is in the *jth* or higher life satisfaction category (i.e. $i+1, i+2, \ldots, k$). The cumulative probability can be expressed as the cumulative logit, which is modeled as a linear function of independent variables. In this model, the intercepts α_j, also referred to as cut-points, are the log of the odds of being equal to or less than category j, when all independent variables in vector x are zero. Thus, it is necessarily true that the α_j increase over j (i.e. $\alpha_1 \leq \alpha_2 \leq \alpha_1 \alpha_{k-1}$). The β indicates the change in the log of the odds of being higher than category j, due to a one-unit increase in the independent variable. A one unit increase affects the log of the odds identically regardless of the cut-point. By eliminating the log, it is possible to estimate the proportional odds ratios of being in a higher life satisfaction category for individuals with a particular characteristic, compared to those who do not (e.g. being a homeowner or not, living in a residential area or not, etc.).[14]

Controlling for individual characteristics is essential for measuring the effect of home-

---

[13]Note that most of the variables are qualitative, either categorical or just dichotomous. Moreover, they are rather heterogeneous in that they include both subjective and objective indicators.

[14]For a more detailed description of the *ordered logit model*, see Wooldridge (2002) or Cameron and Trivedi (2005).

ownership on life satisfaction (Ferrer-i Carbonell and Frijters, 2004). For example, more extroverted individuals yield higher levels of life satisfaction than introverts (Diener et al., 2003). If homeowners are more extroverted than renters, the effect of homeownership on life satisfaction would be biased by the ordered logit model. In order to control for these unobservable individual characteristics, I also apply the ordinary least square (OLS) fixed effects regression model.[15] Consider the following equation

$$Y_{it} = \alpha_0 + \beta_{it} X_{it} + a_i + \mu_{it} \tag{2}$$

where Y_{it} is assumed to be an ordered discrete variable of life satisfaction. X_{it} is the set of observed explanatory variables, a_i is an individual time invariant component and μ_{it} is the error term. The individual unobserved component a_i can be removed by the within transformation, which is obtained by first averaging equation 2 over $t = 1, \ldots, T$ to obtain the cross-section equation

$$\overline{Y}_i = \beta \overline{X}_i + a_i + \overline{\mu}_i \tag{3}$$

where $\overline{Y}_i, \overline{X}_i$ and $\overline{\mu}_i$ is the mean of Y_i, X_i and μ_i respectively. Subtracting equation 3 from equation 2 for each t yields the within equation

$$Y_{it} - \overline{Y}_i = \beta(X_{it} - \overline{X}_i) + (\mu_{it} - \overline{\mu}_i) \tag{4}$$

The within equation yields unbiased and consistent estimates, even though the time-constant unobservable a_i can be correlated arbitrarily with each element of X_{it}. However, there is no way to distinguish the effects of time-constant observables from the time-constant unobservable a_i. Therefore, the time-constant observable gender must be excluded from the analysis. Indeed, the factor of main interest, i.e. being a renter or a homeowner, does not change for many individuals over time. Nevertheless, the application of the model is appropriate, if the ownership status changes for at least some individuals.[16]

---

[15]The Hausman-test revealed that the fixed effects model is the appropriate one compared tot the random effects model.

[16]For a more detailed description of the *fixed effect model* see Wooldridge (2002) or Cameron and Trivedi (2005).

As an alternative to the OLS fixed effects regression model Frijters et al. (2004) proposed an ordinal fixed effects logit model. The reason lies in the fact that, strictly speaking, OLS models can only be applied to cardinal data, which means that the distance between the 11 life satisfaction categories must be of the same size.[17] Uhde (2010) points out, that the ordinal fixed effects logit model has not yet proven to be a consistent measure of life satisfaction.[18] For this reason, the OLS model with fixed effects is the preferred one here.

3.1   Results
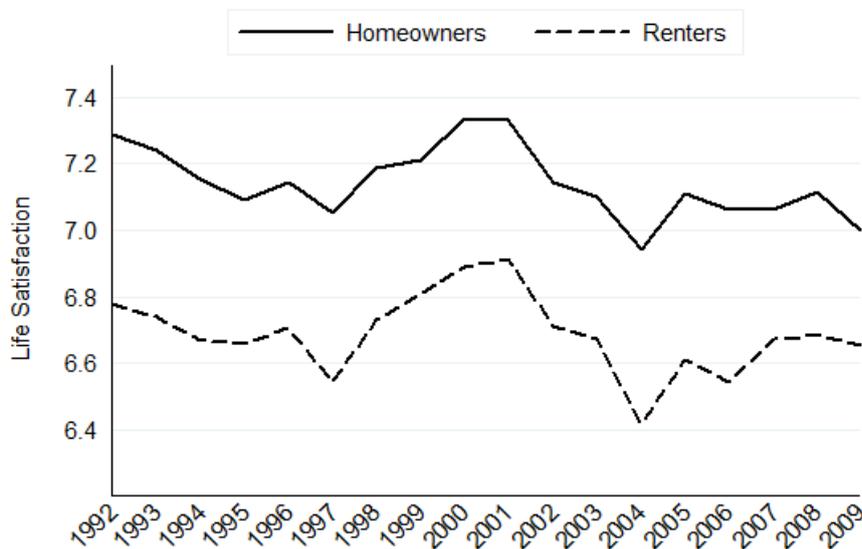
Figure 4: Life satisfaction of homeowners and renters in Germany. Source: GSOEP, 1992 to 2009, own calculations.

Figure 4 reveals profound differences in life satisfaction between renters and homeowners. From 1992 to 2009, the average life satisfaction of renters was continuously lower than the average life satisfaction of homeowners. However, since homeowners and renters differ in many aspects of their living circumstances, I investigated the influence of these other factors. In order to unbundle various socio-economic and housing characteristics from tenure status, I specified and estimated three distinct ordered logit models summarized

---

[17]In practise, differentiating between ordinality and cardinality does not make much difference (Frijters et al., 2004).

[18]A critical comment on the ordered fixed effects model can also be found in Berger (2009).

in Table 2.[19] In the first model, life satisfaction is the dependent variable and explained by a dichotomous variable for homeownership. The variables east, age, age^2, female, unempl, married, divorced, separated, widowed, education, quintiles, healthst and disst are included, in order to control for familiar determinants of life satisfaction. According to the model, there seems to be only a small, though positive effect of homeownership on life satisfaction. In particular, the odds of reporting a higher level of life satisfaction are 1.16 times greater for homeowners than for renters, all other variables being held constant. In line with previous studies, unemployment and health status greatly affect life satisfaction. The odds of being in a higher life satisfaction category are 0.42 times smaller for an unemployed individual and 2.5 times greater for someone reporting a higher health status. In addition, the effects of all other factors in model 1 are statistically significant. In model 2, I add control variables for housing and regional characteristics. While the effect of homeownership on life satisfaction becomes even smaller, the variable remains statistically significant. Furthermore, the results reveal that some housing and neighborhood characteristics significantly affect life satisfaction. In particular, multi-family homes have a marginally negative impact on life satisfaction. Living in an industrial area and the number of people in the household also reduce the odds of reporting a higher level of live satisfaction (odds ratios: 0.79 and 0.89 respectively). Finally, the condition of the dwelling turns out to be an important factor. If the condition declines by one category (e.g. from *in good condition* to *in need of partial renovation*), the odds of reporting a higher level of life satisfaction are 0.74 smaller. The size of the dwelling, duration of residence, community size class and crowding are statistically significant, but relatively unimportant factors of subjective well being.

In the third model, I include three interaction terms, which reflect the homeownership status and the respective conditions of the dwelling. On the one hand, life satisfaction for homeowners is assumed to be higher, if the owner lives in a dwelling which is in *good condition*. On the other hand, life satisfaction for homeowners is assumed to be lower, if the owner lives in a dwelling which is in *need of renovation*. In other words, the quality standard enjoyed by the homeowner is important for the effect of homeownership on life satisfaction. Model 3 clearly shows that the effect of homeownership on life satisfaction varies with the condition of the dwelling. Being owner of a dwelling in need of some

---

[19]The results of the ordered logit models are comparable to those derived from ordinary least squares regressions.

renovation has a negative impact on life satisfaction (odds ratio: 0.84). This effect is even stronger, when the dwelling needs complete renovation (odds ratio: 0.68). The positive effect of owning a dwelling in a condemned condition, is likely to be a statistical artefact, since less than one percent of all surveyed individuals live in such a dwelling. Thus, Model 3 reveals that elements of the effect of homeownership on life satisfaction are likely to be moderated by the condition of the dwelling.

Furthermore, running ordinal logit regression models for different income quintiles separately shows that homeownership is particularly important for low income households (Table 3).The odds of reporting a higher level of life satisfaction is 1.25 times greater for low-income homeowners than for low-income renters. By contrast, the odds of homeowners reporting higher life satisfaction is nearly as great as that of renters in high income groups. The main driver behind this relationship could be the greater need of low-income households to be more independent of public pensions.

The prospect of an insufficient retirement pension for low-income households may raise fears of old age poverty.[20] Thus, self-occupied housing could be a particularly important component of the overall financial portfolio of low-income households.

Finally, it is often argued that homeownership imposes a substantial financial burden. Nevertheless, an objective measure of the real costs of homeownership appears to be very difficult. Therefore, I use the subjective evaluation of homeowner maintenance costs, compared to those of a rented dwelling, and assume that homeowners are able to compare the costs meaningfully. In the GSOEP, the maintenance costs of owner-occupied housing relative to a rental dwelling is captured by the following question: If you compare this [management or maintenance costs of the building] with a rental flat, are those costs - *very inexpensive, inexpensive, about average, a bit too expensive, much too expensive*?[21] Here, the answers *a bit too expensive* or *much too expensive* are defined as a high financial burden, while the answers *inexpensive* and *very inexpensive*) are defined as a low financial burden and the answer *about average* is defined as average burden.

---

[20]Additionally, ordered logit regressions for different age groups show that homeownership is more important for an individual's life satisfaction, if the individual is approaching retirement age. The odds ratio of higher life satisfaction between homeowners and renters is greater for people between 45 and 65, than for those up to 30 years, and even greater for people above 65, i.e. those who have already reached retirement age. (The detailed results are not listed here.)

[21]The exact phrasing changed slightly over time. Unfortunately, data for 2003 and 2004 is not available.

In Table 4, each model only considers one of the three homeowner groups, while the other two groups are excluded from the respective analysis. For example, in the first model, I compare only homeowners with a high financial burden to the group of renters, i.e. homeowners with an average and a low financial burden are excluded. The results of the three models clearly show that the effect of homeownership on life satisfaction varies with the financial burden of homeownership. The odds of reporting a higher level of life satisfaction are remarkably lower for homeowners with a high financial burden, than for renters (odds ratio: 0.83). By contrast, the odds of reporting a higher level of life satisfaction are considerably higher for homeowners with a low financial burden than for renters (odds ratio: 1.26). There is almost no difference between homeowners with average costs and renters (odds ratio: 1.06). The results suggest that the financial burden on the household is a key factor moderating the relationship between homeownership and life satisfaction.

In a final step, fixed-effects models are applied, in order to control for unobserved time-invariant characteristics of the individuals (Table 5). Column 1 of Table 5 shows the results of the fixed-effects regression, when all individuals in the sample are taken into consideration. The results in columns 2, 3, and 4 are based on restricted data sets. The data is restricted to renters and homeowners with high, average, and low financial burden, respectively. The fixed-effects regression results of Model 1 (Table 5, column 1) show that the effect of homeownership on life satisfaction is almost negligible. This raises some concern of a high correlation between homeownership and some unobserved personality traits. Nevertheless, Model 2 (Table 5, column 2) shows that homeownership has a negative and statistically significant effect on life satisfaction for homeowners with a high financial burden. By contrast, the effect of homeownership on life satisfaction is positive, if homeowners have a low financial burden (Table 5, column 4). As a result, the financial burden of the household seems to be a key factor moderating the relationship between homeownership and life satisfaction, even after controlling for various personal and household characteristics as well as for unobserved personality traits.

3.2   Conclusion

The results support a marginal though positive effect of homeownership on life satisfaction in Germany. Although homeownership is related to many living circumstances, controlling

for a wide range of personal and household characteristics does not eliminate the positive effect of homeownership. As the theory suggests, the quality of the dwelling also plays an important role. From a theoretical point of view, homeowners are more interested than renters in keeping their homes in good condition. Thus, they are more committed to maintaining their dwellings, which in turn leads to better housing quality and a higher level of life satisfaction. Our results seem to verify this argument. In contrast to previous research, this study also pays attention to the interaction between homeownership and the condition of the dwelling. The effect of homeownership on life satisfaction is positive, provided the dwelling is in a good condition. However, the effect turned out to be increasingly negative, if the condition of the dwelling declines.

Furthermore, the results suggest that a positive effect of homeownership on life satisfaction is particularly valid for lower income groups. A potential explanation could be the need of low-income households to be more independent of public pensions. The prospect of an insufficient retirement pension for low-income households may raise fears of old age poverty. Thus, self-occupied housing could be a particularly important component of the overall financial portfolio of low-income households. The positive relationship between homeownership and life satisfaction for low-income households confirms the results of previous studies in Anglo-American regions (see e.g. Rohe and Stegman, 1994; Rohe and Basolo, 1997). However, the question of why the effect of homeownership on life satisfaction is not equal among income groups needs to be investigated further.

In addition, I addressed the effect of the financial costs of homeownership. The results reveal, that homeownership has a negative effect on life satisfaction, if there is a high financial burden of homeownership. This indicates that the financial sustainability of a self-occupied dwelling is a crucial factor. However, the subjective evaluation and rough classification of the financial burden of homeownership is certainly one of the major shortcomings of this study. Future research could address this issue and use more objective measures of financial burden. Furthermore, other important factors like inheritance and the promotion of homeownership by the state are omitted and could also be considered in future studies.

Overall, as a determinant of life satisfaction, homeownership should not be overrated. Factors like the subjective health status and unemployment seem to be more decisive determinants. Furthermore, the regression results are mean values. Thus, in light of

different living situations and individuals preferences, it should not be concluded that self-occupied homeownership is the best choice for all. The fixed effects regression results also suggest, that homeowners often exhibit other unobservable personality traits to renters, providing another avenue for further research.

References

R. Becker. Bestimmungsgründe der Bodenpreise für Wohnbaugrundstücke und ihre Auswirkungen auf den eigengenutzten Wohnungsbau. 1986.

E.M. Berger. Maternal employment and happiness: the effect of non-participation and part-time employment on mothers' life satisfaction. *SOEP Papers*, 2009.

G. Bucchianeri. The American Dream or The American Delusion? The Private and External Benefits of Homeownership. *Wharton School of Business. Retrieved July*, 31, 2009.

A.C. Cameron and P.K. Trivedi. *Microeconometrics: methods and applications*. Cambridge University Press, 2005.

L. Diaz-Serrano. Housing Satisfaction, Homeownership and Housing Mobility: A Panel Data Analysis for Twelve EU Countries. *IZA Discussion Paper*, 2006.

D. D. Dick and W. Rotfuß. Homeownership and Life Satisfaction in Germany. Version: July 2, 2009. *(unpublished) Working Paper. mimeo*, 2009.

E. Diener, E. Suh, KW Schaie, and MP Lawton. Subjective well-being and age: An international analysis. *Annual Review of Gerontology and Geriatrics, Volume 17, 1997: Focus on Emotion and Adult Development*, page 304, 1997. ISSN 0198-8794.

E. Diener, S. Oishi, and R.E. Lucas. Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, pages 403–426, 2003.

R.D. Dietz and D.R. Haurin. The social and private micro-level consequences of homeownership. *Journal of Urban Economics*, 54(3):401–450, 2003.

A. Ferrer-i Carbonell and P. Frijters. How Important is Methodology for the estimates of the determinants of Happiness?*. *The Economic Journal*, 114(497):641–659, 2004. ISSN 1468-0297.

B.S. Frey and A. Stutzer. *Happiness and economics: How the economy and institutions affect well-being*. Princeton University Press, 2002. ISBN 0691069980.

J.R. Frick and S. Grimm. Wohnen in Deutschland nach dem Mauerfall: Eine Analyse für die Jahre 1990 bis 2008 auf Basis der Daten des Sozio-oekonomischen Panels (SOEP). *SOEPpapers*, 2009.

J.R. Frick, M.M. Grabka, and J. Marcus. Editing and Multiple Imputation of Item-Non-Response in the 2002 Wealth Module of the German Socio-Economic Panel (SOEP). *SOEPpapers*, 2007.

P. Frijters, J.P. Haisken-DeNew, and M.A. Shields. Investigating the patterns and determinants of life satisfaction in Germany following reunification. *Journal of Human Resources*, 39(3):649, 2004. ISSN 0022-166X.

G.C. Galster. Empirical evidence on cross-tenure differences in home maintenance and conditions. *Land Economics*, pages 107–113, 1983. ISSN 0023-7639.

D.H. Gatzlaff, R.K. Green, and D.C. Ling. Cross-tenure differences in home maintenance and appreciation. *Land Economics*, 74(3):328–342, 1998. ISSN 0023-7639.

J.V. Henderson and Y.M. Ioannides. A model of housing tenure choice. *The American Economic Review*, 73(1):98–113, 1983. ISSN 0002-8282.

J. Horley and J.J. Lavery. Subjective well-being and age. *Social Indicators Research*, 34 (2):275–282, 1995. ISSN 0303-8300.

S. Iwata and H. Yamaga. Rental externality, tenure security, and housing quality. *Journal of Housing Economics*, 17(3):201–211, 2008. ISSN 1051-1377.

G.R. Lee, K. Seccombe, and C.L. Shehan. Marital status and personal happiness: An analysis of trend data. *Journal of Marriage and the Family*, 53(4):839–844, 1991. ISSN 0022-2445.

A. Oswald. A conjecture on the explanation for high unemployment in the industrialised nations: Part 1. *Warwick Economic Research Papers*, 1996. ISSN 0083-7350.

A. Oswald. Theory of homes and jobs. *University of Warwick, mimeo*, 1997.

W.M. Rohe and V. Basolo. Long-term effects of homeownership on the self-perceptions and social interaction of low-income persons. *Environment and Behavior*, 29(6):793, 1997.

W.M. Rohe and M.A. Stegman. The impact of home ownership on the social and political involvement of low-income people. *Urban Affairs Review*, 30(1):152, 1994.

W.M. Rohe, S. Van Zandt, and G. McCarthy. Social benefits and costs of homeownership. *Low-income homeownership: Examining the unexamined goal*, pages 381–406, 2002.

P.H. Rossi and E. Weber. The social benefits of homeownership: Empirical evidence from national surveys. *Housing Policy Debate*, 7(1):1–35, 1996.

P. Saunders. *A nation of home owners*. London: Unwyn Hyman, 1990. ISBN 0044454880.

J.D. Shilling, CF Sirmans, and J.F. Dombrow. Measuring depreciation in single-family rental and owner-occupied housing. *Journal of Housing Economics*, 1(4):368–383, 1991. ISSN 1051-1377.

A.B. Shlay. Low-income homeownership: American dream or delusion? *Urban Studies*, 43(3):511, 2006.

T. Sinai and N.S. Souleles. Owner-Occupied Housing as a Hedge Against Rent Risk*. *Quarterly Journal of Economics*, 120(2):763–789, 2005. ISSN 0033-5533.

H. Takakura. Auswirkungen der Eigentumsformen und des Mieterschutzes auf die Wohnungsqualität. *SOEPpapers*, 2009.

N. Uhde. Soziale Sicherheit und Lebenszufriedenheit: Empirische Ergebnisse. *Perspektiven der Wirtschaftspolitik*, 11(4):407–439, 2010. ISSN 1468-2516.

U. Van Suntum. Housing, taxation and retirement provision. *Journal of Housing Economics*, 18(3):249–255, 2009. ISSN 1051-1377.

J.M. Wooldridge. *Econometric analysis of cross section and panel data*. The MIT press, 2002. ISBN 0262232197.

Appendix

Table 1: Variable listing and description

Variable name	Description	Type
homeowner	Homeowner	Dichotomous
east	East Germany	Dichotomous
age	Age	Continuous
age^2	Age squared divided by 1000	Continuous
female	Female	Dichotomous
unempl	Registered unemployed	Dichotomous
married	Married	Dichotomous
divorced	Divorced	Dichotomous
separated	Separated	Dichotomous
widowed	Widowed	Dichotomous
education	School-leaving degree	Categorical
healthst	Current self-rated health status	Categorical
disst	Disabled	Categorical
pershh	Number of persons in household	Continuous
size	Size of housing unit in square meters	Continuous
crowding	Number of persons per room	Continuous
condit	Need for renovation	Categorical
owncon1	Owner of dwelling in need of some renovation	Dichotomous
owncon2	Owner of dwelling in need of full renovation	Dichotomous
owncon3	Owner of dilapidated dwelling	Dichotomous
moveyr	Year moved into dwelling	Dichotomous
ggk	District size classes	Categorical
type1	Terrace house	Dichotomous
type2	Building with 3 to 4 flats	Dichotomous
type3	Building with 5 to 8 flats	Dichotomous
type4	Building with 9 or more flats	Dichotomous
type5	High-rise building	Dichotomous
area1	New building settlement	Dichotomous
area2	Mixed residential and commercial area	Dichotomous
area3	Commercial area	Dichotomous
area4	Industrial area	Dichotomous

Source: GSOEP 1992-2009, own calculations.

Table 2: Ordered logit regressions

	Model 1		Model 2		Model 3	
homeowner	1.157***	(0.009)	1.049***	(0.010)	1.111***	(0.012)
east	0.529***	(0.004)	0.607***	(0.005)	0.607***	(0.005)
age	0.968***	(0.001)	0.959***	(0.001)	0.959***	(0.001)
age^2	1.645***	(0.024)	1.723***	(0.026)	1.726***	(0.026)
female	1.119***	(0.008)	1.113***	(0.008)	1.113***	(0.008)
unempl	0.416***	(0.006)	0.432***	(0.007)	0.431***	(0.007)
married	1.165***	(0.013)	1.274***	(0.016)	1.272***	(0.016)
divorced	0.875***	(0.015)	0.902***	(0.016)	0.903***	(0.016)
separated	0.683***	(0.021)	0.687***	(0.022)	0.688***	(0.022)
widowed	0.931***	(0.018)	0.958***	(0.020)	0.963*	(0.020)
education	1.079***	(0.005)	1.029***	(0.005)	1.029***	(0.005)
quintile	1.147***	(0.004)	1.159***	(0.004)	1.158***	(0.004)
healthst	2.541***	(0.012)	2.507***	(0.012)	2.504***	(0.012)
disst	0.885***	(0.113)	0.864***	(0.011)	0.864***	(0.011)
pershh	-	-	0.891***	(0.004)	0.892***	(0.004)
size	-	-	1.002***	(0.000)	1.002***	(0.000)
crowding	-	-	1.013**	(0.007)	1.014**	(0.007)
condit	-	-	0.736***	(0.005)	0.783***	(0.007)
owncon1	-	-	-	-	0.835***	(0.012)
owncon2	-	-	-	-	0.679***	(0.040)
owncon3	-	-	-	-	0.905	(0.351)
moveyr	-	-	1.001***	(0.000)	1.001***	(0.000)
ggk	-	-	1.036***	(0.002)	1.035***	(0.002)
type1	-	-	1.018*	(0.010)	1.017	(0.010)
type2	-	-	1.001	(0.014)	0.998	(0.014)
type3	-	-	0.968**	(0.012)	0.966***	(0.012)
type4	-	-	0.906***	(0.013)	0.904***	(0.013)
type5	-	-	0.920***	(0.027)	0.918***	(0.027)
area1	-	-	0.989	(0.008)	0.984*	(0.008)
area2	-	-	0.992	(0.010)	0.992	(0.010)
area3	-	-	1.061	(0.055)	1.060	(0.055)
area4	-	-	0.787***	(0.039)	0.779***	(0.038)
N	279394		270896		270896	
Pseudo R^2	0.074		0.078		0.079	

Odds ratios from ordered logit estimations. Life satisfaction is the dependent variable. Robust standard errors in parantheses.* p <0.10, ** p<0.05, *** p<0.01. All models contain year dummies. Source: GSOEP 1992-2009, own calculations.

Table 3: Ordered logit regressions for income quintiles

	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5	
homeowner	1.257***	(0.060)	1.196***	(0.047)	1.137***	(0.041)	1.096***	(0.038)	1.065*	(0.038)
east	0.682***	(0.024)	0.623***	(0.020)	0.549***	(0.017)	0.574***	(0.019)	0.634***	(0.024)
age	0.968***	(0.005)	0.958***	(0.005)	0.944***	(0.005)	0.955***	(0.005)	0.962***	(0.006)
age^2	1.588***	(0.084)	1.740***	(0.082)	1.986***	(0.106)	1.740***	(0.105)	1.708***	(0.114)
female	1.133***	(0.036)	1.142***	(0.030)	1.085***	(0.028)	1.119***	(0.029)	1.114***	(0.029)
unempl	0.449***	(0.017)	0.464***	(0.018)	0.422***	(0.017)	0.448***	(0.022)	0.412***	(0.024)
married	1.150**	(0.069)	1.220***	(0.052)	1.272***	(0.050)	1.299***	(0.054)	1.427***	(0.068)
divorced	0.749***	(0.045)	0.909*	(0.049)	0.928	(0.056)	1.000	(0.070)	1.247***	(0.093)
separated	0.603***	(0.045)	0.623***	(0.048)	0.761***	(0.071)	0.775**	(0.091)	0.978	(0.122)
widowed	0.927	(0.064)	0.967	(0.066)	0.871*	(0.072)	1.080	(0.110)	0.853	(0.106)
education	1.048**	(0.023)	1.017	(0.019)	1.010	(0.018)	0.994	(0.017)	1.059***	(0.017)
healthst	2.407***	(0.039)	2.444***	(0.035)	2.489***	(0.036)	2.572***	(0.038)	2.612***	(0.037)
disst	0.868***	(0.038)	0.866***	(0.036)	0.867***	(0.040)	0.842***	(0.042)	0.900*	(0.049)
pershh	0.912***	(0.023)	0.844***	(0.016)	0.851***	(0.015)	0.871***	(0.014)	0.950***	(0.013)
size	1.000	(0.001)	1.002***	(0.001)	1.003***	(0.001)	1.003***	(0.000)	1.003***	(0.000)
crowding	1.034	(0.022)	0.975	(0.020)	0.952**	(0.022)	0.985	(0.025)	1.094***	(0.025)
condit	0.790***	(0.018)	0.782***	(0.017)	0.789***	(0.018)	0.791***	(0.022)	0.796***	(0.027)
owncon1	0.860**	(0.051)	0.814***	(0.039)	0.744***	(0.032)	0.803***	(0.034)	0.868***	(0.040)
owncon2	0.680*	(0.139)	0.632***	(0.082)	0.754*	(0.129)	0.485***	(0.076)	0.758	(0.153)
owncon3	0.982	(0.556)	0.080***	(0.036)	2.583	(3.630)	2.062	(1.101)	0.416	(0.225)
moveyr	1.003***	(0.001)	0.999	(0.001)	1.001	(0.001)	1.001	(0.001)	1.000	(0.001)
ggk	1.044***	(0.010)	1.043***	(0.009)	1.005	(0.008)	1.037***	(0.009)	1.039***	(0.008)
type1	1.086	(0.059)	0.954	(0.042)	1.048	(0.040)	1.000	(0.036)	1.038	(0.033)
type2	0.997	(0.054)	0.873***	(0.042)	1.007	(0.047)	1.015	(0.047)	1.116**	(0.056)
type3	0.890**	(0.045)	0.912*	(0.039)	0.991	(0.041)	0.972	(0.043)	1.093*	(0.053)
type4	0.872**	(0.048)	0.883**	(0.043)	0.922*	(0.042)	0.820***	(0.042)	1.020	(0.056)

Table 3: Ordered logit regressions for income quintiles (continued)

	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5	
type5	0.786**	(0.083)	0.939	(0.091)	0.984	(0.100)	0.898	(0.093)	0.943	(0.100)
area1	1.023	(0.037)	0.995	(0.031)	0.980	(0.029)	1.008	(0.030)	0.957	(0.029)
area2	0.997	(0.037)	1.027	(0.036)	0.997	(0.033)	1.016	(0.035)	0.937*	(0.034)
area3	0.855	(0.128)	1.469*	(0.296)	1.328*	(0.207)	1.454**	(0.255)	0.702**	(0.115)
area4	0.952	(0.175)	0.747**	(0.098)	0.753**	(0.100)	0.714***	(0.082)	0.820	(0.216)
N	42754		51109		52113		54749		70171	
Pseudo R^2	0.0723		0.0694		0.0689		0.0696		0.0661	

Odds ratios from ordered logit estimations. Life satisfaction is the dependent variable. Robust standard errors in parantheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. All models contain year dummies. Source: GSOEP 1992-2009, own calculations.

Table 4: Ordered logit regressions for categories of financial burden

	High burden		Av. burden		Low burden	
homeowner	0.826***	(0.018)	1.057***	(0.014)	1.256***	(0.018)
east	0.649***	(0.008)	0.624***	(0.007)	0.623***	(0.007)
age	0.946***	(0.002)	0.954***	(0.002)	0.957***	(0.002)
age^2	1.913***	(0.041)	1.781***	(0.033)	1.740***	(0.032)
female	1.111***	(0.011)	1.115***	(0.010)	1.113***	(0.010)
unempl	0.425***	(0.008)	0.427***	(0.008)	0.433***	(0.008)
married	1.247***	(0.020)	1.255***	(0.018)	1.276***	(0.019)
divorced	0.910***	(0.020)	0.901***	(0.019)	0.885***	(0.018)
separated	0.727***	(0.028)	0.690***	(0.025)	0.691***	(0.026)
widowed	1.054*	(0.030)	1.015	(0.026)	0.988	(0.025)
education	1.024***	(0.007)	1.024***	(0.006)	1.019***	(0.006)
quintile	1.195***	(0.006)	1.180***	(0.005)	1.165***	(0.005)
healthst	2.362***	(0.017)	2.434***	(0.015)	2.420***	(0.015)
disst	0.849***	(0.016)	0.849***	(0.014)	0.854***	(0.014)
pershh	0.885***	(0.006)	0.892***	(0.005)	0.888***	(0.005)
size	1.002***	(0.000)	1.002***	(0.000)	1.002***	(0.000)
crowding	1.003	(0.011)	1.012	(0.009)	1.018**	(0.009)
condit	0.780***	(0.007)	0.776***	(0.007)	0.780***	(0.007)
owncon1	0.794***	(0.028)	0.873***	(0.017)	0.862***	(0.019)
owncon2	0.642***	(0.078)	0.555***	(0.051)	0.970	(0.099)
owncon3	1.783	(1.072)	1.225	(0.462)	0.433	(0.234)
moveyr	1.000	(0.000)	1.001***	(0.000)	1.002***	(0.000)
ggk	1.034***	(0.003)	1.035***	(0.003)	1.032***	(0.003)
type1	0.987	(0.019)	1.018	(0.014)	0.987	(0.014)
type2	0.936***	(0.017)	0.985	(0.016)	0.948***	(0.016)
type3	0.937***	(0.016)	0.961***	(0.015)	0.941***	(0.014)
type4	0.856***	(0.016)	0.888***	(0.015)	0.872***	(0.015)
type5	0.872***	(0.030)	0.897***	(0.029)	0.878***	(0.029)
area1	0.940***	(0.012)	0.965***	(0.010)	0.954***	(0.010)
area2	0.955***	(0.013)	0.971**	(0.012)	0.974***	(0.012)
area3	1.101	(0.066)	1.046	(0.062)	1.029**	(0.059)
area4	0.729***	(0.043)	0.729***	(0.041)	0.752***	(0.042)
N	129861		171494		168856	
Pseudo R^2	0.073		0.076		0.076	
					continued on next page	

Table 4: Ordered logit regressions for categories of financial burden(continued)

	High burden	Av. burden	Low burden

Odds ratios from ordered logit estimations. Life satisfaction is the dependent variable. Robust standard errors in parantheses.* p <0.10, ** p<0.05, *** p<0.01. All models contain year dummies. Source: GSOEP 1992-2009, own calculations. Data for the years 2003 and 2004 is missing.

Table 5: OLS fixed effects regressions

	All		High burden[a]		Av. burden[a]		Low burden[a]	
homeowner	0.029*	(0.017)	-0.129***	(0.036)	0.026	(0.021)	0.091***	(0.023)
east	-0.243***	(0.053)	-0.200***	(0.064)	-0.236***	(0.059)	-0.198***	(0.062)
age	-0.026***	(0.004)	-0.028***	(0.005)	-0.028***	(0.004)	-0.027***	(0.004)
age^2	-0.008	(0.035)	0.011	(0.050)	0.000	(0.041)	-0.010	(0.041)
unempl	-0.616***	(0.018)	-0.649***	(0.024)	-0.629***	(0.021)	-0.624***	(0.022)
married	0.082***	(0.023)	0.080***	(0.029)	0.101***	(0.026)	0.087***	(0.027)
divorced	0.019	(0.035)	0.047	(0.044)	0.031	(0.040)	0.039	(0.041)
separated	-0.305***	(0.042)	-0.259***	(0.054)	-0.302***	(0.049)	-0.293***	(0.050)
widowed	-0.191***	(0.049)	-0.079	(0.071)	-0.116	(0.059)	-0.148**	(0.060)
education	0.005	(0.019)	0.008	(0.027)	0.012	(0.022)	0.026	(0.022)
quintile	0.077***	(0.005)	0.104***	(0.007)	0.093***	(0.006)	0.090***	(0.006)
healthst	0.448***	(0.005)	0.423***	(0.008)	0.433***	(0.007)	0.428***	(0.007)
disst	-0.189***	(0.022)	-0.188***	(0.032)	-0.206***	(0.028)	-0.179***	(0.027)
pershh	-0.047***	(0.008)	-0.051***	(0.011)	-0.050***	(0.009)	-0.054***	(0.010)
size	0.000**	(0.000)	0.001*	(0.000)	0.000*	(0.000)	0.000	(0.000)
crowding	-0.020**	(0.009)	-0.021	(0.015)	-0.023**	(0.011)	-0.014	(0.012)
condit	-0.121***	(0.010)	-0.121***	(0.010)	-0.126***	(0.010)	-0.122***	(0.010)
owncon1	-0.011	(0.016)	-0.081*	(0.044)	-0.014	(0.022)	0.012	(0.025)
owncon2	-0.115**	(0.057)	-0.299**	(0.148)	-0.063	(0.086)	0.039	(0.101)
owncon3	-0.114	(0.360)	-1.141***	(0.110)	-0.281	(0.247)	-1.113**	(0.449)
moveyr	0.007***	(0.001)	0.009***	(0.001)	0.008***	(0.001)	0.007***	(0.001)
ggk	0.014***	(0.006)	0.019**	(0.008)	0.011	(0.007)	0.013*	(0.007)
type1	-0.001	(0.024)	-0.001	(0.036)	0.002	(0.029)	-0.041	(0.031)
type2	0.000	(0.025)	0.021	(0.033)	0.017	(0.029)	-0.001	(0.030)
type3	0.010	(0.024)	0.015	(0.031)	0.020	(0.027)	0.000	(0.028)
type4	-0.032	(0.027)	-0.027	(0.035)	-0.033	(0.031)	-0.043	(0.032)
type5	0.000	(0.058)	-0.013	(0.069)	-0.014	(0.065)	-0.044	(0.067)
area1	-0.014	(0.018)	0.011	(0.023)	-0.008	(0.020)	0.004	(0.021)
area2	-0.025	(0.020)	-0.032	(0.025)	-0.022	(0.022)	-0.042	(0.023)
area3	-0.042	(0.083)	-0.025	(0.098)	-0.058	(0.093)	-0.091*	(0.094)
area4	-0.072	(0.086)	-0.081	(0.103)	-0.079	(0.098)	-0.094	(0.099)
_cons	-6.555	(1.444)	-1.063	(2.127)	-8.443	(1.768)	-7.791	(1.762)
N	270896		129861		171494		168856	
R^2	0.1127		0.1247		0.1191		0.1051	

Coefficients from OLS fixed effects estimations. Life satisfaction is the dependent variable. Robust standard errors in parantheses.* p <0.10, ** p<0.05, *** p<0.01. All models contain year dummies. Source: GSOEP 1992-2009, own calculations. .[a] Data for the years 2003 and 2004 is missing.