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Matthias Keese

Who Feels Constrained by High Debt Burdens?

Subjective vs. Objective Measures of Household Indebtedness

Ruhr Graduate School in Economics
UNIVERSITÄT DUISBURG ESSEN

#169

Imprint

Ruhr Economic Papers

Published by

Ruhr-Universität Bochum (RUB), Department of Economics
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Ruhr Economic Papers #169

Responsible Editor: Volker Clausen

ISSN 1864-4872 (online) – ISBN 978-3-86788-189-0

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Bibliografische Informationen der Deutschen Nationalbibliothek

Die Deutsche Bibliothek verzeichnet diese Publikation in der deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über: *http//dnb.ddb.de* abrufbar.

ISSN 1864-4872 (online)
ISBN 978-3-86788-189-0

Matthias Keese[1]

Who Feels Constrained by High Debt Burdens? – Subjective vs. Objective Measures of Household Indebtedness

Abstract

TThis paper analyzes differences in self-assessed debt burdens of German households confronted with an objective debt burden. Using data from the German Socio-Economic Panel, my econometric analysis shows that a household's subjective debt burden is not only influenced by the current constellation of income, debt service and, possibly, the potential subsistence level, but also by expectations of the personal and overall socio-economic environment in the future (especially unemployment), as well as by further undetermined (and possibly non-financial) factors. Confronted with a certain ratio of consumer debt repayments and income, women perceive significantly higher subjective debt burdens. Unemployment is associated with drastically higher self-assessed debt burdens even when controlling for the overall financial situation of the household. Furthermore, some discrepancies between East and West Germans are detectable. Only some differences in the subjective perception of objective debt burdens can be explained with personal traits (such as risk attitudes) and life satisfaction. I draw the following conclusions: First, self-assessed debt burdens contain information beyond the current economic situation, e.g., expectations on future incomes. Second, relying on subjective debt statements may lead to biased results for policy analysis if the researcher does not account for non-financial factors.

JEL Classification: D12, D14, J16

Keywords: Household debt; subjective, objective measures; risk aversion; gender differences

February 2010

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1 Ruhr Graduate School in Economics (RGS Econ) and University of Duisburg-Essen. *– I am grateful to Reinhold Schnabel, Annika Meng, and Hendrik Schmitz for helpful suggestions. Financial support by the Ruhr Graduate School in Economics is gratefully acknowledged.* *– All correspondence to Matthias Keese, Ruhr Graduate School in Economics, c/o University of Duisburg-Essen, Department of Economics, Chair of Public Economics, Prof. Dr. Reinhold Schnabel, 45117 Essen, Germany, e-mail: matthias.keese@uni-due.de.*

1 Introduction

Currently, household indebtedness is receiving notable public attention. The high number of borrowers unable to handle their debt repayments has raised public concern. At the same time, many households are reporting financial distress and feel constrained by their debt repayments. However, it may be doubtful that self-reported debt burdens are driven by financial circumstances alone but they may also be influenced by expectations, personal traits and further, possibly non-financial factors.

This paper aims to investigate differences in the subjective perception of objective debt burdens for different groups of households. Such an analysis reveals whether the understanding of what is a *debt burden* is similar for the whole population. Analyzing whether differences in debt perception can be explained by theoretical implications or economic intuition points to the range of information contained in subjective debt measures and on the appropriateness of using both types of debt measures for empirical analysis. While objective debt measures serve as indicators for financial fragility (see e.g., the discussion in DeVaney and Lytton, 1995, on the usage of financial ratios, such as of the ratio of debt repayments and income, to predict household insolvency), the subjective perception may be detached from the given situation. Being more concrete, are there household heads which are frivolous with respect to their financial situation? Or, in contrast, are there household heads which are overanxious in their debt perception? Beyond the confrontation of objective and subjective debt measures, my analysis contributes to the literature on differences in economic behavior. While it has been extensively studied how differences in gender, education, age, or the cultural background affect economic risk-taking and financial decisions, the issue of household debt has not received notable attention.

Putting a household's regular debt repayments in relation to the household income, and, possibly, a subsistence level, objective debt burdens (compare to Korczak, 2003; see also Fricke et al., 2004) can be constructed. In contrast, subjective debt indicators refer to a self-perceived debt burden or to statements on difficulties in repaying debt, financial distress, or overborrowing (Betti et al., 2007; Bridges and Disney, 2004; Fricke et al., 2007; Kempson, 2002; Del Rio and Young, 2005). Both concepts of household indebtedness have drawbacks. As for objective debt measures, it is not straightforward to define critical levels (Betti et al., 2001) of e.g., the ratio of debt service and income, that would be valid for any household type. Over the lifecycle, households show different preferences for savings and debt. Depending on the income *level*, a cer-

tain objective debt measure may also reflect different degrees of financial fragility for different household types. However, the inclusion of objective debt burdens in economic analysis is relevant. In Germany, entering a consumer insolvency proceedings and benefiting from the associated debt cancellation is linked to the relation between household income, debt service, and a subsistence level (the non-seizable income). Furthermore, overindebtedness of private households in the German public debate often refers to objective measures of debt burdens (Fricke et al., 2004; Zimmermann, 2007). Similarly, financial ratios capturing debt repayments and income serve as indicators for the financial fragility of a household (DeVaney and Lytton, 1995).

As for self-assessed debt burdens, it is sometimes claimed that households should know best by themselves whether their debt level is critical (Betti et al., 2007). If subjective debt burdens include information that goes beyond the objective debt burden, they can offer a rich source of information for research. However, conclusions drawn from self-assessed debt burdens can be biased or even misleading if they are influenced by non-financial considerations and by factors a researcher cannot control for.

The results of this paper show that subjective debt perception differs notably among households. Differences are detectable for the current financial situation (income, household size), and for expectations of future incomes: for instance, unemployed household heads perceive significantly higher debt burdens while age and education have only reduced explanatory power. Depending on the model specification, subjective debt burdens are also different for East Germans and women. However, only some of the observed differences in debt perception can be explained by differences in general life satisfaction, health, and personal traits (such as risk attitudes and the self-evaluation of being a worrier). I draw several conclusions: (1) Similar to other fields of economic behavior, debt perception differs among population subgroups and may be unrelated to the economic situation. (2) There are misperceptions in subjective debt burdens that possibly induce financial distress (in case of frivolity towards debt) or suboptimal consumption constraints (in case of over-anxiety towards financial risk-taking). (3) Relying on self-assessed debt statements will lead to biased results for policy analysis if the researcher does not fully account for non-financial factors.

The paper is structured in the following way: The second section provides a literature overview and discusses theoretical implications. The third section describes the dataset and the selected sample. The fourth section explains the econometric model. The fifth section displays the estimation results. The sixth section concludes.

2 Literature overview and theoretical considerations

In the empirical economic literature, the issue of household debt is still rather neglected [1] even if a couple of household surveys include information on debt issues. However, the explicit comparison of objective and subjective debt burdens is still an unexplored field of research.

One exception is the recent work by Georgarakos et al. (2009) who estimate an ordered probit model with random effects with an ordinal scale of self-assessed financial distress as the dependent variable using data from the European Community Household Panel survey. Thereby, they include the ratio of mortgage repayment and income as a main control variable. Unfortunately, the authors are not able to distinguish between mortgage repayments and housing costs in general. Strictly speaking, they examine the impact of overall housing costs on subjective financial burdens. However, the share of mortgage repayments in overall housing costs may vary notably, especially between the different countries under investigation. For the vast majority of countries, they find that the subjective debt perception (controlling for the objective situation) differs with unemployment, marital status, health, and the presence of children in the household.

Del Rio and Young (2005) investigate the determinants of self-assessed financial distress using the British Household Panel Survey. However, their main intention is not an examination of differences in subjective debt perception. The subjective debt burden they use is a statement on whether the household's debt repayments constitute "a heavy burden, somewhat of a burden or not a problem" (p. 17). Applying an ordered logit model, they identify the unsecured-debt-to-income ratio and the level of mortgage income gearing as the main factors of subjective debt burdens and conclude that both concepts of indebtedness must be somehow related [2]. Furthermore, self-assessed financial distress is significantly higher for unemployed, while there are no significant differences for gender.

Lenton and Mosley (2008) analyze the determinants of debt concern. [3] They run random-effects panel regressions and find that debt worrying is less severe among men and households above the poverty line while it increases with age and with number of children.

[1] For Germany, there are only a few studies dealing with household debt on the micro-level. A literature overview is offered by Keese (2009).

[2] "...as we are able to reject the hypothesis that our subjective measures of the burden of debt are entirely random", (p. 29).

[3] "Do you worry about debt problems?" Answer choices: "always; often; seldom; and never (p. 7). Their data source is the Families' and Children's Survey.

My study goes far beyond the few existing contributions in several respects: I consider consumer credit as well as home loans. Furthermore, since empirical evidence suggests associations between psychological factors and debt (e.g., Livingstone and Lund, 1992; Webley and Nyhus, 2001), I use a large set of control variables, including personality traits and health variables, in addition to sociodemographic and economic characteristics.

A similar discussion on subjective vs. objective measures is known from the health economics literature. Several authors have investigated the issue of reporting heterogeneity of the self-assessed health status given a certain objective health indicator (see, e.g., Lindeboom and Van Doorslaer, 2004; Bound, 1991). There are some analogies in analyzing a debt burden and a health status. In both cases, the assessment of the objective measure is prone to measurement error: the latent health status is not observable, such as the latent debt burden of a household; the objective statement is, in both cases, only a proxy while the self-assessed statement can be influenced by factors that are not related to health or household finance, respectively.

Why should subjective debt perception differ among households? Basically, discrepancies between subjective and objective debt measures can be attributed to (1) measurement errors or to (2) differences in preferences, financial circumstances, and misperceptions of the real financial situation. There is no reason to believe that the distribution of measurement error should be systematically different in population subgroups, e.g., among women, younger household heads, or East Germans. Therefore, differences in debt perception are most likely to originate from the second bundle of causes. Some possible explanations for differences in debt perception can be gained from economic theory and intuition; I group them in three categories:

First, the current financial situation should matter. When assuming that the current household income is a suitable proxy for lifetime earnings, households with a higher income should report lower subjective debt burdens given a certain debt-repayment-to-income ratio. Secondly, a residual income level after debt repayments that is usually higher for richer households should have a similar relaxing effect on debt perception. Similarly, household size should be important since the equivalent household income increases with the number of household members.

Second, subjective debt burdens may differ due to financial reasons that go beyond the current household budget, namely by the attitude towards debt and by financial expectations. Economic theory gives several determinants for increased debt demand,

e.g., life-cycle considerations[4]: younger households would then report lower burdens if confronted with a certain objective debt burdens since it is somehow *natural* in their position in the life-cycle to accumulate more debt compared to older households, due to higher expenses for housing or durable goods. Furthermore, I argue that subjective debt perception differs with education since human capital yields to increases in expected lifetime income. As for unemployed, two dimensions are possible: On the one hand, if the period of unemployment is expected to be short, the household will be more likely to indebt in expectation of higher future income. Therefore, a given objective debt burden should not come along with a higher (but a lower) subjective burden after controlling for income since the household may be willing to raise debt during unemployment to keep the former consumption level. On the other hand, if unemployment is expected to continue, a given objective debt burden may constitute a higher subjective burden since the household cannot expect an increasing income in the future.

Third, factors that are unrelated to the financial situation of the household (such as the cultural and personal background of the household head) could play a role. Therefore, I check for differences in debt perception for gender, migrants, and East Germans. Several studies have found gender differences in economic risk behavior and have concluded that women tend to be less risk-averse and more cautious in taking financial risks (see e.g., Jianakoplos and Bernasek, 1998; Powell and Ansic, 1997; as well as, for an overview of experimental studies, Croson and Gneezy, 2009). As for household debt, this can be reflected by higher subjective debt burdens of women compared to men. In addition, I use individual information on health, overall life satisfaction and personal traits (e.g., risk aversion) to explain subjective debt burdens.

I expect homeowners and tenants to have systematically different debt perceptions since the former ones generally own more wealth. Even if assuming that a debt repayment puts the same pressure on the household budget of both a houseowner and a tenant, a certain household budget (after debt repayments) should be more relaxed for homeowners since they have no expenditures for rent, but only for maintenance.

[4]Modigliani and Brumberg (1954). For the theoretical considerations on household debt discussed here, I refer to the overview in Bertola et al. (2006).

3 Dataset description

I use the German Socio-Economic Panel to contrast subjective and objective debt burdens. The SOEP, located at the DIW Berlin (German Institute of Economic Research), started in 1984 and, in 2008, surveyed more than 20,000 individuals in more than 11,000 households.[5] A main feature of this dataset is the fact that it contains statements on both objective and subjective debt burdens. Furthermore, it offers a wide range of variables on the economic and socio-demographic background, household composition, marital status, health, life satisfaction, and personality of the surveyed people.

As for debt, the household heads are asked for their monthly debt service for home loans and consumer credits. The exact wording of the questions is the following: "How high are the monthly loan or mortgage payments including interest for this loan or mortgage? Aside from debts on loans for home and property ownership, are you currently paying back loans and interest on loans that you took out to make large purchases or other expenditures? How high is the monthly rate that you pay on these loans?" [6] Furthermore, a self-assessed debt burden has been collected since 2005. The exact wording reads as follows: "Does repaying these loans place a major burden on your household, a minor burden, or no burden at all?" (Answer choices: "Major burden", "minor burden", or "no burden".)

In addition to these debt-related statements, I use information on household size and composition, as well as socio-demographic and socio-economic characteristics of the household head, such as gender, age, education, employment, and marital status. Furthermore, I have information on personal traits and circumstances that might influence on debt perception. The most important variable with respect to financial decisions is probably the risk attitude. I use a measure of general risk attitude surveyed in 2004 and 2006: "How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?" The answers are ranked on a 11-point-scale (zero: "risk averse" to ten: "Fully prepared to take risks") with zero being most risk averse.

A special question on the willingness of taking financial risks was only surveyed in 2004. Dohmen et al. (2005) provide a discussion of the risk survey measures in the SOEP and show that the general measure is the best predictor of personal behavior in

[5] For details, see Wagner et al. (2007).

[6] The SOEP Household Questionnaires (as well as the Individual Question Forms) are available at: http://panel.gsoep.de/soepinfo2008/.

Table 1: Objective debt measures

Debt measure	Definition
D_1^{OBJ}	Debt service (only consumer credits) as share of total household income
D_2^{OBJ}	Total debt service (consumer credits and home loans) as share of total household income
D_3^{OBJ}	Relation of household income (minus consumer credit payments) and potential subsistence level (non-seizable income)
D_4^{OBJ}	Relation of household income (minus total debt service) and potential subsistence level (non-seizable income)

Note. Monthly net household income and monthly debt repayments. Own illustration.

financial affairs. I use the statement on taking risks made in 2004 for all waves since recurring on the 2006 information yields many missing values for this variable. I thereby assume that risk aversion is relatively stable over small periods even if Dohmen et al. (2005) find some evidence for changes in risk attitudes over the life-cycle. In addition, I use information on general life satisfaction, health status, and whether the respondents characterize themselves as being a worrier. General life satisfaction and health status are surveyed annually: "How satisfied are you with your life, all things considered? Please answer according to the following scale: 0 means *completely dissatisfied*, 10 means *completely satisfied*." "How would you describe your current health?" "Very good", "good", "satisfactory", "poor", "bad". The question on being a worrier was asked in the Wave 2005: "I see myself as someone who ...*worries a lot*. 1 means *does not apply to me at all*, 7 means *applies to me perfectly*".

A drawback of the survey lies in the fact that the question on self-assessed debt burdens only refers to consumer credits and is therefore only answered by households with this type of debt. However, it is questionable whether individuals are psychologically able to separate different debt burdens. This lack of clarity has two consequences: Firstly, I can only include observations with positive consumer debt in the analysis. Secondly, I have to apply different concepts of objective debt burdens (displayed in Table 1) and check whether the results for homeowners are sensitive to the inclusion of housing debt repayments.

D_1^{OBJ} is the ratio of the monthly debt service for consumer credits and the household income, $D_2^{OBJ}$the ratio of the total debt service and the household income. For tenants, D_1^{OBJ} and $D_2^{OBJ}$are obviously identical while they can differ for homeowners depending

on whether a home loan has to be repaid. $D_3^{OBJ}$and D_4^{OBJ}relate income, debt, and subsistence level: $D_3^{OBJ}$is the ratio of the residual household income (income minus debt service for consumer credits) and the potential non-seizable income[7], D_4^{OBJ}considers the total debt service. For tenants, the measures $D_3^{OBJ}$and D_4^{OBJ} are identical. The interpretation of the debt measures is different: the higherD_1^{OBJ} and D_2^{OBJ}, the higher the objective debt burden; the higher D_3^{OBJ} and D_4^{OBJ}, the more alleviated is the debt situation of the household.

I treat housing debt and unsecured debt (for consumer credits) differently since housing debt is associated with accumulation of long-lasting wealth. I do not include further wealth variables for two reasons: Firstly, housing wealth is exceptional since homeownership saves rent and relaxes the household budget of owners compared to tenants. Wealth other than housing should not play an important role since debt repayments for consumer credits may indicate that the household does not own a lot of (liquid) wealth. Secondly, wealth is not annually observed in the SOEP.

I construct dummies for several subgroups of the sample, namely year dummies to check for developments over time (2005-2008), age dummies to check for life-cycle effects (household head aged below 30, between 30 and 45, between 45 and 60, and older than 60 years), education dummies (university entrance qualification and university degree of the household head), as well as dummies for households in East Germany, with a female, an unemployed, or a non-German head, and a person who characterizes herself as being a worrier. Furthermore, I take statements of the household head on risk attitudes, the health status, overall life satisfaction, as well as different household characteristics (current income[8], number of adults[9], and children). I also insert several dummies for the marital status of the respondent, such as *married and living together, married but living separately, divorced, widowed,* and *not married* (the latter is the reference group), as well as a dummy which indicates whether the respondent has a steady partnership.

I exclude households with more than two adults since I cannot be sure that these household communities composed of more than one generation do indeed pool their resources and do indeed have a joint budget. Therefore, they are not likely to decide jointly on debt. In addition, I neglect households with incomplete information on the

[7] For details, refer to Keese (2009). As a robustness check, I also use a second subsistence level, namely the potential social-assistance level.

[8] Deflated household net income. I use the average growth rate of household net income between 1995-2005 (1.48%) to adjust the observed income levels of the years 2005-2008 (see Federal Statistical Office, 2006).

[9] An *adult* household member is aged older than 16.

variables that are relevant for my investigation.

The finite sample includes 6,107 household observations from 2005-2008 which represented more than five millions of German households in every period. Table 2 shows the descriptive statistics.

4 Econometric model

Generally, subjective or self-assessed measures of debt burdens have categorical responses. To consider the hierarchical order of the self-assessed debt burden (*major burden*, *minor burden*, or *no burden*), I apply an ordered logit model (compare to Wooldridge, 2002). To ensure interpersonal comparability, I exploit the panel structure of the data at hand and estimate random-effects panel models.

Let D_{it}^{*} denote the latent debt burden of a household. As a proxy for D_{it}^{*}, I use objective debt measures, D_{it}^{OBJ}:

$$D_{it}^{*} = f(D_{it}^{\mathrm{OBJ}}; \beta_1) + u_{\mathrm{i}} + \nu_{it} \tag{1}$$

The error term consists of a household-specific, time-invariant component, u_i, and an idiosyncratic component, ν_{it}. The ordered logit model to be estimated reads as follows:

$$D_{it}^{\mathrm{SUB}} = j \qquad if \quad \alpha_{\mathrm{j\text{-}1}} < f(D_{it}^{\mathrm{OBJ}}; \beta_1) + u_{\mathrm{i}} + \nu_{it} \leq \alpha_{\mathrm{j}} \tag{2}$$

In the first set of regressions, I include a matrix X_{it} that contains the subgroup dummies as well as household income, number of adults, and children. Thus, a significant coefficient β_2 indicates a parallel shift in cut-points for this subgroup implying a significantly different reporting behavior given a certain objective debt burden. In the second set of regressions, I also include the measure of personal traits and circumstances such as attitudes towards risk:

$$D_{it}^{\mathrm{SUB}} = j \qquad if \quad \alpha_{\mathrm{j\text{-}1}} < f(D_{it}^{\mathrm{OBJ}}; \beta_1) + \beta_2 * X_{it} + \beta_3 * PERS_{it} + u_{\mathrm{i}} + \nu_{it} \leq \alpha_{\mathrm{j}} \tag{3}$$

The functional form of $f(D_i^{\mathrm{OBJ}}; \beta_1)$ is unknown. I assume a quadratic specification indicating that the probability of reporting higher debt burdens increases (but non constantly) with the objective debt burden:

$$f(D_{it}^{\mathrm{OBJ}}; \beta_1) = \beta_{11} * D_{it}^{\mathrm{OBJ}} + \beta_{12} * (D_{it}^{\mathrm{OBJ}})^2 \tag{4}$$

Table 2: Descriptive statistics of the sample

	Tenants	Homeowners	All
D_1^{OBJ}	0.13	0.11	0.12
D_2^{OBJ}	0.13	0.28	0.18
D_3^{OBJ}	1.13	1.34	1.21
D_4^{OBJ}	1.13	1.09	1.12
Consumer credit	1.00	1.00	1.00
home loan	0.00	0.78	0.27
Houseowner	0.00	1.00	0.35
No burden	0.22	0.28	0.24
Minor	0.39	0.43	0.41
Major	0.39	0.29	0.35
Mean age	41.84	47.28	43.74
Age group (<30)	0.22	0.06	0.16
Age group (30-45)	0.44	0.45	0.44
Age group (45-60)	0.24	0.34	0.27
Age group (>60)	0.10	0.16	0.12
Univ. entrance qualif.	0.25	0.30	0.27
University degree	0.16	0.28	0.21
Mean income (deflated)	2,242	3,253	2,595
Unemployed	0.10	0.04	0.08
East Germany	0.27	0.28	0.27
Migrant	0.07	0.04	0.06
Female	0.44	0.37	0.41
Health status	2.66	2.63	2.65
Life satisfaction	6.48	6.93	6.64
Trait: worried	4.84	4.66	4.78
Risk attitude	5.08	5.13	5.10
Observations	3,976	2,131	6,107
Obs. 2005 (weighted)	989 (3.84 mill)	504 (1.42 mill)	1,493 (5.23 mill)
Obs. 2006 (weighted)	1,040 (3.58 mill)	519 (1.45 mill)	1,559 (5.03 mill)
Obs. 2007 (weighted)	985 (3.84 mill)	530 (1.48 mill)	1,515 (5.32 mill)
Obs. 2008 (weighted)	962 (3.96 mill)	578 (1.68 mill)	1,540 (5.64 mill)

Note. D_1^{OBJ} : Debt service (consumer credit) / Income; D_2^{OBJ} : Total debt service / Income; D_3^{OBJ} : Income - debt service (consumer credit) / Subsistence level; D_4^{OBJ} : Total debt service / Subsistence level. Own calculations. Characteristics of the household (head). Data source: SOEP 2005-2008.

5 Econometric results

5.1 Joint vs. separate estimation

I first check whether homeowners and tenants should be treated differently or whether I can include all observations in one model and capture effects resulting from homeownership by inserting dummies and slope parameter for homeowners. The results of the likelihood-ratio tests displayed in Table 3 indicate that estimating different models for homeowners and tenants leads to more reliable results. For the vast majority of objective debt burdens that I use, the hypothesis that the joint model is nested in the two separate models has to be rejected (expect for D_1^{OBJ}). I therefore run separate regressions for homeowners and tenants.

Table 3: Homeowners vs. tenants: LR-tests for joint estimation

	D_1^{OBJ}	D_2^{OBJ}	D_3^{OBJ}	D_4^{OBJ}
Not controlling for personal traits etc.				
$LR\ \chi^2$	1.55	312.11	53.68	169.75
$Prob > \chi^2$	1.000	0.000	0.000	0.000
Controlling for risk attitudes				
$LR\ \chi^2$	0.40	265.75	50.14	145.66
$Prob > \chi^2$	1.000	0.000	0.000	0.000
Controlling for personal traits etc.				
$LR\ \chi^2$	19.00	256.38	60.75	147.92
$Prob > \chi^2$	0.9214	0.000	0.001	0.000

Note. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Column header: objective debt measure used in the regression (see Table 1). Data: SOEP 2005-08.

5.2 Tenants

Objective debt burdens

For tenants, only $D_1^{OBJ}$and $D_3^{OBJ}$are relevant. Table A1 (appendix) displays the regression results. As expected, the coefficients of the debt-to-income ratio D_1^{OBJ} are significantly[10] positive, the coefficients of the debt indicator D_3^{OBJ}, which relate house-

[10]Here and in the following, I use the term *significant* if the p-value lies below the 5-%-level.

hold income and debt service to the non-seizable income, are significantly negative. A positive coefficient of the linear term indicates that the probability of reporting *no burden* declines with the debt-service-to-income ratio while the probability of reporting *major burden* rises.

The opposite is true for the measure D_3^{OBJ}. If the residual income exceeds the subsistence level more notably, the household's perception (*no burden* or *major burden*) will be adjusted accordingly. In all cases, the effect on the middle category *minor burden* is ambiguous. The coefficients of the quadratic terms are always different from the linear ones. Therefore, higher objective debt burdens do not reinforce but attenuate e.g., the probability of reporting *major burden*. Such a result is rather surprising since one would expect that a higher objective debt burden increases the subjective perception more than proportionally.

Household composition

The impact of household size (adults and children) on debt perception is as expected. The coefficients for both the number of adults and children carry a significantly positive sign for the debt-service-to-income ratio and a significantly negative sign for the debt measures which include the subsistence level. The former result is due to the fact that the equivalent household income rises with the number of household members. Therefore, a given relative debt payment will put more pressure on the budget if the household size increases. Since the objective debt burden D_3^{OBJ} already controls for the subsistence level, the subjective debt perception significantly decreases with household size.

I quantify the differences in subjective debt burdens by calculating the marginal effects of reporting *no burden*, *minor burden*, and *major burden* (following the methodology in Wooldridge, 2002). These effects are displayed in Table 4 (not controlling for traits, etc.) and Table 5 (including all controls). The results are quite robust against the inclusion of all control variables. For instance, an additional child increases the probability of reporting *major burden* by five to six, an additional adult by up to six percentage points (D_1^{OBJ}). Contrarily, the probability of reporting *major burden* declines by about five (child) and up to more than 13 percentage points (adult) (D_3^{OBJ}).

Table 4: Selected marginal effects (tenants) (not controlling for traits, etc.)

	Number of adults	Number of children	University degree	Unemployed	Age <30	Female	East German
D_1^{OBJ}							
No	-0.022*	-0.031***	0.057**	-0.096***	0.026	-0.038***	0.008
	(0.012)	(0.009)	(0.025)	(0.022)	(0.018)	(0.013)	(0.015)
Minor	-0.013	-0.021	0.019	-0.105**	0.010	-0.019	0.004
	(0.018)	(0.015)	(0.030)	(0.047)	(0.020)	(0.020)	(0.016)
Major	0.035	0.052***	-0.077**	0.200***	-0.036	0.057***	-0.012
	(0.023)	(0.015)	(0.030)	(0.042)	(0.023)	(0.022)	(0.022)
D_3^{OBJ}							
No	0.108**	0.035**	0.033	-0.084***	0.041*	-0.007	0.034*
	(0.042)	(0.016)	(0.023)	(0.030)	(0.021)	(0.012)	(0.019)
Minor	0.026	0.018	0.019	-0.110**	0.021	-0.005	0.021
	(0.052)	(0.019)	(0.027)	(0.054)	(0.026)	(0.014)	(0.024)
Major	-0.135***	-0.053***	-0.052	0.194***	-0.062**	0.011	-0.055**
	(0.026)	(0.015)	(0.033)	(0.043)	(0.026)	(0.021)	(0.025)

Note. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_3^{OBJ} : (Income - repayments) / Subsistence level. Data: SOEP 2005-08.

Table 5: Selected marginal effects (tenants) (controlling for traits, etc.)

	Number of adults	Number of children	University degree	Unemployed	Age <30	Female	East German
D_1^{OBJ}							
No	-0.039**	-0.039***	0.045*	-0.068***	0.010	-0.034**	0.013
	(0.017)	(0.013)	(0.026)	(0.025)	(0.018)	(0.016)	(0.016)
Minor	-0.024	-0.024	0.015	-0.053	0.004	-0.015	0.005
	(0.034)	(0.026)	(0.036)	(0.051)	(0.021)	(0.026)	(0.020)
Major	0.063*	0.063***	-0.060*	0.121***	-0.013	0.049**	-0.018
	(0.033)	(0.020)	(0.031)	(0.043)	(0.024)	(0.023)	(0.022)
D_3^{OBJ}							
No	0.104**	0.030*	0.027	-0.057**	0.026	-0.011	0.037*
	(0.048)	(0.016)	(0.023)	(0.027)	(0.021)	(0.014)	(0.022)
Minor	0.022	0.014	0.014	-0.053	0.013	-0.007	0.020
	(0.066)	(0.022)	(0.031)	(0.051)	(0.027)	(0.018)	(0.031)
Major	-0.126***	-0.043**	-0.041	0.110***	-0.038	0.018	-0.057**
	(0.037)	(0.017)	(0.032)	(0.042)	(0.027)	(0.022)	(0.026)

Note. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_3^{OBJ} : (Income - repayments) / Subsistence level. Data: SOEP 2005-08.

Age

The reference group consists of heads of household aged between 30 and 45. The coefficient for the group under 30 years of age is significantly negative in two regressions (D_3^{OBJ}); in contrast, older household heads (46-60 years) report significantly higher subjective debt burdens, even when controlling for personal traits, life satisfaction, and health. These findings can be explained with life-cycle considerations. Since household indebtedness is more *natural* in earlier periods of the life-cycle, younger households may feel less constrained by their debt burden. Furthermore, one may argue that younger cohorts have a stronger attitude towards debt, especially consumer credits. However, the oldest age group (older than 60 years) does not show significant differences. All in all, the effect of age on debt perception is rather weak and lower than expected.

Further covariates related to the current or the future economic situation

The coefficients of household income are significant in all regressions. As for the debt-service-to-income ratio D_1^{OBJ}, the significantly negative sign confirms the expectation that a higher residual income (after debt repayments) leads to a lower subjective debt burden. Accordingly, the coefficients are significantly negative for the debt measure D_3^{OBJ}. To keep a certain constellation of income, debt service, and subsistence level, a rise in income implies that the debt burden has to rise in the same way so that the residual income stays constant. Therefore, the higher subjective debt burden may result from the increase in the absolute debt repayment while it is neglected that the income has also risen.

Two education dummies are included in the regressions, namely *university entrance qualification* (abitur) and *university degree*. The effect of education is mostly captured by the coefficient of *university degree*. However, this coefficient is only significant (and negative) in the D_1^{OBJ}regressions. The marginal effect of *university degree* ranges between six and eight percentage points. Taking education as proxy for life-time earnings, these findings suggest that expectations on future incomes are less important than expected when assessing the current debt burden.

Households with an unemployed head report significantly higher subjective debt burdens (positive sign of the coefficient for the dummy *unemployed* in all specifications). This effect does not disappear when including all control variables. The marginal effects are quite high but become smaller when including all control variables: the probability

of reporting *major burden* lies between 11 and 20 percentage points higher in case the household head is unemployed. Accordingly, the probability of reporting *no burden* is between six and ten percentage points lower. For unemployed individuals, the SOEP also asks whether the person is optimistic in finding a new job ("easy") or pessimistic ("difficult" or "almost impossible"). Since basically all unemployed respondents in my sample are pessimistic with respect to finding a new job, I conclude that nearly all unemployed in my sample expect their unemployment spell to last a while. Thus, the higher debt perception may result before all from bad expectations about future income streams (e.g., since the unemployment replacement rate drops after some months of unemployment) and unemployed may anticipate debt-related burdens occurring in future periods. In addition, a psychological burden associated with unemployment could have an impact as well. However, it is not possible to separate both effects.

Other covariates

The coefficients for females are significant in the D_1^{OBJ}regressions which indicates the existence of gender differences in subjective debt burdens that do not result from differences in personal characteristics such as risk attitudes. In all D_1^{OBJ} specifications, women tend to report *major burden* significantly more often (five to six percentage points). However, the female coefficients are insignificant in the D_3^{OBJ}regressions.

Debt perception of East German households differs significantly from West German households. The coefficients yield a significantly negative sign in all specifications of the D_3^{OBJ} regressions. The probability of reporting *no burden* is three to four percentage points higher; the probability of *major burden* is six percentage points lower. An easy interpretation is not at hand. If expectations about the future economic situation or the economic environment played an important role, the opposite finding would be more convincing since both aspects are generally worse in East Germany. Since the *East* coefficient is only significant in the D_3^{OBJ} regressions (and D_3^{OBJ} controls for the subsistence level), the results may illustrate the fact that living expenses and the average income level are usually lower in East Germany while the subsistence level does not discriminate between East and West Germany (the non-seizable income is equal in both parts of Germany). Possibly, the own financial situation relative to the one in the near personal environment alleviates the subjective perception of the given debt situation. As well, cultural differences may still be decisive, also in subjective debt perception.

As for the personal traits under consideration, risk aversion itself is insignificant in all regressions (such as the health status) but the inclusion of risk attitudes in the regression has an impact on the significance of other control variables. In contrast, differences in subjective debt perception are indeed significantly related to overall life satisfaction (the higher the life satisfaction, the lower the subjective debt burden) and to being a worrier.

The third specification of the model contains the entire set of control variables, including the marital status and information on a partnership of the respondent. The coefficients of the marital states themselves are statistically insignificant, except the dummy *married but living separately* which carries a significantly positive sign. The probability to answer *major burden* is nine to ten percentage points higher for respondents who are married but not living with their spouse (results not reported). A possible explanation is that separation comes along with a psychological burden which is transferred to the subjective perception of household debt.

The dummy for household heads without a German citizenship does not show a significant impact on debt perception.

5.3 Homeowners

Objective debt measures

The impact of the objective debt measures is similar for homeowners and tenants. In all regressions (Table A2a and Table A2b), the coefficient of the linear term is significantly positive in the debt-service-to-income ratios (D_1^{OBJ}, D_2^{OBJ}) and significantly negative when considering the potential subsistence levels (D_3^{OBJ}, D_4^{OBJ}). Again, the coefficients of the quadratic term have the opposite sign; all are statistically significant.

Household composition

The influence of the household composition on subjective debt perception is similar for homeowners and tenants. Again, a further child increases the probability of reporting *major burden* for D_1^{OBJ} and D_2^{OBJ}in most specifications while lowering the probability of reporting *no burden*. The opposite holds for D_3^{OBJ} and D_4^{OBJ}. The number of adult household members has only a significant influence when considering the subsistence level (D_3^{OBJ} and D_4^{OBJ}). The marginal effects are displayed in Table 6 and Table 7.

Table 6: Selected marginal effects (homeowners) (not controlling for traits etc.)

	Number of adults	Number of children	University degree	Unemployed	Age <30	Female	East German
D_1^{OBJ}							
No	-0.045*	-0.040**	0.065*	-0.143***	0.046	-0.057**	-0.051*
	(0.026)	(0.015)	(0.038)	(0.054)	(0.051)	(0.026)	(0.028)
Minor	-0.001	-0.001	-0.010	-0.062	-0.009	0.003	0.001
	(0.039)	(0.024)	(0.043)	(0.099)	(0.048)	(0.036)	(0.035)
Major	0.046	0.041**	-0.055*	0.204**	-0.037	0.054*	0.050*
	(0.044)	(0.018)	(0.032)	(0.082)	(0.039)	(0.029)	(0.030)
D_2^{OBJ}							
No	-0.016	-0.024*	0.064*	-0.137**	0.028	-0.048*	-0.084***
	(0.031)	(0.014)	(0.038)	(0.054)	(0.050)	(0.025)	(0.032)
Minor	0.000	-0.001	-0.006	-0.071	-0.006	-0.001	-0.007
	(0.030)	(0.017)	(0.042)	(0.097)	(0.041)	(0.033)	(0.050)
Major	0.016	0.025*	-0.058*	0.208**	-0.023	0.049	0.091**
	(0.038)	(0.015)	(0.034)	(0.082)	(0.038)	(0.029)	(0.038)
D_3^{OBJ}							
No	0.165**	0.051*	0.056	-0.143**	0.032	-0.056*	-0.059*
	(0.084)	(0.027)	(0.039)	(0.068)	(0.050)	(0.029)	(0.032)
Minor	-0.052	-0.005	-0.003	-0.109	-0.003	-0.005	-0.007
	(0.107)	(0.035)	(0.044)	(0.124)	(0.039)	(0.043)	(0.047
Major	-0.113***	-0.045**	-0.053	0.252***	-0.028	0.060*	0.066*
	(0.036)	(0.018)	(0.036)	(0.092)	(0.042)	(0.034)	(0.037)
D_4^{OBJ}							
No	0.097*	0.025	0.055	-0.143**	0.023	-0.052**	-0.074**
	(0.059)	(0.017)	(0.037)	(0.057	(0.050)	(0.025)	(0.032)
Minor	-0.019	-0.001	-0.003	-0.098	-0.004	-0.003	-0.009
	(0.061)	(0.017)	(0.038)	(0.105)	(0.036)	(0.034)	(0.046)
Major	-0.078***	-0.024*	-0.052	0.241***	-0.020	0.056*	0.083**
	(0.023)	(0.014)	(0.034)	(0.085	(0.040)	(0.030)	(0.036)

Note. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_2^{OBJ} : Total debt service / Income; D_3^{OBJ} : (Income - repayments) / Subsistence level; D_4^{OBJ} : Total debt service / Subsistence level. Data: SOEP 2005-08.

Table 7: Selected marginal effects (homeowners) (controlling for traits etc.)

	Number of adults	Number of children	University degree	Unemployed	Age <30	Female	East German
D_1^{OBJ}							
No	-0.044	-0.027*	0.038	-0.123*	0.018	-0.044	-0.035
	(0.039)	(0.016)	(0.036)	(0.066)	(0.047)	(0.029)	(0.028)
Minor	-0.006	-0.002	-0.002	-0.057	0.000	-0.001	-0.001
	(0.061)	(0.026)	(0.043)	(0.125)	(0.046)	(0.043)	(0.038)
Major	0.050	0.029	-0.037	0.180*	-0.017	0.045	0.036
	(0.061)	(0.019)	(0.034)	(0.093)	(0.044)	(0.032)	(0.031)
D_2^{OBJ}							
No	-0.029	-0.015	0.043	-0.120*	0.002	-0.030	-0.064*
	(0.039)	(0.014)	(0.037)	(0.067)	(0.047)	(0.027)	(0.035)
Minor	-0.005	-0.002	0.000	-0.068	0.000	-0.003	-0.009
	(0.051)	(0.018)	(0.045)	(0.123)	0.039)	(0.034)	(0.057)
Major	0.034	0.017	-0.044	0.189**	-0.002	0.033	0.073*
	(0.058)	(0.016)	(0.036)	(0.093)	(0.045)	(0.029)	(0.042)
D_3^{OBJ}							
No	0.156	0.061*	0.035	-0.125	0.002	-0.049	-0.038
	(0.106)	(0.036)	(0.037)	(0.079)	(0.045)	(0.034)	(0.030)
Minor	-0.037	-0.003	0.002	-0.094	0.000	-0.008	-0.007
	(0.138)	(0.054)	(0.043)	(0.145)	(0.036)	(0.052)	(0.044)
Major	-0.119*	-0.058**	-0.037	0.219**	-0.002	0.057	0.045
	(0.059)	(0.028)	(0.037)	(0.101)	(0.048)	(0.037)	(0.036)
D_4^{OBJ}							
No	0.074	0.030	0.036	-0.125*	-0.005	-0.039	-0.054*
	(0.071)	(0.021)	(0.036)	(0.071)	(0.045)	(0.028)	(0.033)
Minor	-0.006	0.000	0.002	-0.087	0.000	-0.005	-0.010
	(0.074)	(0.027)	(0.040)	(0.130)	(0.037)	(0.039)	(0.051)
Major	-0.068	-0.031*	-0.038	0.213**	0.005	0.044	0.063
	(0.042)	(0.018)	(0.035)	(0.095)	(0.047)	(0.032)	(0.039)

Note. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_2^{OBJ} : Total debt service / Income; D_3^{OBJ} : (Income - repayments) / Subsistence level; D_4^{OBJ} : Total debt service / Subsistence level. Data: SOEP 2005-08.

Age

Age has no influence on the subjective debt burdens; the respective coefficients are mostly insignificant. The only exception is the oldest group that reports significantly higher subjective debt burdens when considering the total debt service. As before, given that debt should be more common in early stages of the life-cycle, the oldest household heads may express their concern about still having loan repayments and, therefore, report higher subjective debt burdens

Further covariates related to the current or the future economic situation

The effect of household income is significant and similar to the tenants regressions. Education plays even a minor role for homeowners than for tenants, the coefficients of *university entrance qualification* are insignificant in all specifications; the effect of *university degree* on debt perception disappears when including the entire set of control variables.

In contrast, unemployment has a significant impact on subjective debt perception that is robust against the inclusion of the additional control variables. The marginal effects are quite large: an unemployed household head has a much lower probability of reporting *no burden* (12 to 14 percentage points) and a much higher probability of reporting *major burden* (up to 25 percentage points). These results do not change in a notable manner when controlling e.g., for personal traits. However, the marginal effects decrease (18 to 22 percentage points).

Other covariates

The results for the other covariates are rather mixed and depend on the specification: Again, women are significantly more likely to report *major burden* and less likely to report *no burden* (about four to six percentage points). However, the differences in debt perception are mostly driven by differences in personal traits and characteristics. The marginal effects become insignificant when including the entire set of control variables in the regression.

The coefficients of *East German* are significantly positive in most regressions. However, the marginal effects are mostly insignificant when using all control variables. In the basic specification with the limited set of controls, the probability to report *no burden* is five to eight percentage points lower for East German homeowners (*major burden*: five to nine percentage points higher). To sum up, East German homeowners

report significantly higher subjective debt burdens (in contrast to tenants), but to a large extent, these differences can be attributed to differences in personality traits and, most important, overall life satisfaction.

As before, being non-German has no influence on debt perception. For homeowners, neither the personality traits (risk aversion, being a worrier) nor the health status has a significant impact on debt perception; only life satisfaction has explanatory power.

As for the marital states, both *married but living separately* and *divorced* have a significantly positive coefficient in all relevant regressions. The marginal effects for both are notably high: *married but living separately* increases the probability of reporting *major burden* by up to 17 percentage points; *divorced* by up to 13 percentage points (results not reported). My findings are in line with the study by Del Rio and Young (2005) who also find a significant association between being divorced and self-reported financial distress. As indicated before, since I control for income and the objective debt burden, my interpretation is that these results are not driven by the financial situation but by a more pronounced emotional susceptibility to stress and strains due to the familial situation.

5.4 Robustness checks

I vary the set of control variables to check the robustness of the obtained results. For instance, I exchange the household income in the estimation equation by the equivalent household income (household income divided by the square root of the number of household members). This modification does not alter the conclusions drawn above. However, controlling explicitly for an equivalent income leads to insignificant coefficients for *number of adults* and *number of children* in most regressions which is not surprising.

Furthermore, I vary the subsistence level in the objective debt measures D_3^{OBJ} and D_4^{OBJ}. Instead of the non-seizable household income, I use the potential social assistance level. The latter concept of subsistence is notably lower than the non-seizable income. It comprises payments for rent, heating costs, and fixed amounts depending on the age of the household members; in detail, the procedure to calculate the potential social assistance level of each household is described in Keese (2009). For both concepts of subsistence level, the results remain qualitatively unchanged.

6 Conclusion

This paper investigates whether the subjective perception of objective debt burdens differs among population subgroups. I estimate random-effects panel ordered logit models with objective debt measures. The first objective measure of household indebtedness is the debt-service-to-income ratio; the second one comprises the ratio of residual household income (after debt repayments) and a potential subsistence level (non-seizable income). The dependent variable is a subjective statement on whether the debt repayment is perceived as a *major*, *minor*, or *no burden*. To account for the heterogeneity of homeowners and tenants, I run separate regressions for both groups. For homeowners, measures of objective debt burdens include only consumer credits as well as repayments for both secured and unsecured debt.

Some of my findings are similar for tenants and homeowners, others are different: First, households report subjective debt measures in response to the current budget and debt situation (objective debt burden, income, and household composition).

Second, subjective debt measures contain information beyond the current financial situation. Being unemployed has a very strong and robust association with debt perception that cannot be explained with differences in personal traits and characteristics: keeping all other covariates constant, unemployment increases the probability of reporting *major burden* by a double digit amount. Since the unemployment replacement rate decreases with the duration of being jobless, this finding may reflect bad expectations on the future income stream. However, two further variables that reflect expectations about future incomes, namely education and age, play a minor role. The effect of education is weakly significant or even insignificant when controlling for personality traits, health, and life satisfaction. The effects for age are rather alternating: to sum up, younger household heads (younger than 30 years) tend to perceive significantly lower debt burdens while household heads older than 45 years are more likely report higher debt burdens. Though, the findings for age are not robust for both subsamples (tenants and homeowners) and all model specifications.

Third, factors that are unrelated to the current or the future financial situation do matter as well: among tenants, women report significantly higher subjective debt burdens if confronted with a certain ratio of debt repayments and income. This result is in line with previous findings that women tend to be more cautious and less audacious in financial affairs. To a large extent, these gender differences are robust against a modification of the control variables in the estimation equation and, therefore, cannot

be entirely attributed to differences in personality traits. However, gender differences in subjective debt perception are negligible for homeowners. Furthermore, regional differences matter: East German tenants report significantly lower burdens while East German homeowners perceive significantly higher debt burdens compared to their West German counterparts. To a large extent, these discrepancies disappear when including, e.g., non-financial control variables; the respective marginal effects become insignificant. All in all, it becomes obvious that differences in subjective debt burdens are significantly influenced by non-financial factors such as life satisfaction and personality traits (self-evaluation: being a worrier). Interestingly, risk attitudes have no significant impact on subjective debt perception but influence on the significance of other covariates. Also, people seem to transfer tensions resulting from the familial background to the subjective perception of debt: in case of separation or divorce, the self-assessed debt burden is drastically higher.

To conclude, analyzing debt burdens (or overindebtedness) is quite challenging: Relying on self-assessed statements only may lead to biased results if the researcher is unable to observe all factors influencing the subjective debt statement. As I have shown, even if information on the current and the future financial situation as well as on personality traits and further factors such as life satisfaction and health are at disposal, unexplained differences in debt perception are still detectable.

People who do not feel constrained by their debt burden can be expected to increase borrowing in future periods. Empirical evidence shows that the extension of credit lines does indeed lead to increased debt burdens (Gross and Souleles, 2002), thus fostering household overindebtedness and insolvency (see, e.g., the discussion in DeVaney and Lytton, 1994). As a result, people who are more careless towards indebtedness are at risk to enter severe financial problems. Similarly, high subjective debt burdens may result from scrupulosity towards financial risks. Then, such an anxiety limits consumption and expenditure choices over the life-cycle. Consequently, misperceptions of the objective debt situation are accompanied by personality and social costs.

Further research is strongly desired to get deeper insights in the subjective perception of objective debt burdens, thereby focusing on the influence of psychological and other individual-specific factors (e.g., expectations of the economic situation and attitudes towards debt), as well as on the developing of debt perception over time and within changing environments.

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Table A1: Regression results (tenants)

	D_1^{OBJ}	D_1^{OBJ}	D_1^{OBJ}	D_3^{OBJ}	D_3^{OBJ}	D_3^{OBJ}
D^{OBJ}	12.47***	12.55***	12.48***	-4.164***	-4.213***	-4.187***
	(0.811)	(0.850)	(0.849)	(0.257)	(0.269)	(0.268)
D^{OBJ}	-10.82***	-10.89***	-11.00***	0.478***	0.481***	0.465***
(squared)	(1.502)	(1.556)	(1.547)	(0.0349)	(0.0358)	(0.0354)
Number of	0.123*	0.146*	0.233**	-0.482***	-0.453***	-0.485***
adults	(0.0745)	(0.0794)	(0.0996)	(0.0849)	(0.0895)	(0.106)
Number of	0.181***	0.215***	0.233***	-0.177***	-0.152***	-0.155***
children	(0.0432)	(0.0467)	(0.0479)	(0.0469)	(0.0505)	(0.0511)
Income in	-0.151***	-0.165***	-0.116***	0.384***	0.367***	0.430***
1,000 euros	(0.0291)	(0.0306)	(0.0303)	(0.0591)	(0.0616)	(0.0613)
Univ. entr.	0.0216	0.0163	0.0516	0.0885	0.0963	0.126
qualification	(0.0935)	(0.0993)	(0.0966)	(0.0915)	(0.0973)	(0.0957)
University	-0.281***	-0.317***	-0.233**	-0.168	-0.207*	-0.143
degree	(0.106)	(0.113)	(0.110)	(0.104)	(0.111)	(0.109)
Unemployed	0.658***	0.630***	0.433***	0.580***	0.545***	0.362***
	(0.107)	(0.113)	(0.113)	(0.104)	(0.110)	(0.110)
Age <30	-0.129	-0.143	-0.0511	-0.204**	-0.223**	-0.136
	(0.0845)	(0.0894)	(0.0927)	(0.0828)	(0.0877)	(0.0913)
Age 46-60	0.163*	0.228**	0.153	0.188**	0.265***	0.188**
	(0.0879)	(0.0940)	(0.0965)	(0.0864)	(0.0926)	(0.0954)
Age >60	-0.0254	0.0527	0.0554	-0.0725	-0.000517	-0.00556
	(0.121)	(0.129)	(0.138)	(0.120)	(0.127)	(0.136)
Female	0.202***	0.215***	0.186**	0.0358	0.0612	0.0640
	(0.0691)	(0.0744)	(0.0741)	(0.0674)	(0.0727)	(0.0726)
Migrant	-0.118	-0.103	-0.0874	-0.0329	0.00285	0.0164
	(0.133)	(0.141)	(0.137)	(0.130)	(0.139)	(0.135)
East	-0.0418	-0.0338	-0.0685	-0.178**	-0.179**	-0.201**
German	(0.0800)	(0.0843)	(0.0825)	(0.0788)	(0.0831)	(0.0814)
Health			0.000869			-0.0240
status			(0.0373)			(0.0367)
Life			-0.201***			-0.204***
satisfaction			(0.0199)			(0.0196)
Trait:			0.0882***			0.0736***
worried			(0.0220)			(0.0217)
Risk		0.00529	0.00841		0.00878	0.0120
attitude		(0.0169)	(0.0165)		(0.0166)	(0.0162)
Year dummies	yes	yes	yes	yes	yes	yes
Marital status	no	no	yes	no	no	yes
Cut point	0.0366	0.0876	-0.491*	-5.275***	-5.261***	-6.032***
1	(0.164)	(0.195)	(0.291)	(0.273)	(0.298)	(0.363)
Cut point	1.847***	1.966***	1.403***	-3.536***	-3.455***	-4.207***
2	(0.170)	(0.201)	(0.295)	(0.257)	(0.283)	(0.349)
Rho	0.564***	0.563***	0.525***	0.554***	0.555***	0.518***
	(0.0226)	(0.0235)	(0.0256)	(0.0227)	(0.0235)	(0.0254)
Observations	3,976	3,585	3,510	3,976	3,585	3,510

Note. Random-effects ordered probit model. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_3^{OBJ} : Total debt repayments / Income. Standard errors in parentheses. *** p<0.01,** p<0.05,* p<0.1. Data: SOEP 2005-08.

Table A2a: Regression results (homeowners)

	D_1^{OBJ}	D_1^{OBJ}	D_1^{OBJ}	D_2^{OBJ}	D_2^{OBJ}	D_2^{OBJ}
D^{OBJ}	12.71***	13.05***	13.03***	5.046***	5.497***	5.208***
	(1.231)	(1.272)	(1.279)	(0.794)	(0.832)	(0.823)
D^{OBJ}	-14.26***	-14.88***	-15.64***	-2.475**	-3.047***	-2.990***
(squared)	(2.516)	(2.566)	(2.632)	(1.025)	(1.064)	(1.061)
Number of	0.195	0.160	0.206	0.0668	0.00938	0.133
adults	(0.146)	(0.154)	(0.204)	(0.142)	(0.149)	(0.200)
Number of	0.172***	0.140***	0.124**	0.103**	0.0683	0.0686
children	(0.0522)	(0.0541)	(0.0553)	(0.0514)	(0.0533)	(0.0544)
Income in	-0.127***	-0.145***	-0.125***	-0.117***	-0.133***	-0.117***
1,000 euros	(0.0293)	(0.0302)	(0.0307)	(0.0289)	(0.0297)	(0.0303)
Univ. entr.	-0.0455	-0.0806	-0.0849	-0.161	-0.169	-0.165
qualification	(0.127)	(0.132)	(0.130)	(0.125)	(0.130)	(0.128)
University	-0.255**	-0.220	-0.163	-0.249*	-0.234*	-0.182
degree	(0.130)	(0.135)	(0.133)	(0.128)	(0.133)	(0.130)
Unemployed	0.754***	0.811***	0.675***	0.721***	0.802***	0.661***
	(0.215)	(0.224)	(0.222)	(0.213)	(0.222)	(0.220)
Age <30	-0.179	-0.203	-0.0767	-0.106	-0.120	-0.00665
	(0.185)	(0.192)	(0.196)	(0.182)	(0.189)	(0.193)
Age 46-60	0.0715	0.0338	-0.0256	0.183*	0.135	0.0848
	(0.111)	(0.117)	(0.119)	(0.110)	(0.115)	(0.117)
Age >60	-0.0132	-0.0775	-0.0966	0.384***	0.329**	0.297*
	(0.146)	(0.153)	(0.161)	(0.146)	(0.152)	(0.159)
Female	0.237**	0.201**	0.194*	0.201**	0.157	0.133
	(0.0960)	(0.102)	(0.105)	(0.0942)	(0.100)	(0.103)
Migrant	0.0839	-0.0359	-0.0204	0.0716	-0.0644	-0.0335
	(0.217)	(0.220)	(0.217)	(0.214)	(0.217)	(0.212)
East	0.216**	0.197*	0.155	0.358***	0.337***	0.288***
German	(0.107)	(0.111)	(0.109)	(0.105)	(0.109)	(0.107)
Health			0.0435			0.0431
status			(0.0532)			(0.0521)
Life			-0.127***			-0.122***
satisfaction			(0.0287)			(0.0281)
Trait:			0.0189			0.0313
worried			(0.0300)			(0.0294)
Risk		7.38e-05	0.0108		-0.0152	-0.00187
attitude		(0.0220)	(0.0221)		(0.0218)	(0.0218)
Year dummies	yes	yes	yes	yes	yes	yes
Marital status	no	no	yes	no	no	yes
Cut point	0.453	0.243	0.173	0.372	0.0855	0.0857
1	(0.308)	(0.345)	(0.491)	(0.313)	(0.346)	(0.487)
Cut point	2.391***	2.227***	2.131***	2.250***	2.006***	1.979***
2	(0.317)	(0.353)	(0.499)	(0.322)	(0.353)	(0.495)
Rho	0.563***	0.559***	0.531***	0.552***	0.546***	0.519***
	(0.0318)	(0.0332)	(0.0346)	(0.0326)	(0.0338)	(0.0356)
Observations	2,131	1,955	1,917	2,131	1,955	1,917

Note. Random-effects ordered probit model. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_2^{OBJ} : (Income - repayments) / Subsistence level. Standards error in parentheses. *** p<0.01,** p<0.05,* p<0.1. Data: SOEP 2005-08.

Table A2b: Regression results (homeowners)

	D_3^{OBJ}	D_3^{OBJ}	D_3^{OBJ}	D_4^{OBJ}	D_4^{OBJ}	D_4^{OBJ}
D^{OBJ}	-2.866***	-2.964***	-2.933***	-2.209***	-2.279***	-2.138***
	(0.297)	(0.306)	(0.310)	(0.212)	(0.220)	(0.220)
D^{OBJ}	0.169***	0.179***	0.172***	0.154***	0.161***	0.151***
(squared)	(0.0319)	(0.0323)	(0.0323)	(0.0290)	(0.0294)	(0.0293)
Number of	-0.582***	-0.631***	-0.586***	-0.359**	-0.411***	-0.295
adults	(0.158)	(0.165)	(0.216)	(0.146)	(0.154)	(0.203)
Number of	-0.199***	-0.242***	-0.250***	-0.102*	-0.141**	-0.128**
children	(0.0643)	(0.0667)	(0.0681)	(0.0568)	(0.0590)	(0.0600)
Income in	0.502***	0.501***	0.531***	0.299***	0.293***	0.288***
1,000 euros	(0.0787)	(0.0808)	(0.0827)	(0.0567)	(0.0584)	(0.0591)
Univ. entr.	-0.0802	-0.106	-0.109	-0.157	-0.165	-0.164
qualification	(0.130)	(0.134)	(0.132)	(0.126)	(0.130)	(0.128)
University	-0.226*	-0.198	-0.151	-0.217*	-0.202	-0.154
degree	(0.132)	(0.137)	(0.135)	(0.128)	(0.133)	(0.130)
Unemployed	0.828***	0.895***	0.738***	0.795***	0.869***	0.717***
	(0.217)	(0.226)	(0.223)	(0.213)	(0.221)	(0.219)
Age <30	-0.124	-0.138	-0.00737	-0.0885	-0.0957	0.0209
	(0.187)	(0.193)	(0.196)	(0.182)	(0.188)	(0.192)
Age 46-60	0.0919	0.0747	0.0458	0.160	0.128	0.0884
	(0.113)	(0.118)	(0.120)	(0.110)	(0.115)	(0.117)
Age >60	0.0748	0.0332	0.0639	0.325**	0.279*	0.270*
	(0.148)	(0.155)	(0.162)	(0.145)	(0.152)	(0.159)
Female	0.239**	0.205**	0.223**	0.220**	0.178*	0.172*
	(0.0975)	(0.103)	(0.106)	(0.0943)	(0.1000)	(0.102)
Migrant	0.213	0.101	0.100	0.128	0.00373	0.0208
	(0.223)	(0.226)	(0.220)	(0.216)	(0.218)	(0.213)
East	0.257**	0.225**	0.174	0.321***	0.293***	0.244**
German	(0.109)	(0.112)	(0.110)	(0.105)	(0.109)	(0.107)
Health			0.0294			0.0428
status			(0.0532)			(0.0520)
Life			-0.140***			-0.126***
satisfaction			(0.0286)			(0.0280)
Trait:			0.0291			0.0305
worried			(0.0304)			(0.0294)
Risk		0.00835	0.0156		-0.00699	0.00440
attitude		(0.0224)	(0.0224)		(0.0218)	(0.0218)
Year dummies	yes	yes	yes	yes	yes	yes
Marital status	no	no	yes	no	no	yes
Cut point	-3.731***	-4.006***	-4.064***	-2.546***	-2.873***	-2.743***
1	(0.393)	(0.428)	(0.552)	(0.312)	(0.354)	(0.484)
Cut point	-1.836***	-2.068***	-2.153***	-0.683**	-0.971***	-0.867*
2	(0.380)	(0.414)	(0.543)	(0.305)	(0.345)	(0.480)
Rho	0.580***	0.573***	0.544***	0.553***	0.546***	0.518***
	(0.0301)	(0.0317)	(0.0334)	(0.0321)	(0.0334)	(0.0351)
Observations	2,131	1,955	1,917	2,131	1,955	1,917

Note. Random-effects ordered probit model. Dependent variable: *major burden*=2, *minor burden*=1, *no burden*=0. Objective measure: D_1^{OBJ} : Debt repayments (consumer credit) / Income; D_2^{OBJ} : (Income - repayments) / Subsistence level. Standard errors in parentheses. *** p<0.01,** p<0.05,* p<0.1. Data: SOEP 2005-08.