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**Article**

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# Research Article

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## The impact of income inequality on household indebtedness in euro area countries

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*This paper explores the impact of income inequality on household indebtedness at the household level. Using the first wave of the Eurosystem Household Finance and Consumption Survey data, the analysis sheds light on heterogeneous effects across euro area countries. The results suggest that there is weak evidence that income inequality has affected households' indebtedness in continental European countries. The countries that show an impact are characterised by positive effects that operate across the income distribution and tend to be robust for consumption-related and housing-related debts. The effects, however, vary much less across the distribution for consumption-related debts as compared to housing-related debts. Households at the top of the income distribution seem to react more than lower-income households when it comes to housing-related debts.*

**Keywords:** *income inequality, relative income, household indebtedness, euro area*

**JEL codes:** *D12, D14, D31*

### 1 INTRODUCTION

*'Debt is a two-edged sword. Used wisely and in moderation, it clearly improves welfare. But, when it is used imprudently and in excess, the result can be disaster. For individual households and firms, over-borrowing leads to bankruptcy and financial ruin.'*

S.G. Cecchetti, M.S. Mohanty and F. Zampolli, 'The real effects of debt' (2011: 1)

The evolution of household indebtedness and its roots have been on the agenda of the economic discussion in the aftermath of the global financial crisis. In some European countries, households had increased their debt remarkably in the pre-crisis period, which fuelled the risk of their over-indebtedness. This raised the question of why households generally take on debt and what are the underlying mechanisms that are at play in the background.

In the post-crisis period, a strand of the economic literature has emerged that debates the relationship between income inequality and household indebtedness.<sup>1</sup> Among others,

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1. Some studies already addressed the nexus between income inequality and household indebtedness in the pre-crisis period (for example, Barba/Pivetti 2008; Palley 2002).

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Barba/Pivetti (2008), Morelli/Atkinson (2015), Stockhammer (2015) and van Treeck (2014) argue that rising income inequality had been associated with the surge of household indebtedness in the pre-crisis period and that eventually led to macroeconomic instabilities. Individuals that felt they were lagging behind were induced to take out loans in order to increase consumption and to keep up with individuals higher ranked in the income distribution. Income inequality may therefore foster unsustainable household indebtedness (Dabla-Norris et al. 2015).

Since 2010, a growing number of empirical studies investigated the impact of income inequality on household indebtedness at the country level (for an overview of empirical studies see Bazillier/Hericourt 2017). The results are, however, rather mixed and inconclusive. In contrast, the empirical evidence on the impact of income inequality on borrowing behaviour at the household level is scarce. Georgarakos et al. (2014) present robust effects on borrowings, particularly for those who consider themselves poorer than their reference group, using Dutch household survey data. Similarly, Berlemann/Salland (2016) examine peer effects based on regional average incomes on debt market participation by using cross-sectional private customer data from a German savings bank. Their findings suggest a positive effect of income inequality on the financial behaviour of individuals. In addition, Brown et al. (2016) use British Household Panel Survey data (1995, 2000 and 2005) and base their social interaction measure on responses to a number of questions concerning group memberships. They find a positive effect of social interactions on household financial decisions. In contrast, Coibion et al. (2014) find evidence for the reversed relationship. They use US quarterly panel data over the course of 2001–2012 and show that debt leverage was higher for high-income households in high-inequality areas compared with lower-inequality areas. Likewise, Loschiavo (2021) provides evidence for the predominant importance of supply factors compared to demand factors for the probability of being indebted using panel survey data for Italian households. In regions with high income inequality, financial institutions tend to give loans to richer households as a household's income might be regarded as a reliable criterion for creditworthiness. Hake/Poyntner (2021) further find positive effects of interpersonal comparisons on taking out loans particularly for top-income households relying on household-level data for Central, Eastern and Southeastern European countries for the period 2009–2018.

This paper contributes to this literature and explores the impact of income inequality on household indebtedness at the household level by using the Eurosystem Household Finance and Consumption Survey (HFCS) for 2010.<sup>2</sup> Specifically, I empirically test the hypothesis that a higher exposure to income inequality for households is associated with a higher household indebtedness. A large number of the empirical studies focus on the total amount of debts and distinguish between collateralised and non-collateralised debts. According to theoretical arguments, it is, however, conspicuous consumption and housing that are particularly relevant for interpersonal comparison and signalling social status. This analysis therefore focuses exclusively on consumption-related and housing-related household debt components. Moreover, empirical studies at the micro level are mostly focused on individual countries. Differences in data sources and data availability make it difficult to compare effects across countries. As the HFCS data provide

2. I only use the first wave of the HFCS, because I focus on the pre-crisis period. It is assumed that the crisis substantially affected the risk-taking behaviour of households and the risk-taking behaviour of banks and financial institutions related to credit supply. Credit markets have been much more restricted in the post-crisis period. Even though fieldwork for the first wave took place between 2007 and 2010, changes in the risk-taking behaviour seem to be less dominant in the first wave compared to subsequent waves. A large part of the debt was already taken on before the global financial crisis.

harmonised information about euro area countries, the analysis allows us to compare effects and to shed light on heterogeneous effects across continental European countries.

The results suggest that in most euro area countries income inequality does not play a role for household indebtedness. There is, however, a positive impact of income inequality on household indebtedness in a small sample of countries. The effects are robust for consumption-related and housing-related household debts and operate across the entire income distribution. Interestingly, the effects vary less across the distribution for consumption-related debts compared to housing-related debts. Households at the top of the income distribution show a stronger response compared to lower-income households when it comes to housing-related debts.

The remainder of this paper is structured as follows. Section 2 discusses the relationship between income inequality and household indebtedness from a theoretical point of view. Section 3 describes the data used in this study, while Section 4 describes the empirical strategy. Section 5 focuses on the results of the empirical analysis and Section 6 provides robustness checks. Finally, Section 7 concludes.

## 2 INCOME INEQUALITY AND HOUSEHOLD INDEBTEDNESS

Finance is basically considered as necessary and beneficial for economic development. Debts offer individuals and households the opportunity to consume and to invest, even in periods with lower income. Borrowings therefore allow individuals and households to make intertemporal decisions, as they are interested in smoothing their consumption paths and prefer to pull forward investment decisions. From this perspective, transitory income shocks, for example due to unemployment, are likely to be dampened by increased borrowings (Krueger/Perri 2006; van Treeck 2014). According to the permanent-income hypothesis of Friedman (1957) and the life-cycle model of Modigliani (1986), households maximise their utility by smoothing consumption over their lifetime. In periods of low income relative to average income, households raise debts to finance current consumption. Loans thus appear to be a rational answer to temporary income shocks.

The relative income hypothesis, initially put forward by Duesenberry (1949), allows us to address the link between indebtedness and household behaviour from a different perspective. In principle, this hypothesis underlines that the household savings rate (and thus also the consumption rate) is not influenced by the absolute level of income; rather, it represents an increasing function of the household's position in the income distribution within a reference group.<sup>3</sup> This argument implies that preferences are not independent from other individuals, as initially proposed by Veblen (1899). Hence it is assumed that individuals make comparisons with other individuals and derive their utility not only from their own absolute income, but also from the income of a reference group (Verme 2013). The hypothesis primarily predicts effects on consumption, as it is conspicuous consumption that is eventually visible for individuals. In this context, consumption might be seen as a social status, where low-income and middle-income households want to keep up with higher-income households and take on debt. The *expenditure cascade* approach by Frank et al. (2014) argues in a similar vein. Higher expenditures by higher-income households make poorer households spend more, influencing even poorer households, and so on. In this respect, permanent income differences between households,

3. The hypothesis further states that there exists a relation of the household's current to past income (Brown 2008).

as reflected in higher income inequality, are therefore directly linked to higher household indebtedness.

In contrast, Coibion et al. (2014) argue that income inequality may reflect a supply-side mechanism rather than a demand-side mechanism. Income inequality may affect the credit supply of the banking system to households, since it works as a signal for credit risk. In the case of a high level of income inequality, incomes are stronger signals of credit-worthiness. This, however, implies that income inequality is more likely to be associated with lower (higher) indebtedness of lower (higher) income households.

In general, in order to meet the demand for credit, the supply side of the credit market plays an essential role. The general institutional features of the credit supply side affects indebtedness because constraints on the ability of households to raise debts are imposed (Bazillier/Hericourt 2017). As a consequence of the process of financial liberalisation, the easing of credit constraints on households had started (Debelle 2004). That allowed households to increase their borrowings steadily, particularly in the Anglo-Saxon countries, namely the United States and the United Kingdom. According to Rajan (2011), the financial liberalisation in the US had been induced by political authorities to relieve debt-financed household consumption and to dampen the negative impact of an increased income inequality on aggregate demand.

Bazillier et al. (2021) and Kumhof et al. (2015) also discuss the link between income inequality and the credit supply. Higher incomes at the very top of the distribution can increase savings and eventually the aggregate credit supply improving the options for lower-ranked households to take on debts. Accordingly, a higher income inequality can bring a higher indebtedness of lower- and middle-income households as a result of a higher credit supply. Against these supply-side arguments, Fitoussi/Saraceno (2010) argued that credit markets in continental Europe had generally been rather restrictive, which constrained households from taking on debt.

### 3 DATA

In this study, I use the Eurosystem HFCS for the year 2010 that was originally conducted in 15 euro area countries, namely Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Luxembourg, Malta, the Netherlands, Portugal, Spain, Slovakia and Slovenia. The HFCS is a household-level data set and provides information about household gross income and household wealth, as well as different household debt positions such as collateralised and non-collateralised debt. The gross household income consists of income (from work, capital and property) including monetary transfers, but does not consider any types of taxes. As concerns wealth, one can distinguish between household main residences, other real-estate properties, self-employment businesses, and financial assets. Furthermore, debts are split into collateralised and non-collateralised debts. In the case of loans, the reasons for borrowing are available. In this analysis, I focus on debt positions that are associated with 'conspicuous' consumption. I therefore consider collateralised and non-collateralised loans whose main purposes are 'to cover living expenses and other purchases', 'to consolidate other consumption debt' and 'to buy vehicle or other means of transport'. Moreover, I add *outstanding credit lines* to consumption-related debt positions. As housing can also be relevant for interpersonal comparisons and signalling social status, I additionally look at households' debt positions covering collateralised and non-collateralised loans with the main purposes being 'to purchase the household main residence', 'to purchase another real-estate asset' and 'to refurbish or renovate the residence'. In the empirical analysis, I thus distinguish between consumption-related and housing-related debts.

The data for Finland do not include information on the purpose of borrowing. Additionally, data for Malta are limited. Due to these limitations,<sup>4</sup> I exclude Finland and Malta from the analysis.

In order to avoid missing values, the data set works with five imputates. For each imputate, values for specific variables were estimated by using an imputation technique with an iterative and sequential structure. In order to ensure the representativeness of the data, the HFCS provides household weights. Moreover, a set of replicate weights is available to account for uncertainties regarding the sample design. I take both into account in the estimation procedure.

Table 1 presents summary statistics about consumption-related and housing-related debts in euro area countries. The second column shows the share of households with consumption-related debt positions, while the fourth column reports the share of households with housing-related debt positions. We can identify quite heterogeneous shares across the countries. The numbers reveal that mostly the majority of households do not hold debts. As can be seen in the third and fifth columns, housing-related debt positions are much larger than consumption-related debt positions. The largest amounts of housing-related debts can be found in Luxembourg, the Netherlands, Cyprus and Germany. Cyprus, Luxembourg, Greece and the Netherlands reveal the largest amounts of consumption-related debts.

*Table 1 Descriptive statistics*

|             | Consumption-related debt positions |              | Housing-related debt positions |              |
|-------------|------------------------------------|--------------|--------------------------------|--------------|
|             | Participation                      | Mean (euros) | Participation                  | Mean (euros) |
| Austria     | 32.4                               | 2 934        | 20.6                           | 64 299       |
| Belgium     | 42.1                               | 3 453        | 33.0                           | 83 851       |
| Cyprus      | 58.5                               | 9 317        | 44.5                           | 120 054      |
| Germany     | 43.9                               | 4 453        | 22.5                           | 102 808      |
| Spain       | 44.8                               | 4 845        | 36.2                           | 77 942       |
| France      | 47.0                               | 3 957        | 30.3                           | 75 789       |
| Greece      | 29.7                               | 5 156        | 17.8                           | 52 768       |
| Italy       | 20.7                               | 4 206        | 11.3                           | 76 838       |
| Luxembourg  | 56.2                               | 6 909        | 40.6                           | 179 691      |
| Netherlands | 58.0                               | 5 056        | 43.5                           | 152 834      |
| Portugal    | 43.6                               | 2 759        | 38.4                           | 73 046       |
| Slovenia    | 42.8                               | 3 539        | 22.6                           | 15 190       |
| Slovakia    | 23.3                               | 778          | 15.2                           | 19 394       |

*Note:* This table provides an overview of households holding consumption-related and housing-related debts across countries in the sample.

*Source:* HFCS (2010), UDB 1.5.

4. Despite the extensive harmonisation in the applied methodology in the HFCS, some differences in the data production across countries need to be considered (Fessler/Schürz 2013). Fieldwork took place between 2007 and 2010. In addition, there are also differences in sampling designs and survey methods applied across countries. The typically applied survey mode was Computer Assisted Personal Interviews (CAPI). However, Cyprus, Finland and the Netherlands, as well as partly Italy and Malta, applied other survey methods. In Belgium, France, Germany, Greece, Italy, Luxembourg, the Netherlands, Slovakia and Slovenia, other data sources were also used for income and public pension plans data (Finance, Eurosystem Household and Consumption Network 2013).

#### 4 EMPIRICAL STRATEGY

In this analysis, I examine the impact of income inequality on the borrowing behaviour of households. In doing so, I take into account demand-side and supply-side factors that are important for household indebtedness. In the baseline model, I estimate the specification in the following form, separately for a country  $c$ :

$$Debt_i = RD_i\theta + GHI_i\phi + \mathbf{X}'_i\beta + \epsilon_i, \quad (1)$$

where  $Debt_i$  denotes either a debt ownership dummy or the outstanding amount of consumption-related/housing-related debts of household  $i$ ;  $\mathbf{X}_i$  is a  $k \times 1$  vector containing a set of explanatory variables;  $RD_i$  represents the measure of income inequality – *relative deprivation* – and  $GHI_i$  is the own absolute household's gross income for household  $i$ . The remaining  $\epsilon_i$  is the error term.

The explanatory variable of main interest  $RD_i$  aims at capturing the exposure to income inequality of household  $i$  with respect to a reference group. Unlike the approach of Georgarakos et al. (2014), I cannot apply direct information about a reference group. Moreover, the data set does not provide information on regions within countries. I therefore use the entire society within a country and so all households in the same country as the reference group in the specification. I acknowledge that this is a drawback of the study, as the literature underscores, for instance, the role of small neighbourhoods for making comparisons (for example, Clark et al. 2009; Jestl et al. 2021; Luttmer 2005).<sup>5</sup> As proposed by the notion of the *relative income hypothesis* and the *expenditure cascade*, I assume that households make comparisons in particular with higher-income households.<sup>6</sup> Following Stark (1984) and Yitzhaki (1979), I compute the relative deprivation (RD) – a measure of relative income – for each household by comparing household  $i$ 's income with those of all households with a higher income ( $j$ ) in a country:

$$RD_i = \frac{1}{N} \sum_{j=i+1}^N (y_j - y_i), \quad (2)$$

where households are sorted by their equivalised household gross income  $y$  in ascending order. I apply the OECD equivalence scale to compute the equivalised household gross income. The higher the relative deprivation for a household  $i$ , the higher the exposure to income inequality for household  $i$ , as a high RD reflects a large average income distance between households in a country.<sup>7</sup>

There is a rich volume of literature on problems when estimating social interactions (for example, Manski 2000; Moffitt 2001). As stressed by Georgarakos et al. (2014), one has to deal with two main issues in such a setting. First, income inequality may simply reflect, holding other factors constant, a transitory income shock. In that case, economic theory would predict that households take out debts to compensate for income instability

5. Defining the reference group based on small-scale neighbourhoods may result in different estimation results. I also estimate specifications, where I apply educational attainment groups and age cohorts of the household head as reference groups. For those types of RD measures, however, I found weaker results with a lower level of significance.

6. In the robustness checks (see Section 6), I also test a measure for income inequality where households compare themselves with an *average* household.

7. In this context, I assume that the levels of income inequality are especially crucial for the microeconomic mechanisms explained above, instead of the changes in income inequality. For a discussion on the 'level' and 'change' hypothesis, see Morelli/Atkinson (2015).

and to smooth consumption. To control for transitory income shocks, I use information about the employment within the household, future income expectations, and whether the income in the reference period was regarded as ‘low’. Second, unobserved factors that affect both borrowing behaviour and relative income can result in a spurious relationship between the two observed variables. Such an omitted variable can cause a bias in the estimates. In order to check for endogeneity in the main explanatory variable, an instrument variable regression approach is applied. The results are discussed in Section 6.

Van Treeck (2014) quotes strategies along with indebtedness which intend to cope with a lower relative income. Individuals may increase their working hours or households their participation rate in the labour market to increase their absolute income and improve their relative income. To take this possibility into account, I control for the employment and the number of individuals with more than one job within the household. As a further coping strategy, households can use their savings to afford spending. To take this into account, I add a dummy to the model that indicates whether a household has a savings account or not. Households may further have the possibility of using sources of informal credit via relatives or friends. To consider this channel of raising debts, I use information in the survey regarding whether households had the ‘ability to get financial assistance from friends or relatives’. Moreover, I add a dummy variable that captures the past receipt of an inheritance. Karagiannaki (2017) provided evidence that households, particularly in the lower part of the wealth distribution, tend to reveal a higher propensity to consume out of the inherited wealth. This would imply a lower propensity to take on debt for those households.

In addition, I consider standard explanatory variables in the specification: age of the household’s head and its squared term, dummies for education attainment of the household head, and dummies for the female household head and married household head. To control for the household structure, I use the number of children and adults in the household, as well as the age and educational attainment differences within a household (that is, maximum and minimum comparison within the household). I further use real-estate and financial assets of households to proxy the creditworthiness of households. Moreover, I add a dummy variable for liquidity-constrained households, as was done by Le Blanc et al. (2014) using the HFCS data set. In doing so, I create a dummy variable that indicates whether net assets are worth less than six months’ gross household income.

As the amount of outstanding debts as well as some continuous explanatory variables are characterised by a large number of zero values, I apply the inverse-hyperbolic-sine (ihs) transformation instead of a typical logarithmic transformation.<sup>8</sup>

## 5 RESULTS

In this analysis, I investigate the impact of income inequality on the borrowing behaviour of households. From a demand-side perspective, economic theory suggests a positive impact of income inequality on borrowing decisions, given that I control for transitory income shocks and other households’ and individuals’ characteristics, that might have an impact on financial decisions. Contrary to this, income inequality might reflect a supply-side impact on household indebtedness, indicating a signal for a household’s creditworthiness. This is more likely to be associated with a negative impact of income inequality on household indebtedness, in particular, in the lower part of income distribution.

8.  $ihs(y) = \ln(y + \sqrt{y^2 + 1})$ ; see, for example, Burbidge et al. (1988). In contrast to a logarithmic transformation, the ihs transformation allows us to keep observations with zeros in the sample. The results can be interpreted in a similar way as using a logarithmic transformation.



The literature suggests that conspicuous consumption and housing are relevant for interpersonal comparison and for signalling social status. In what follows, I take a look at the relationship under consideration for consumption-related and housing-related household debts. In a further step, I also investigate potential heterogeneous effects of inequality on indebtedness across the income distribution.

### 5.1 Consumption-related debts

First, I evaluate the impact of income inequality on the likelihood of credit market participation. In doing so, I estimate Specification 1, where the dependent variable indicates the ownership of consumption-related debts. The results of the Probit model for the full set of included explanatory variables are shown in Table A1 in Appendix 1. I start by discussing the results of the additional explanatory variables.

The average marginal effect of the absolute own households' income is positive, however, not statistically different from zero in most countries. The age of the household's head has a predominantly negative impact on being indebted. Thus, the average marginal effect for the household's head age and its squared term is negative. The older the household's head, the lower the likelihood of holding consumption-related debts. Likewise, households with a female household head tend to be characterised by having a lower likelihood of holding debts. Education does not seem to play a major role in being indebted, as most estimates are not statistically different from zero, even at a 10 per cent significance level. In addition, differences in the educational attainment and the age within the household and whether the household head is married do not have much influence on the decision to take on consumption-related debts. The number of adults and the number of children within a household only have an influence in some countries. In Spain, an additional adult living in a household increases the probability of holding consumption-related debts, while it is in France, Portugal and Slovakia that the probability decreases with a higher number of adults. As concerns the number of children, the probability increases in Belgium, Spain, Greece and Italy, but falls in Slovakia. The dummy capturing inheritances received reveals negative effects on consumption-related debts in Spain, Greece, Luxembourg and Portugal, but a positive effect in Austria and Slovakia. A negative effect corresponds to the mechanism that households might consume out of the inherited wealth, instead of saving it. The results for the ownership of a savings account show a negative effect in Austria, Cyprus, Spain, Slovenia and Slovakia. When a self-employed individual lives in the household, the likelihood of holding consumption-related debt decreases in Spain, France, Italy, Luxembourg and the Netherlands. The employment share within a household is revealed to be associated with an increase in the likelihood of holding consumption-related debts in Austria, Belgium, Germany, Spain, France, Italy, Portugal and Slovenia. In addition, when individuals in a household carry out more than one job, the likelihood increases in Austria, Belgium, Portugal and Slovakia. Thus, on average, households with a higher work intensity show a higher probability of holding consumption-related debts.

The source of informal credit has a statistically significantly negative impact on the likelihood of holding consumption-related debts in Germany and Slovenia. Financial assistance from relatives and friends acts as a substitution for taking on debts via formal credit-supply channels in these countries. Furthermore, the controls for transitory income shocks exhibit, as suggested by economic theory, a pattern of positive effects on the probability to raise debts, with one exception in Slovenia. When temporary shocks or even expectations of such shocks hit a household, the likelihood of taking on debts therefore tends to increase. These results are in line with the assumption that households prefer

to smooth consumption. In order to balance temporary income instabilities, households take on debts to keep consumption at a certain level.

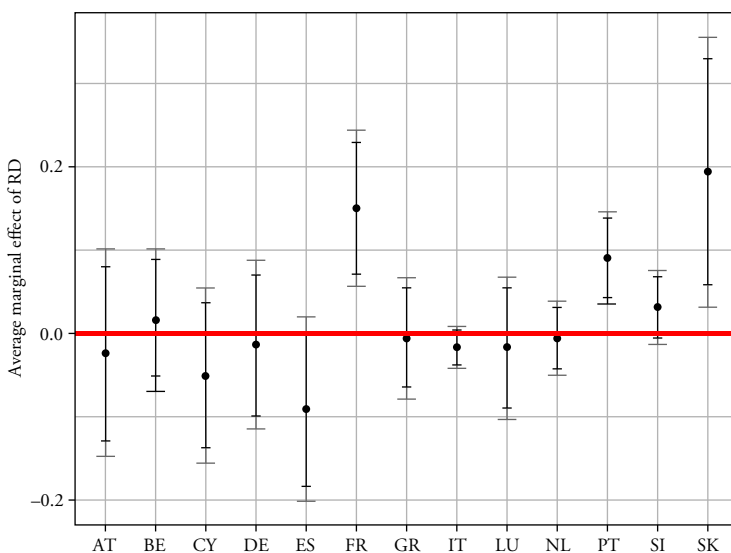
The variables in the last three rows of Table A1 take into account households' wealth stock. The results suggest that households with a low level of net assets are more likely to hold consumption-related debts. We find a statistically significant influence in Austria, Germany, Spain, France, Greece, Italy, the Netherlands, Portugal and Slovakia. These results might also correspond to the coping strategies as outlined by van Treeck (2014). When liquid assets and savings are low, *ceteris paribus*, households are more willing to take on consumption-related debts. Moreover, the results for financial assets show a clear pattern. Financial assets are associated with a lower likelihood of taking on consumption-related debts. Contrary to this finding, real assets are associated with an increase in likelihood.

We then turn to the results of the variable of main interest – the *relative deprivation* – that measures income inequality at the household level. Figure 1a illustrates the average marginal effects of relative deprivation on the probability of holding consumption-related debts with the corresponding 95 per cent and 90 per cent confidence intervals. As can be seen, the results show a heterogeneous pattern. In most countries the average marginal effects are not statistically different from zero. Interestingly, we observe in many countries, even though statistically insignificant, negative point estimates. The results for Spain and Italy especially – close to be statistically significant at the 10 per cent level – suggest a negative influence of income inequality on the probability of holding consumption-related debts. In contrast, households seem to react positively to income inequality in France, Portugal and Slovakia. In addition, the results point to a weak positive effect of income inequality in Slovenia. Holding the own absolute household income and other household characteristics constant, a higher income inequality induces households to take on consumption-related debts. On average, a 1 per cent increase in relative deprivation is associated with an almost 10 percentage-points increase in the probability of holding consumption-related debts in Portugal, 15 percentage points in France, and nearly 20 percentage points in Slovakia.

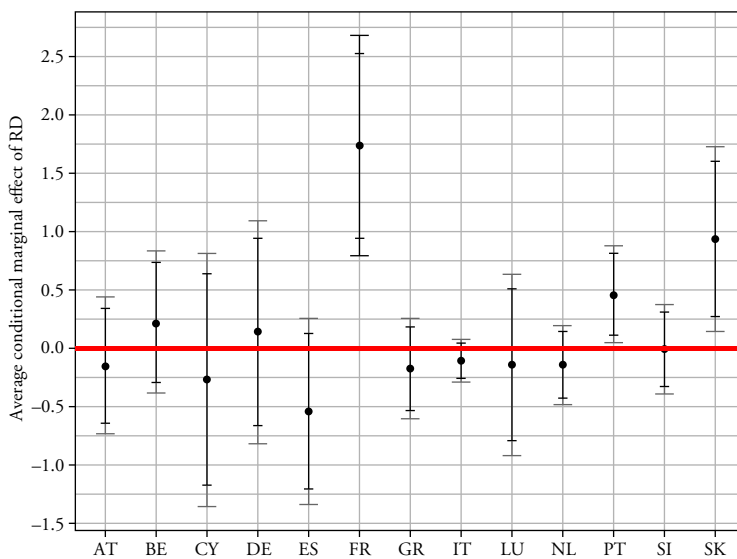
Second, I examine the impact of income inequality on the households' outstanding amount of consumption-related debts. As already discussed in Section 3, Table 1 reports low levels of indebted households in all countries considered in this study. In order to test the impact of income inequality appropriately, I need to take the large number of non-indebted households into account. I therefore apply a Tobit regression model. Table A2 in Appendix 1 reports the effects on the (conditional) expected values for indebted households. In principle, the estimated coefficients are consistent with those reported in Table A1. Analogous to the marginal effects, Figure 1b illustrates the (conditional) impact of RD on the outstanding amount of consumption-related debts. We observe a similar pattern in the effects as before. The effects are positive and statistically different from zero in France, Portugal and Slovakia. The weak effect of RD in Slovenia in Figure 1a cannot be found in the results of the Tobit regression. The conditional elasticities suggest that a 1 per cent increase in relative deprivation is associated with a 0.5 per cent increase in consumption-related debts by a typical household with consumption-related debts in Portugal, an almost 1 per cent increase in Slovakia, and a 1.75 per cent increase in France.

## 5.2 Housing-related debts

In addition to consumption-related debt positions, I also analyse the effects of income inequality on housing-related debt positions. Analogous to Section 5.1, I explore the impact on the likelihood of the credit market participation and the effects on the households' outstanding amount of housing-related debts. Table A3 shows the full set of regression results of the Probit model and Table A4 the results for the Tobit model focusing



(a)



(b)

Notes: The whiskers indicate the corresponding 95 per cent and the 90 per cent confidence interval. Results for relative deprivation from Tables A1 and A2 in Appendix 1.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: Own illustration.

Figure 1 (a) Average marginal effect of income inequality on credit market participation; (b) conditional average marginal effect of income inequality on debt outstandings (ihs-transformed) consumption-related debts

exclusively on housing-related debt positions. The results of the additional co-variables show a similar pattern compared to those for consumption-related debts.

Figure 2a illustrates the average marginal effects of relative deprivation on the probability of holding housing-related debts. Interestingly, we find more positive point estimates as compared to consumption-related debts in Figure 1. However, the majority of the results are not statistically different from zero. The countries with a statistically significant result show predominately positive effects of RD on the likelihood of holding housing-related debts. Similar to consumption-related debts, we observe a statistically significant result in France and Portugal. Even though we have found a strong positive impact of relative deprivation on consumption-related debt positions in Slovakia, the effect on housing-related debts is only significant at the 10 per cent level. Instead, income inequality is shown to have a positive impact in Slovenia. The results suggest that a 1 per cent increase in relative deprivation is associated with an approximately 5 percentage-points increase in the likelihood of holding housing-related debts in Slovenia, 10 percentage points in Portugal, and around 12.5 percentage points in France.

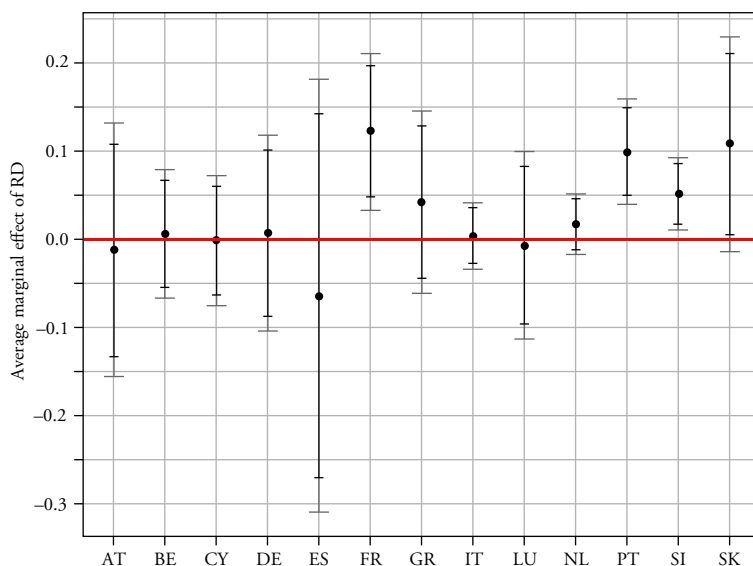
Further, Figure 2b shows the average conditional effects of relative deprivation on households' outstanding amount of housing-related debts. As can be seen, the pattern in the results is in line with the results in Figure 2a. We find statistically significant results in France, Portugal and Slovenia that suggest a positive (conditional) effect of income inequality on the amount of outstanding housing-related debts. Again, the effect in Slovakia shows only a weak significance. The estimated elasticities indicate that a 1 per cent increase in relative deprivation is associated with a 0.5 per cent increase in housing-related debts by a typical household with housing-related debts in Slovenia, and an almost 1.5 per cent increase in France and Portugal.

Taken together, the estimated effects of income inequality on household indebtedness are rather consistent for consumption-related and housing-related debts. The results suggest that in most continental European countries interpersonal comparison does not play a key role for either household debt position. However, for the set of countries with statistically significant results, we find predominately positive effects. Portugal and France seem to be characterised by a keeping-up behaviour of households with respect to both consumption-related and housing-related debts. Interestingly, Slovakia shows positive effects only for consumption-related debts, while Slovenia shows them only for housing-related debts.

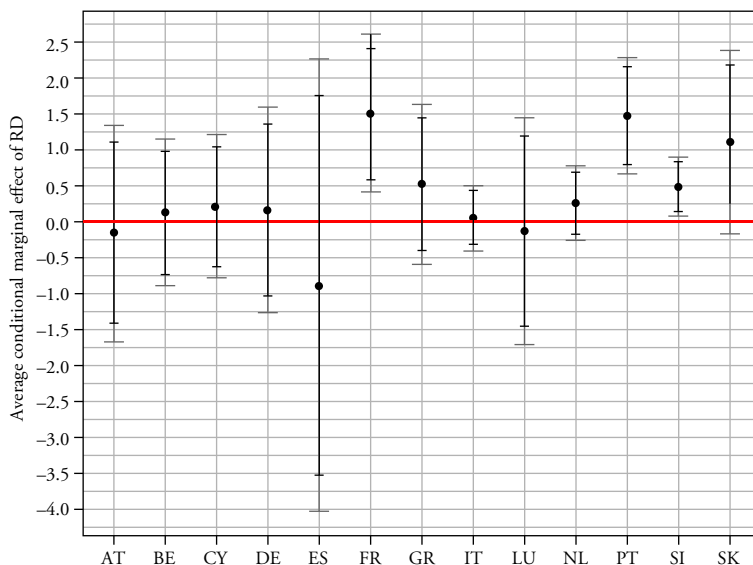
### 5.3 Effects across the income distribution

So far, I have analysed average effects over the total sample. In this respect, RD reveals the average (conditional) impact of income inequality across the entire income distribution. In order to shed light on heterogeneous effects across the income distribution, I estimate (conditional) effects by decile of the equivalised income distribution.

The results for the effect of relative deprivation on consumption-related debts across the income distribution are presented in Table 2. The results are in line with those presented in Tables A1 and A2. Again, we find effects of income inequality that are statistically different from zero in France, Portugal and Slovakia. Table 3 provides the corresponding set of estimates for housing-related debts. The results for the likelihood of holding housing-related debts and for the outstanding amount of housing-related debts are also in line with the baseline results presented above. Consistent with the results for consumption-related debts, we find strong positive effects of income inequality in France and Portugal. In addition, the results for Slovenia are shown to be statistically different from zero across the distribution, with the exception of the first income decile. Beyond that, we also observe results in Slovakia that are statistically significant. However, nearly all estimates are only statistically different from zero at the 10 per cent level.



(a)



(b)

Notes: The whiskers indicate the corresponding 95 per cent and the 90 per cent confidence interval. Results for relative deprivation from Tables A3 and A4 in Appendix 1.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: Own illustration.

Figure 2 (a) Average marginal effect of income inequality on credit market participation; (b) conditional average marginal effect of income inequality on debt outstandings (ihs-transformed) housing-related debts

Table 2. Average marginal effect of RD across the income distribution

| Dependent variable: | Pr(consumption-related debts > 0)                                 |                  |                   |                   |                   |                                  |                   |                   |                   |                   |                                  |                                  |                   |
|---------------------|---|------------------|-------------------|-------------------|-------------------|----------------------------------|-------------------|-------------------|-------------------|-------------------|----------------------------------|----------------------------------|-------------------|
|                     | AT  | BE               | CY                | DE                | ES                | FR                               | GR                | IT                | LU                | NL                | PT                               | SK                               | SI                |
| Decile 1            | -0.022<br>(0.055)   | 0.017<br>(0.037) | -0.053<br>(0.057) | -0.013<br>(0.046) | -0.070<br>(0.043) | <b>0.145</b><br>( <b>0.045</b> ) | -0.004<br>(0.025) | -0.015<br>(0.012) | -0.016<br>(0.041) | -0.005<br>(0.020) | <b>0.077</b><br>( <b>0.024</b> ) | <b>0.172</b><br>( <b>0.061</b> ) | 0.030<br>(0.022)  |
| Decile 2            | -0.021<br>(0.055)   | 0.017<br>(0.041) | -0.044<br>(0.047) | -0.013<br>(0.050) | -0.073<br>(0.045) | <b>0.144</b><br>( <b>0.046</b> ) | -0.004<br>(0.026) | -0.013<br>(0.011) | -0.017<br>(0.044) | -0.006<br>(0.024) | <b>0.075</b><br>( <b>0.024</b> ) | <b>0.178</b><br>( <b>0.076</b> ) | 0.036<br>(0.026)  |
| Decile 3            | -0.021<br>(0.057)   | 0.015<br>(0.039) | -0.051<br>(0.055) | -0.013<br>(0.049) | -0.081<br>(0.051) | <b>0.141</b><br>( <b>0.045</b> ) | -0.005<br>(0.034) | -0.014<br>(0.011) | -0.018<br>(0.048) | -0.005<br>(0.022) | <b>0.075</b><br>( <b>0.024</b> ) | <b>0.168</b><br>( <b>0.076</b> ) | 0.032<br>(0.023)  |
| Decile 4            | -0.023<br>(0.061)   | 0.015<br>(0.038) | -0.053<br>(0.058) | -0.012<br>(0.048) | -0.091<br>(0.056) | <b>0.148</b><br>( <b>0.047</b> ) | -0.005<br>(0.035) | -0.014<br>(0.011) | -0.017<br>(0.043) | -0.005<br>(0.022) | <b>0.089</b><br>( <b>0.028</b> ) | <b>0.169</b><br>( <b>0.077</b> ) | 0.032<br>(0.024)  |
| Decile 5            | -0.023<br>(0.064)   | 0.017<br>(0.043) | -0.053<br>(0.059) | -0.014<br>(0.052) | -0.091<br>(0.057) | <b>0.151</b><br>( <b>0.048</b> ) | -0.005<br>(0.036) | -0.014<br>(0.011) | -0.017<br>(0.045) | -0.005<br>(0.022) | <b>0.096</b><br>( <b>0.030</b> ) | <b>0.209</b><br>( <b>0.092</b> ) | 0.030<br>(0.021)  |
| Decile 6            | -0.024<br>(0.064)   | 0.018<br>(0.045) | -0.053<br>(0.057) | -0.013<br>(0.050) | -0.100<br>(0.062) | <b>0.151</b><br>( <b>0.048</b> ) | -0.005<br>(0.039) | -0.016<br>(0.013) | -0.016<br>(0.044) | -0.006<br>(0.023) | <b>0.099</b><br>( <b>0.031</b> ) | <b>0.207</b><br>( <b>0.093</b> ) | 0.033<br>(0.023)  |
| Decile 7            | -0.025<br>(0.067)   | 0.018<br>(0.043) | -0.051<br>(0.054) | -0.014<br>(0.053) | -0.098<br>(0.062) | <b>0.156</b><br>( <b>0.050</b> ) | -0.005<br>(0.040) | -0.017<br>(0.013) | -0.016<br>(0.044) | -0.006<br>(0.023) | <b>0.101</b><br>( <b>0.031</b> ) | <b>0.218</b><br>( <b>0.093</b> ) | 0.031<br>(0.022)  |
| Decile 8            | -0.025<br>(0.067)   | 0.019<br>(0.046) | -0.048<br>(0.051) | -0.014<br>(0.055) | -0.099<br>(0.062) | <b>0.158</b><br>( <b>0.050</b> ) | -0.006<br>(0.042) | -0.018<br>(0.015) | -0.018<br>(0.047) | -0.006<br>(0.024) | <b>0.099</b><br>( <b>0.031</b> ) | <b>0.220</b><br>( <b>0.096</b> ) | 0.033<br>(0.024)  |
| Decile 9            | -0.026<br>(0.070)   | 0.019<br>(0.046) | -0.050<br>(0.053) | -0.014<br>(0.055) | -0.101<br>(0.063) | <b>0.158</b><br>( <b>0.051</b> ) | -0.006<br>(0.043) | -0.019<br>(0.015) | -0.016<br>(0.043) | -0.006<br>(0.024) | <b>0.097</b><br>( <b>0.030</b> ) | <b>0.197</b><br>( <b>0.084</b> ) | 0.032<br>(0.023)  |
| Decile 10           | -0.026<br>(0.070)   | 0.021<br>(0.050) | -0.042<br>(0.043) | -0.014<br>(0.055) | -0.099<br>(0.061) | <b>0.157</b><br>( <b>0.050</b> ) | -0.006<br>(0.044) | -0.020<br>(0.016) | -0.017<br>(0.044) | -0.006<br>(0.023) | <b>0.099</b><br>( <b>0.031</b> ) | <b>0.215</b><br>( <b>0.089</b> ) | 0.032<br>(0.023)  |
| Dependent variable: | E(ibs(consumption-related debts)   consumption-related debts > 0) |                  |                   |                   |                   |                                  |                   |                   |                   |                   |                                  |                                  |                   |
| Decile 1            | -0.129<br>(0.250)   | 0.186<br>(0.216) | -0.184<br>(0.367) | 0.130<br>(0.366)  | -0.345<br>(0.254) | <b>1.315</b><br>( <b>0.344</b> ) | -0.111<br>(0.126) | -0.100<br>(0.091) | -0.111<br>(0.326) | -0.148<br>(0.187) | <b>0.267</b><br>( <b>0.121</b> ) | <b>0.723</b><br>( <b>0.241</b> ) | -0.003<br>(0.171) |
| Decile 2            | -0.127<br>(0.265)   | 0.204<br>(0.274) | -0.167<br>(0.335) | 0.133<br>(0.448)  | -0.356<br>(0.262) | <b>1.480</b><br>( <b>0.410</b> ) | -0.100<br>(0.117) | -0.089<br>(0.078) | -0.149<br>(0.423) | -0.131<br>(0.163) | <b>0.324</b><br>( <b>0.154</b> ) | <b>0.833</b><br>( <b>0.367</b> ) | -0.003<br>(0.181) |
| Decile 3            | -0.128<br>(0.264)   | 0.203<br>(0.291) | -0.210<br>(0.425) | 0.136<br>(0.473)  | -0.435<br>(0.329) | <b>1.552</b><br>( <b>0.436</b> ) | -0.142<br>(0.176) | -0.085<br>(0.076) | -0.141<br>(0.392) | -0.139<br>(0.170) | <b>0.333</b><br>( <b>0.156</b> ) | <b>0.884</b><br>( <b>0.418</b> ) | -0.006<br>(0.185) |

(continues overleaf)

Table 2 (continued)

| Dependent variable: | Pr(consumption-related debts > 0) |                  |                   |                  |                   |                                  |                   |                   |                   |                   |                                  |                                  |                   |
|---------------------|-----------------------------------|------------------|-------------------|------------------|-------------------|----------------------------------|-------------------|-------------------|-------------------|-------------------|----------------------------------|----------------------------------|-------------------|
|                     | AT                                | BE               | CY                | DE               | ES                | FR                               | GR                | IT                | LU                | NL                | PT                               | SK                               | SI                |
| Decile 4            | -0.136<br>(0.288)                 | 0.198<br>(0.272) | -0.263<br>(0.542) | 0.119<br>(0.426) | -0.509<br>(0.380) | <b>1.717</b><br>( <b>0.482</b> ) | -0.150<br>(0.196) | -0.085<br>(0.077) | -0.125<br>(0.366) | -0.138<br>(0.168) | <b>0.437</b><br>( <b>0.209</b> ) | <b>0.859</b><br>( <b>0.426</b> ) | -0.003<br>(0.125) |
| Decile 5            | -0.143<br>(0.310)                 | 0.200<br>(0.295) | -0.261<br>(0.544) | 0.142<br>(0.500) | -0.561<br>(0.427) | <b>1.830</b><br>( <b>0.510</b> ) | -0.169<br>(0.222) | -0.089<br>(0.079) | -0.128<br>(0.365) | -0.141<br>(0.177) | <b>0.503</b><br>( <b>0.235</b> ) | <b>1.081</b><br>( <b>0.502</b> ) | -0.004<br>(0.219) |
| Decile 6            | -0.144<br>(0.299)                 | 0.241<br>(0.339) | -0.300<br>(0.616) | 0.144<br>(0.507) | -0.567<br>(0.428) | <b>1.857</b><br>( <b>0.522</b> ) | -0.178<br>(0.233) | -0.104<br>(0.093) | -0.142<br>(0.418) | -0.138<br>(0.169) | <b>0.480</b><br>( <b>0.228</b> ) | <b>1.023</b><br>( <b>0.480</b> ) | -0.005<br>(0.225) |
| Decile 7            | -0.157<br>(0.330)                 | 0.250<br>(0.349) | -0.301<br>(0.628) | 0.148<br>(0.534) | -0.611<br>(0.466) | <b>1.946</b><br>( <b>0.539</b> ) | -0.178<br>(0.226) | -0.105<br>(0.095) | -0.148<br>(0.425) | -0.139<br>(0.171) | <b>0.522</b><br>( <b>0.243</b> ) | <b>1.048</b><br>( <b>0.461</b> ) | -0.003<br>(0.193) |
| Decile 8            | -0.152<br>(0.315)                 | 0.262<br>(0.364) | -0.312<br>(0.659) | 0.148<br>(0.528) | -0.628<br>(0.479) | <b>1.965</b><br>( <b>0.541</b> ) | -0.197<br>(0.246) | -0.111<br>(0.100) | -0.139<br>(0.398) | -0.145<br>(0.181) | <b>0.537</b><br>( <b>0.250</b> ) | <b>1.061</b><br>( <b>0.475</b> ) | -0.004<br>(0.233) |
| Decile 9            | -0.154<br>(0.313)                 | 0.247<br>(0.331) | -0.301<br>(0.623) | 0.142<br>(0.503) | -0.627<br>(0.483) | <b>1.893</b><br>( <b>0.523</b> ) | -0.204<br>(0.262) | -0.116<br>(0.106) | -0.144<br>(0.420) | -0.141<br>(0.176) | <b>0.599</b><br>( <b>0.270</b> ) | <b>0.895</b><br>( <b>0.386</b> ) | -0.010<br>(0.219) |
| Decile 10           | -0.171<br>(0.336)                 | 0.252<br>(0.344) | -0.320<br>(0.673) | 0.149<br>(0.501) | -0.664<br>(0.510) | <b>1.822</b><br>( <b>0.507</b> ) | -0.230<br>(0.284) | -0.130<br>(0.119) | -0.153<br>(0.433) | -0.148<br>(0.190) | <b>0.580</b><br>( <b>0.248</b> ) | <b>1.004</b><br>( <b>0.414</b> ) | -0.008<br>(0.253) |

Note: Results are reported as average marginal effects (Probit) in the first section and as average conditional marginal effects (Tobit) in the second section. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Base group: lower secondary education.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SK = Slovakia; SI = Slovenia.

Source: HFCS (2010) – UDBB 1.5.

Table 3 Average marginal effect of RD across the income distribution

| Dependent variable: | Pr(housing-related debts > 0)                             |                  |                   |                  |                   |                                |                  |                  |                   |                  |                                |                                |                                |
|---------------------|---|------------------|-------------------|------------------|-------------------|--------------------------------|------------------|------------------|-------------------|------------------|--------------------------------|--------------------------------|--------------------------------|
|                     | AT  | BE               | CY                | DE               | ES                | FR                             | GR               | IT               | LU                | NL               | PT                             | SK                             | SI                             |
| Decile 1            | -0.009<br>(0.050)   | 0.005<br>(0.027) | -0.001<br>(0.030) | 0.004<br>(0.023) | -0.044<br>(0.079) | <b>0.076</b><br><b>(0.026)</b> | 0.029<br>(0.028) | 0.003<br>(0.011) | -0.005<br>(0.040) | 0.018<br>(0.018) | <b>0.079</b><br><b>(0.025)</b> | <b>0.102</b><br><b>(0.050)</b> | 0.023<br>(0.017)               |
| Decile 2            | -0.009<br>(0.057)   | 0.006<br>(0.033) | 0.000<br>(0.026)  | 0.006<br>(0.037) | -0.046<br>(0.091) | <b>0.087</b><br><b>(0.032)</b> | 0.030<br>(0.037) | 0.003<br>(0.011) | -0.006<br>(0.053) | 0.016<br>(0.015) | <b>0.075</b><br><b>(0.023)</b> | <b>0.100</b><br><b>(0.058)</b> | <b>0.035</b><br><b>(0.015)</b> |
| Decile 3            | -0.009<br>(0.060)   | 0.005<br>(0.029) | 0.000<br>(0.035)  | 0.005<br>(0.038) | -0.053<br>(0.106) | <b>0.095</b><br><b>(0.036)</b> | 0.038<br>(0.048) | 0.003<br>(0.014) | -0.006<br>(0.051) | 0.015<br>(0.015) | <b>0.075</b><br><b>(0.024)</b> | 0.092<br>(0.055)               | <b>0.045</b><br><b>(0.021)</b> |
| Decile 4            | -0.010<br>(0.066)   | 0.005<br>(0.030) | 0.000<br>(0.037)  | 0.006<br>(0.045) | -0.061<br>(0.121) | <b>0.114</b><br><b>(0.042)</b> | 0.041<br>(0.054) | 0.004<br>(0.015) | -0.006<br>(0.048) | 0.017<br>(0.016) | <b>0.096</b><br><b>(0.030)</b> | <b>0.092</b><br><b>(0.057)</b> | <b>0.056</b><br><b>(0.025)</b> |
| Decile 5            | -0.011<br>(0.073)   | 0.006<br>(0.032) | -0.001<br>(0.039) | 0.008<br>(0.057) | -0.062<br>(0.125) | <b>0.122</b><br><b>(0.046)</b> | 0.043<br>(0.056) | 0.004<br>(0.016) | -0.006<br>(0.053) | 0.016<br>(0.016) | <b>0.105</b><br><b>(0.032)</b> | <b>0.123</b><br><b>(0.073)</b> | <b>0.054</b><br><b>(0.022)</b> |
| Decile 6            | -0.011<br>(0.075)   | 0.007<br>(0.040) | -0.001<br>(0.039) | 0.008<br>(0.056) | -0.068<br>(0.138) | <b>0.130</b><br><b>(0.049)</b> | 0.044<br>(0.061) | 0.005<br>(0.020) | -0.007<br>(0.058) | 0.018<br>(0.018) | <b>0.107</b><br><b>(0.033)</b> | 0.112<br>(0.068)               | <b>0.059</b><br><b>(0.023)</b> |
| Decile 7            | -0.012<br>(0.080)   | 0.007<br>(0.041) | 0.000<br>(0.042)  | 0.009<br>(0.066) | -0.070<br>(0.139) | <b>0.143</b><br><b>(0.053)</b> | 0.042<br>(0.057) | 0.005<br>(0.022) | -0.007<br>(0.058) | 0.021<br>(0.020) | <b>0.112</b><br><b>(0.034)</b> | <b>0.116</b><br><b>(0.067)</b> | <b>0.058</b><br><b>(0.023)</b> |
| Decile 8            | -0.013<br>(0.082)   | 0.008<br>(0.042) | -0.001<br>(0.040) | 0.009<br>(0.066) | -0.071<br>(0.142) | <b>0.148</b><br><b>(0.055)</b> | 0.046<br>(0.056) | 0.005<br>(0.023) | -0.007<br>(0.059) | 0.022<br>(0.021) | <b>0.111</b><br><b>(0.034)</b> | <b>0.122</b><br><b>(0.072)</b> | <b>0.066</b><br><b>(0.026)</b> |
| Decile 9            | -0.013<br>(0.086)   | 0.008<br>(0.042) | 0.000<br>(0.042)  | 0.010<br>(0.070) | -0.075<br>(0.150) | <b>0.156</b><br><b>(0.058)</b> | 0.048<br>(0.058) | 0.006<br>(0.025) | -0.007<br>(0.056) | 0.020<br>(0.019) | <b>0.112</b><br><b>(0.033)</b> | <b>0.108</b><br><b>(0.063)</b> | <b>0.057</b><br><b>(0.023)</b> |
| Decile 10           | -0.014<br>(0.090)   | 0.009<br>(0.049) | 0.000<br>(0.041)  | 0.011<br>(0.078) | -0.076<br>(0.152) | <b>0.157</b><br><b>(0.059)</b> | 0.052<br>(0.060) | 0.007<br>(0.029) | -0.007<br>(0.063) | 0.020<br>(0.021) | <b>0.115</b><br><b>(0.036)</b> | <b>0.131</b><br><b>(0.074)</b> | <b>0.064</b><br><b>(0.023)</b> |
| Dependent variable: | E(ihs(housing-related debts)   housing-related debts > 0) |                  |                   |                  |                   |                                |                  |                  |                   |                  |                                |                                |                                |
| Decile 1            | -0.124<br>(0.496)   | 0.082<br>(0.305) | 0.130<br>(0.312)  | 0.069<br>(0.217) | -0.490<br>(0.792) | <b>0.683</b><br><b>(0.229)</b> | 0.323<br>(0.273) | 0.034<br>(0.112) | -0.081<br>(0.529) | 0.278<br>(0.301) | <b>0.828</b><br><b>(0.242)</b> | <b>1.013</b><br><b>(0.480)</b> | 0.130<br>(0.188)               |
| Decile 2            | -0.111<br>(0.545)   | 0.087<br>(0.351) | 0.101<br>(0.268)  | 0.090<br>(0.366) | -0.531<br>(0.950) | <b>0.813</b><br><b>(0.298)</b> | 0.323<br>(0.354) | 0.029<br>(0.117) | -0.116<br>(0.762) | 0.203<br>(0.231) | <b>0.914</b><br><b>(0.267)</b> | 0.998<br>(0.613)               | <b>0.252</b><br><b>(0.121)</b> |
| Decile 3            | -0.123<br>(0.612)   | 0.086<br>(0.368) | 0.152<br>(0.384)  | 0.092<br>(0.406) | -0.684<br>(1.264) | <b>0.982</b><br><b>(0.376)</b> | 0.432<br>(0.492) | 0.036<br>(0.150) | -0.091<br>(0.622) | 0.209<br>(0.218) | <b>0.967</b><br><b>(0.287)</b> | 0.946<br>(0.613)               | <b>0.316</b><br><b>(0.174)</b> |

(continues overleaf)



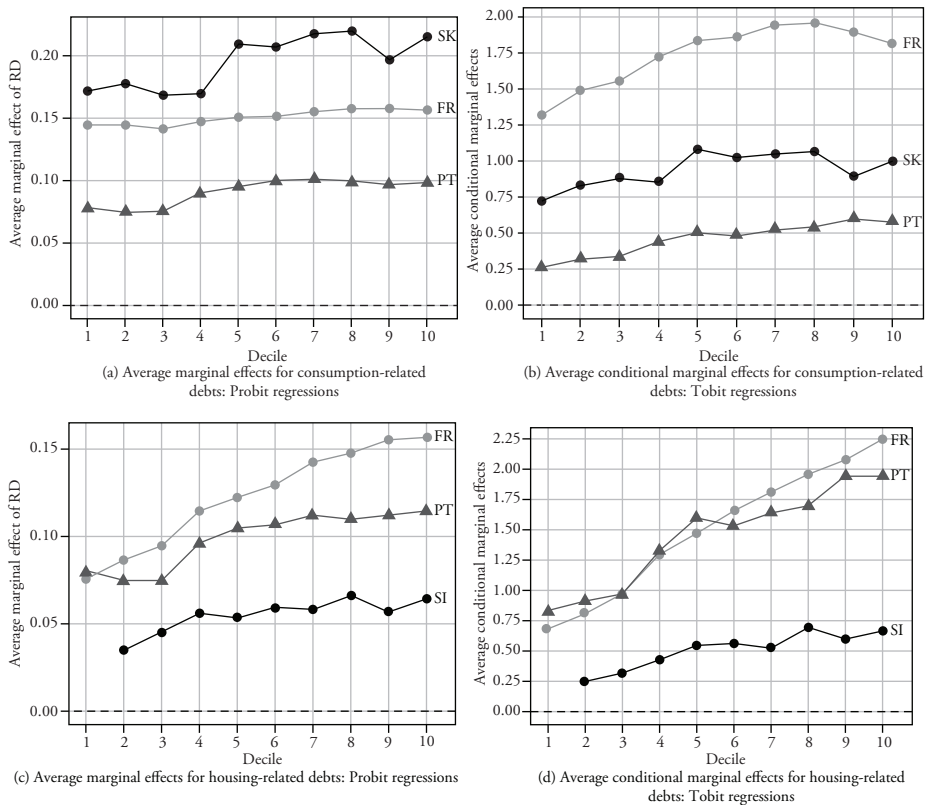
Table 3 (continued)

| Dependent variable: | Pr(housing-related debts > 0) |                  |                  |                  |                   |                         |                  |                  |                   |                  |                         |                         |                         |
|---------------------|-------------------------------|------------------|------------------|------------------|-------------------|-------------------------|------------------|------------------|-------------------|------------------|-------------------------|-------------------------|-------------------------|
|                     | AT                            | BE               | CY               | DE               | ES                | FR                      | GR               | IT               | LU                | NL               | PT                      | SK                      | SI                      |
| Decile 4            | -0.133<br>(0.670)             | 0.088<br>(0.378) | 0.184<br>(0.452) | 0.105<br>(0.473) | -0.780<br>(1.435) | <b>1.296</b><br>(0.473) | 0.468<br>(0.549) | 0.039<br>(0.170) | -0.094<br>(0.626) | 0.233<br>(0.247) | <b>1.328</b><br>(0.394) | 0.930<br>(0.630)        | <b>0.426</b><br>(0.241) |
| Decile 5            | -0.149<br>(0.751)             | 0.090<br>(0.380) | 0.192<br>(0.502) | 0.147<br>(0.693) | -0.888<br>(1.676) | <b>1.476</b><br>(0.568) | 0.556<br>(0.663) | 0.043<br>(0.190) | -0.107<br>(0.676) | 0.214<br>(0.240) | <b>1.602</b><br>(0.467) | 1.335<br>(0.836)        | <b>0.546</b><br>(0.258) |
| Decile 6            | -0.157<br>(0.784)             | 0.136<br>(0.563) | 0.233<br>(0.590) | 0.153<br>(0.712) | -0.867<br>(1.625) | <b>1.657</b><br>(0.644) | 0.555<br>(0.714) | 0.055<br>(0.245) | -0.143<br>(0.940) | 0.251<br>(0.284) | <b>1.529</b><br>(0.449) | 1.159<br>(0.750)        | <b>0.560</b><br>(0.266) |
| Decile 7            | -0.170<br>(0.849)             | 0.149<br>(0.648) | 0.247<br>(0.611) | 0.193<br>(0.917) | -1.029<br>(1.878) | <b>1.814</b><br>(0.682) | 0.524<br>(0.641) | 0.060<br>(0.265) | -0.150<br>(0.983) | 0.292<br>(0.307) | <b>1.643</b><br>(0.473) | <b>1.106</b><br>(0.663) | <b>0.529</b><br>(0.237) |
| Decile 8            | -0.182<br>(0.884)             | 0.169<br>(0.702) | 0.253<br>(0.639) | 0.187<br>(0.887) | -1.060<br>(1.945) | <b>1.963</b><br>(0.730) | 0.571<br>(0.612) | 0.065<br>(0.282) | -0.139<br>(0.897) | 0.318<br>(0.323) | <b>1.699</b><br>(0.501) | 1.253<br>(0.778)        | <b>0.693</b><br>(0.319) |
| Decile 9            | -0.195<br>(0.916)             | 0.161<br>(0.675) | 0.248<br>(0.610) | 0.208<br>(0.952) | -1.131<br>(2.070) | <b>2.082</b><br>(0.767) | 0.599<br>(0.603) | 0.072<br>(0.310) | -0.153<br>(0.956) | 0.288<br>(0.289) | <b>1.948</b><br>(0.557) | <b>1.045</b><br>(0.632) | <b>0.599</b><br>(0.269) |
| Decile 10           | -0.226<br>(1.038)             | 0.176<br>(0.718) | 0.259<br>(0.632) | 0.271<br>(1.177) | -1.282<br>(2.308) | <b>2.235</b><br>(0.827) | 0.670<br>(0.648) | 0.095<br>(0.390) | -0.176<br>(1.055) | 0.304<br>(0.314) | <b>1.950</b><br>(0.517) | <b>1.386</b><br>(0.800) | <b>0.665</b><br>(0.230) |

Note: Results are reported as average marginal effects (Probit) in the first section and as average conditional marginal effects (Tobit) in the second section. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Base group: lower secondary education.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SK = Slovakia; SI = Slovenia.  
Source: HFCS (2010) – UDB 1.5.

Overall, we also find interesting differences in the evolution of the effects of income inequality across the income distribution. Figure 3 illustrates the estimated marginal effects across the income distribution for countries that show statistically significant results. Figure 3a and 3b show the results for consumption-related debts, while Figure 3c and 3d show the results for housing-related debts. We find rather constant effects across the distribution for the likelihood of holding consumption-related debts in France and Portugal, but the effects on the outstanding amount of consumption-related debts are shown to become larger when we move up the income distribution. Interestingly, in France the effect becomes smaller again for the top income groups. When we look at the results for housing-related debts, however, we find a different pattern. As can be seen, the effects on the likelihood of holding debt increase across the income distribution. In particular, France shows a sharp increase from the first to the top income decile. This pattern becomes even more pronounced when we turn to the effects on the outstanding amount of housing-related debts.



*Notes:* The graphs show the estimated marginal effects of RD across the equivalised household income distribution. Countries are considered that show statistically significant results (above the 10 per cent level) in Tables 2 and 3.

FR = France; PT = Portugal; SI = Slovenia; SK = Slovakia.

*Source:* HFCS (2010) – UDB 1.5. Own estimations and illustration.

*Figure 3* Effects of RD across the income distribution

Taken together, the results suggest that the ‘keeping-up’ behaviour of households prevails across the entire income distribution in France and Portugal and partly in Slovakia and Slovenia. Interestingly, the effects of interpersonal comparison seem to vary much less across the distribution for consumption-related debts as compared to housing-related debts. Households at the top of the income distribution seem to be more affected by interpersonal comparison when it comes to housing-related debts. These strong effects for higher income households are consistent with the findings of Hake/Poyntner (2021). A further interesting finding applies to the countries with negative point estimates. In those, we observe consistent patterns of negative statistically insignificant point estimates across the income deciles. A supply-side income inequality mechanism stems from the notion that income works more as a signal for creditworthiness in the case of high income inequality. This would imply a varying impact of income inequality: a negative impact for lower income groups but a positive impact for higher income groups. The findings, however, do not suggest such a supply-side mechanism.

## 6 ROBUSTNESS CHECKS

In order to assess the robustness of the findings, I conduct some checks. In the results presented above, I do not consider potential issues resulting from omitted variables, which affect both borrowing behaviour and income inequality. Such an omitted variable may result in a bias in the estimates for income inequality. In order to test for a bias, I apply an instrumental variable estimation. Finding effective instruments to apply this approach is a difficult task. Georganakos et al. (2014) rely on information about employment shares in regional high-tech industries (manufacturing and knowledge-intensive services) and gaps in educational attainments between households and their peer group. They argue that the educational gap raises households’ perception of lagging behind and this effect is higher in regions with larger employment shares in high-tech industries. Thus, higher earnings of highly educated workers in high-tech industries may induce less-educated workers in other industries to feel they are lagging behind. As the HFCS data do not provide information about regions within countries, I cannot exploit variations in local employment rates. Instead, I use information about the overall employment in high-tech industries<sup>9</sup> within each country. Additionally, I compute the employment shares separately for age cohorts<sup>10</sup> (based on the age of the household head). In order to consider varying effects across educational groups, I compute the gap in educational attainments for households (that is, the gap between highest educational attainment and highest educational attainment within the household). The interaction of both variables, employment rates in high-tech industries by age cohorts and educational attainment gaps, allows us to capture the variation of high earners by different ages for different educational attainment levels. As I conduct the empirical analysis in multiple countries, I also consider an alternative set of instruments. In doing so, I select the size of the household main residence and income that accrues from private business (other than self-employment). In Austria, Belgium, Germany and Spain the instruments’ size of household main residence and income from private business seem to be more appropriate, while in other countries I stick to the instruments that I derived from Georganakos et al. (2014). In general, the

9. I compute the shares of employed individuals as percentages of the total population. Workers in high-tech industries are defined as managers and professionals in the industries *Manufacturing, Information & Communication*, and *Financial and Insurance Activities*.

10. Age cohorts: under 35, 35–50, and over 50 years.

relevance of the sets of instruments is quite different across the sample of countries. Overall, the estimated effects tend to be in line with the baseline results. I test for exogeneity of the relative deprivation variable by using a Wald test. In all countries, I fail to reject the null hypothesis of exogeneity. These results suggest a preference for the results from the baseline specifications. Detailed results of this robustness check are available upon request.

In a further step, I test the robustness of the measure for income inequality. Georgarakos et al. (2014) apply *inter alia* the difference between the own income and the average peer income as their relative income measure. Thus, they implicitly assume that households compare themselves with the average household within their reference group. By using the relative deprivation measure in the analysis, it is assumed that households make comparison particularly with higher-income households. In order to consider that households compare themselves with the average, I compute the *relative income* (RI) for an individual  $i$  as the ratio between the own (equivalised) income ( $y_i$ ) and the average (equivalised) income ( $\bar{y}$ ) in a country:

$$RI_i = \frac{y_i}{\bar{y}}, \quad (3)$$

where  $\bar{y} = \frac{\sum_{j=1}^N y_j}{N}$  and  $N$  is the total number of households in a country. Thus, the higher  $RI_i$ , the larger the distance to the average household and the higher is its position across the social ladder. Conversely, when  $RI_i$  is smaller than one, a household is lagging behind the average household. By using  $RI$  instead of  $RD$ , I re-run the baseline specifications from Tables A1 and A2. The results are shown to be consistent with those for the initial income inequality measure. Detailed regression results are available upon request.

So far, I consider the total debt stock in the empirical analysis. However, I am also interested in the question of what the impact of income inequality on current/new debts is. I therefore use the following question in the survey: ‘In the last three years, have you (or any member of your household) applied for a loan or other credit?’. As that variable represents a dummy variable, I can only employ a Probit regression model. The results are presented in Table A5 in Appendix 1. Interestingly, we find positive marginal average effects in nearly all countries. Belgium and Spain are exceptions where we observe negative results. However, the average marginal effects are only statistically different from zero in France and Greece. In addition, I have also estimated the effects by income decile for this specification. Interestingly, the effects in France and Greece are shown to increase across the income distribution. Results are available upon request. Even though relative deprivation shows once again to have no impact in most countries, the results suggest that income inequality affects households’ indebtedness positively in cases where there is an effect.

## 7 CONCLUSION

There is only scarce empirical evidence on the impact of income inequality on the financial behaviour of households at the micro level in continental European countries. Most of the analyses rely on data for individual countries and focus on total household debt. In this paper, I investigate the impact of the exposure to income inequality on consumption-related and housing-related household debts and shed light on the heterogeneity in effects across continental European countries. In doing so, I make use of the Eurosystem Household Finance and Consumption Survey for the year 2010. Based on the purpose of debts, I focus on debt positions in the households’ balance sheet that are potentially used for ‘conspicuous’ consumption and housing. Both items are expected to be important for interpersonal comparisons and signalling social status. A rich set of explanatory variables

allows us to control for transitory income shocks, employment intensity within households, wealth stocks, and informal channels to acquire financial resources.

The empirical results reveal a heterogeneous pattern for the impact of income inequality on consumption-related and housing-related debts. In Austria, Belgium, Cyprus, Germany, Spain, Greece, Italy, Luxembourg and the Netherlands, income inequality does not seem to be influential for holding these debt items. However, we find a robust positive impact of income inequality in France and Portugal. In addition, we find positive effects in Slovakia for consumption-related debts, and in Slovenia for housing-related debts. Interestingly, the effects operate in these countries across the entire income distribution, but the pattern seems to differ across the distribution between consumption-related and housing-related debts. In particular, the effects on housing-related debts are shown to become stronger for higher-income households compared to middle- and lower-income households.

Overall, the results suggest that there is only weak evidence that income inequality has affected households' indebtedness in continental European countries. The countries that show an impact are characterised by a predominantly positive effect on indebtedness across the income distribution. In these countries, individuals seem not only to consider their own balance sheet when they make financial decisions, but also to take their relative position in society into account. Further research needs to address whether this mechanism is also related to over-indebtedness of households. The low levels of consumption-related debt in continental European countries point to a low risk of financial stress and macroeconomic instability. In this respect, the effects of social comparison on housing-related debts seem to be much more relevant as these debt positions account for a relatively large outstanding amount.

This study used a rich harmonised cross-sectional survey data set for continental European countries. However, these data are related to some limitations. The data do not allow us to exploit direct information about the reference groups of households. Moreover, regional information for defining small-scale neighbourhoods for interpersonal comparison is not available. The availability of such information in cross-country data would allow us to present more in-depth insights into the nexus between interpersonal comparison and household indebtedness.

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APPENDIX 1

Table A1 Probit regressions: consumption-related debts

| Dependent variable:                   | Pr(consumption-related debts > 0) |                                  |                            |                            |                                  |                                  |                                  |                                  |                                  |                            |                                  |                                  |                                  |
|---------------------------------------|-----------------------------------|----------------------------------|----------------------------|----------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------|----------------------------------|----------------------------------|----------------------------------|
|                                       | AT                                | BE                               | CY                         | DE                         | ES                               | FR                               | GR                               | IT                               | LU                               | NL                         | PT                               | SK                               | SI                               |
| Relative deprivation, ihs-transformed | -0.024<br>(0.064)                 | 0.018<br>(0.043)                 | -0.049<br>(0.053)          | -0.013<br>(0.052)          | -0.091<br>(0.056)                | <b>0.151</b><br>( <b>0.048</b> ) | -0.005<br>(0.037)                | -0.016<br>(0.013)                | -0.017<br>(0.044)                | -0.006<br>(0.023)          | <b>0.091</b><br>( <b>0.028</b> ) | <b>0.194</b><br>( <b>0.083</b> ) | 0.032<br>(0.022)                 |
| Gross income, ihs-transformed         | -0.011<br>(0.062)                 | 0.033<br>(0.033)                 | 0.029<br>(0.045)           | 0.001<br>(0.044)           | 0.009<br>(0.019)                 | <b>0.174</b><br>( <b>0.034</b> ) | 0.028<br>(0.048)                 | 0.002<br>(0.013)                 | 0.016<br>(0.029)                 | -0.005<br>(0.037)          | <b>0.129</b><br>( <b>0.027</b> ) | <b>0.295</b><br>( <b>0.125</b> ) | 0.008<br>(0.010)                 |
| Age household head                    | -0.005<br>( <b>0.001</b> )        | -0.008<br>( <b>0.001</b> )       | -0.010<br>( <b>0.002</b> ) | -0.006<br>( <b>0.001</b> ) | -0.008<br>( <b>0.001</b> )       | -0.005<br>( <b>0.001</b> )       | -0.002<br>( <b>0.001</b> )       | -0.005<br>( <b>0.001</b> )       | -0.013<br>( <b>0.002</b> )       | -0.006<br>( <b>0.002</b> ) | -0.009<br>( <b>0.001</b> )       | -0.006<br>( <b>0.001</b> )       | -0.006<br>( <b>0.002</b> )       |
| Female household head                 | -0.025<br>(0.023)                 | <b>0.042</b><br>( <b>0.024</b> ) | 0.002<br>(0.035)           | -0.015<br>(0.027)          | 0.010<br>(0.018)                 | -0.022<br>( <b>0.012</b> )       | 0.003<br>(0.028)                 | -0.050<br>( <b>0.012</b> )       | -0.005<br>(0.033)                | -0.019<br>(0.041)          | 0.019<br>(0.021)                 | 0.004<br>(0.020)                 | -0.112<br>( <b>0.037</b> )       |
| Primary educ. or below                | <b>0.594</b><br>( <b>0.316</b> )  | -0.013<br>(0.054)                | 0.111<br>(0.081)           | -0.141<br>(0.179)          | 0.003<br>(0.026)                 | -0.018<br>(0.025)                | -0.073<br>( <b>0.042</b> )       | -0.001<br>(0.022)                | -0.060<br>(0.061)                | 0.170<br>(0.105)           | -0.031<br>(0.021)                | 0.060<br>(0.270)                 | -0.230<br>( <b>0.118</b> )       |
| Upper secondary educ.                 | 0.044<br>(0.032)                  | -0.030<br>(0.036)                | 0.112<br>(0.067)           | 0.047<br>(0.044)           | 0.044<br>(0.027)                 | 0.036<br>(0.024)                 | 0.016<br>(0.036)                 | -0.006<br>(0.017)                | -0.034<br>(0.053)                | 0.037<br>(0.041)           | -0.027<br>(0.027)                | 0.104<br>(0.126)                 | -0.081<br>(0.052)                |
| Tertiary educ.                        | 0.020<br>(0.047)                  | -0.004<br>(0.035)                | 0.100<br>(0.064)           | 0.037<br>(0.050)           | <b>0.061</b><br>( <b>0.027</b> ) | 0.007<br>(0.025)                 | -0.027<br>(0.045)                | 0.026<br>(0.020)                 | -0.046<br>(0.059)                | 0.025<br>(0.044)           | 0.021<br>(0.033)                 | 0.087<br>(0.133)                 | -0.035<br>(0.060)                |
| Age diff. within HH                   | 0.002<br>(0.001)                  | 0.000<br>(0.001)                 | 0.002<br>(0.002)           | 0.001<br>(0.001)           | -0.001<br>(0.001)                | <b>0.002</b><br>( <b>0.001</b> ) | -0.002<br>(0.001)                | 0.001<br>(0.001)                 | 0.000<br>(0.002)                 | 0.001<br>(0.002)           | <b>0.001</b><br>( <b>0.001</b> ) | 0.001<br>(0.001)                 | -0.002<br>(0.002)                |
| Educ. diff. within HH                 | 0.016<br>(0.018)                  | 0.015<br>(0.014)                 | 0.000<br>(0.000)           | 0.002<br>(0.013)           | -0.002<br>(0.008)                | 0.004<br>(0.006)                 | 0.019<br>(0.013)                 | -0.005<br>(0.008)                | <b>0.032</b><br>( <b>0.018</b> ) | -0.008<br>(0.018)          | 0.010<br>(0.008)                 | 0.021<br>(0.015)                 | -0.058<br>( <b>0.021</b> )       |
| Married household head                | 0.033<br>(0.031)                  | -0.038<br>(0.028)                | 0.002<br>(0.046)           | 0.030<br>(0.033)           | 0.025<br>(0.023)                 | 0.008<br>(0.015)                 | 0.057<br>(0.031)                 | 0.005<br>(0.019)                 | 0.064<br>(0.040)                 | 0.032<br>(0.043)           | 0.023<br>(0.022)                 | <b>0.072</b><br>( <b>0.030</b> ) | -0.039<br>(0.050)                |
| # of adults                           | -0.048<br>(0.029)                 | -0.022<br>(0.025)                | -0.020<br>(0.029)          | 0.001<br>(0.029)           | <b>0.050</b><br>( <b>0.018</b> ) | -0.073<br>( <b>0.014</b> )       | 0.028<br>(0.024)                 | 0.004<br>(0.014)                 | -0.015<br>(0.031)                | 0.017<br>(0.044)           | -0.053<br>( <b>0.015</b> )       | -0.099<br>( <b>0.032</b> )       | <b>0.065</b><br>( <b>0.037</b> ) |
| # of children                         | 0.025<br>(0.025)                  | <b>0.079</b><br>( <b>0.022</b> ) | -0.011<br>(0.029)          | 0.005<br>(0.026)           | <b>0.109</b><br>( <b>0.021</b> ) | -0.012<br>(0.011)                | <b>0.059</b><br>( <b>0.028</b> ) | <b>0.026</b><br>( <b>0.014</b> ) | 0.005<br>(0.025)                 | 0.008<br>(0.037)           | 0.013<br>(0.015)                 | -0.071<br>( <b>0.028</b> )       | 0.028<br>(0.039)                 |
| Inheritance received                  | <b>0.073</b><br>( <b>0.026</b> )  | -0.027<br>(0.023)                | 0.023<br>(0.034)           | 0.000<br>(0.026)           | -0.062<br>( <b>0.025</b> )       | -0.018<br>(0.012)                | -0.129<br>( <b>0.065</b> )       | n.a.<br>(n.a.)                   | -0.097<br>( <b>0.039</b> )       | 0.034<br>(0.044)           | -0.091<br>( <b>0.019</b> )       | <b>0.048</b><br>( <b>0.024</b> ) | -0.029<br>(0.050)                |
| Savings account                       | <b>0.145</b><br>( <b>0.054</b> )  | 0.035<br>(0.035)                 | -0.068<br>( <b>0.037</b> ) | 0.015<br>(0.041)           | -0.051<br>( <b>0.021</b> )       | <b>0.096</b><br>( <b>0.022</b> ) | 0.055<br>(0.059)                 | 0.016<br>(0.012)                 | -0.059<br>(0.042)                | -0.011<br>(0.062)          | -0.018<br>(0.021)                | -0.120<br>( <b>0.027</b> )       | -0.146<br>( <b>0.047</b> )       |

(continues overleaf)



Table A1 (continued)

| Dependent variable:               | Pr(consumption-related debris > 0) |                          |                         |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-----------------------------------|------------------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                   | AT                                 | BE                       | CY                      | DE                       | ES                       | FR                       | GR                       | IT                       | LU                       | NL                       | PT                       | SK                       | SI                       |
| Self-employed                     | -0.061<br>(0.038)                  | -0.049<br>(0.044)        | -0.026<br>(0.043)       | -0.025<br>(0.039)        | <b>-0.096</b><br>(0.033) | <b>-0.065</b><br>(0.021) | -0.022<br>(0.032)        | <b>-0.071</b><br>(0.023) | <b>-0.139</b><br>(0.058) | <b>-0.220</b><br>(0.079) | -0.045<br>(0.031)        | 0.023<br>(0.033)         | 0.071<br>(0.061)         |
| Employment share                  | <b>0.008</b><br>(0.003)            | <b>0.011</b><br>(0.003)  | 0.002<br>(0.005)        | <b>0.010</b><br>(0.003)  | <b>0.005</b><br>(0.002)  | <b>0.010</b><br>(0.002)  | 0.003<br>(0.003)         | <b>0.006</b><br>(0.002)  | 0.004<br>(0.004)         | 0.000<br>(0.005)         | <b>0.003</b><br>(0.002)  | 0.002<br>(0.003)         | <b>0.007</b><br>(0.004)  |
| % with more jobs                  | <b>0.002</b><br>(0.001)            | <b>0.001</b><br>(0.001)  | -0.001<br>(0.001)       | 0.000<br>(0.000)         | 0.000<br>(0.001)         | 0.000<br>(0.001)         | 0.001<br>(0.001)         | 0.000<br>(0.001)         | 0.001<br>(0.002)         | 0.001<br>(0.001)         | <b>0.001</b><br>(0.000)  | <b>0.002</b><br>(0.001)  | 0.000<br>(0.000)         |
| Informal fin. assistance          | -0.023<br>(0.021)                  | 0.022<br>(0.028)         | 0.011<br>(0.035)        | <b>-0.065</b><br>(0.027) | n.a.<br>(n.a.)           | n.a.<br>(n.a.)           | 0.033<br>(0.024)         | n.a.<br>(n.a.)           | -0.031<br>(0.043)        | -0.059<br>(0.036)        | 0.003<br>(0.019)         | 0.007<br>(0.024)         | <b>-0.088</b><br>(0.046) |
| Low income expectations           | 0.033<br>(0.022)                   | 0.030<br>(0.023)         | 0.004<br>(0.033)        | <b>0.052</b><br>(0.023)  | -0.036<br>(0.026)        | n.a.<br>(n.a.)           | 0.014<br>(0.025)         | <b>0.058</b><br>(0.015)  | -0.018<br>(0.035)        | -0.003<br>(0.049)        | -0.008<br>(0.017)        | 0.008<br>(0.022)         | <b>0.148</b><br>(0.042)  |
| Transitory shock                  | <b>0.069</b><br>(0.038)            | <b>0.080</b><br>(0.033)  | 0.005<br>(0.039)        | 0.011<br>(0.033)         | 0.005<br>(0.020)         | n.a.<br>(n.a.)           | 0.021<br>(0.029)         | <b>0.042</b><br>(0.018)  | -0.033<br>(0.043)        | -0.017<br>(0.078)        | 0.029<br>(0.018)         | 0.029<br>(0.025)         | <b>-0.173</b><br>(0.041) |
| Low asset constraint              | <b>0.229</b><br>(0.041)            | 0.077<br>(0.069)         | 0.110<br>(0.111)        | <b>0.271</b><br>(0.042)  | <b>0.186</b><br>(0.049)  | <b>0.154</b><br>(0.026)  | <b>0.259</b><br>(0.052)  | <b>0.124</b><br>(0.041)  | 0.040<br>(0.071)         | <b>0.163</b><br>(0.062)  | <b>0.296</b><br>(0.047)  | <b>0.218</b><br>(0.068)  | 0.054<br>(0.109)         |
| Financial assets, ihs-transformed | <b>-0.029</b><br>(0.008)           | <b>-0.030</b><br>(0.007) | -0.013<br>(0.008)       | <b>-0.016</b><br>(0.009) | <b>-0.017</b><br>(0.004) | <b>-0.040</b><br>(0.005) | <b>-0.051</b><br>(0.006) | <b>-0.014</b><br>(0.002) | <b>-0.020</b><br>(0.012) | <b>-0.031</b><br>(0.011) | <b>-0.021</b><br>(0.006) | <b>-0.028</b><br>(0.007) | <b>-0.031</b><br>(0.006) |
| Real assets, ihs-transformed      | <b>0.057</b><br>(0.009)            | <b>0.065</b><br>(0.009)  | <b>0.034</b><br>(0.014) | <b>0.054</b><br>(0.009)  | <b>0.085</b><br>(0.011)  | <b>0.066</b><br>(0.004)  | <b>0.083</b><br>(0.012)  | <b>0.047</b><br>(0.006)  | <b>0.080</b><br>(0.012)  | <b>0.101</b><br>(0.009)  | <b>0.110</b><br>(0.006)  | <b>0.029</b><br>(0.011)  | <b>0.069</b><br>(0.019)  |
| Observations                      | 2 036                              | 2 100                    | 1 122                   | 3 127                    | 5 914                    | 14 958                   | 2 056                    | 7 113                    | 888                      | 1 201                    | 3 687                    | 1 777                    | 309                      |
| Pseudo- $R^2$                     | 0.161                              | 0.327                    | 0.261                   | 0.187                    | 0.272                    | 0.280                    | 0.168                    | 0.176                    | 0.294                    | 0.247                    | 0.367                    | 0.193                    | 0.164                    |

Note: Results are reported as average marginal effects. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Results for 'n.a.' (not available) categories and 'negative income' dummy are not shown. Base group: lower secondary education of household head.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SK = Slovakia; SI = Slovenia.

Source: HFCS (2010) – UDB 1.5.

Table A2 Tobit regressions: consumption-related debts

| Dependent variable:                   | E(ths(consumption-related debts)   consumption-related debts > 0) |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |  |
|---------------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|--|
|                                       | AT  | BE                                | CY                                | DE                                | ES                                | FR                                | GR                                | IT                                | LU                                | NL                                | PT                                | SK                                | SI                                |  |
| Relative deprivation, ths-transformed | -0.145<br>(0.299)   | 0.227<br>(0.310)                  | -0.268<br>(0.553)                 | 0.141<br>(0.487)                  | -0.535<br>(0.405)                 | <b>1.738</b><br>( <b>0.481</b> )  | -0.174<br>(0.216)                 | -0.102<br>(0.092)                 | -0.139<br>(0.395)                 | -0.141<br>(0.174)                 | <b>0.466</b><br>( <b>0.213</b> )  | <b>0.939</b><br>( <b>0.406</b> )  | -0.004<br>(0.196)                 |  |
| Gross income, ths-transformed         | 0.005<br>(0.321)  | 0.301<br>(0.241)                  | 0.420<br>(0.609)                  | 0.129<br>(0.442)                  | 0.073<br>(0.145)                  | <b>1.680</b><br>( <b>0.348</b> )  | 0.149<br>(0.267)                  | 0.009<br>(0.096)                  | 0.387<br>(0.316)                  | -0.070<br>(0.222)                 | <b>0.753</b><br>( <b>0.163</b> )  | <b>1.487</b><br>( <b>0.620</b> )  | 0.083<br>(0.076)                  |  |
| Age household head                    | <b>-0.019</b><br>( <b>0.006</b> )                                 | <b>-0.017</b><br>( <b>0.007</b> ) | <b>-0.067</b><br>( <b>0.016</b> ) | <b>-0.039</b><br>( <b>0.010</b> ) | <b>-0.042</b><br>( <b>0.008</b> ) | <b>-0.026</b><br>( <b>0.005</b> ) | <b>-0.013</b><br>( <b>0.008</b> ) | <b>-0.028</b><br>( <b>0.005</b> ) | <b>-0.073</b><br>( <b>0.016</b> ) | <b>-0.037</b><br>( <b>0.016</b> ) | <b>-0.038</b><br>( <b>0.007</b> ) | <b>-0.020</b><br>( <b>0.004</b> ) | <b>-0.042</b><br>( <b>0.012</b> ) |  |
| Female household head                 | -0.120<br>(0.144)   | 0.239<br>(0.166)                  | -0.563<br>(0.347)                 | -0.277<br>(0.202)                 | 0.082<br>(0.135)                  | -0.119<br>(0.106)                 | -0.066<br>(0.193)                 | <b>-0.354</b><br>( <b>0.078</b> ) | -0.321<br>(0.280)                 | -0.051<br>(0.310)                 | -0.163<br>(0.119)                 | -0.039<br>(0.098)                 | <b>-0.748</b><br>( <b>0.309</b> ) |  |
| Primary educ. or below                | <b>2.345</b><br>( <b>0.725</b> )                                  | -0.390<br>(0.435)                 | 0.565<br>(1.001)                  | -0.982<br>(3.868)                 | -0.026<br>(0.201)                 | -0.277<br>(0.201)                 | -0.453<br>(0.278)                 | -0.033<br>(0.179)                 | -1.203<br>(0.584)                 | 1.035<br>(0.665)                  | -0.065<br>(0.161)                 | 0.179<br>(1.269)                  | <b>-3.238</b><br>( <b>0.945</b> ) |  |
| Upper secondary educ.                 | <b>0.373</b><br>( <b>0.195</b> )                                  | -0.031<br>(0.287)                 | 0.914<br>(0.803)                  | 0.240<br>(0.359)                  | 0.182<br>(0.180)                  | 0.234<br>(0.190)                  | 0.165<br>(0.251)                  | -0.035<br>(0.111)                 | -0.707<br>(0.502)                 | 0.188<br>(0.330)                  | 0.074<br>(0.177)                  | 0.596<br>(0.605)                  | -0.655<br>(0.470)                 |  |
| Tertiary educ.                        | 0.109<br>(0.280)  | 0.005<br>(0.278)                  | 0.889<br>(0.767)                  | -0.060<br>(0.393)                 | 0.271<br>(0.212)                  | -0.194<br>(0.196)                 | -0.242<br>(0.319)                 | 0.101<br>(0.145)                  | <b>-1.383</b><br>( <b>0.549</b> ) | -0.069<br>(0.363)                 | 0.106<br>(0.203)                  | 0.440<br>(0.631)                  | -0.548<br>(0.547)                 |  |
| Age diff. within HH                   | <b>0.007</b><br>( <b>0.006</b> )                                  | 0.003<br>(0.008)                  | 0.001<br>(0.018)                  | 0.004<br>(0.011)                  | -0.002<br>(0.006)                 | 0.004<br>(0.005)                  | -0.014<br>(0.010)                 | 0.006<br>(0.005)                  | -0.016<br>(0.016)                 | 0.019<br>(0.017)                  | <b>0.012</b><br>( <b>0.006</b> )  | 0.009<br>(0.007)                  | -0.008<br>(0.018)                 |  |
| Educ. diff. within HH                 | 0.062<br>(0.099)  | 0.165<br>(0.100)                  | 0.000<br>(0.000)                  | -0.011<br>(0.093)                 | 0.045<br>(0.056)                  | <b>0.083</b><br>( <b>0.048</b> )  | 0.143<br>(0.097)                  | -0.013<br>(0.055)                 | <b>0.290</b><br>( <b>0.136</b> )  | -0.139<br>(0.126)                 | 0.011<br>(0.044)                  | 0.094<br>(0.077)                  | <b>-0.291</b><br>( <b>0.183</b> ) |  |
| Married household head                | -0.056<br>(0.182)   | -0.186<br>(0.185)                 | -0.099<br>(0.489)                 | -0.018<br>(0.269)                 | 0.123<br>(0.167)                  | 0.074<br>(0.107)                  | 0.173<br>(0.220)                  | 0.009<br>(0.130)                  | 0.476<br>(0.374)                  | <b>0.736</b><br>( <b>0.337</b> )  | -0.154<br>(0.128)                 | 0.180<br>(0.146)                  | -0.525<br>(0.416)                 |  |
| # of adults                           | -0.132<br>(0.166)   | -0.070<br>(0.152)                 | 0.109<br>(0.277)                  | 0.179<br>(0.249)                  | <b>0.438</b><br>( <b>0.119</b> )  | <b>-0.424</b><br>( <b>0.122</b> ) | <b>0.295</b><br>( <b>0.175</b> )  | 0.093<br>(0.096)                  | 0.138<br>(0.265)                  | -0.004<br>(0.281)                 | <b>-0.167</b><br>( <b>0.097</b> ) | <b>-0.470</b><br>( <b>0.157</b> ) | <b>0.490</b><br>( <b>0.278</b> )  |  |
| # of children                         | 0.141<br>(0.134)  | <b>0.307</b><br>( <b>0.129</b> )  | -0.022<br>(0.286)                 | -0.064<br>(0.205)                 | <b>0.329</b><br>( <b>0.132</b> )  | <b>-0.186</b><br>( <b>0.086</b> ) | <b>0.482</b><br>( <b>0.181</b> )  | <b>0.174</b><br>( <b>0.098</b> )  | 1.112<br>(0.226)                  | -0.172<br>(0.219)                 | -0.055<br>(0.092)                 | <b>-0.426</b><br>( <b>0.140</b> ) | 0.088<br>(0.313)                  |  |
| Inheritance received                  | <b>0.467</b><br>( <b>0.156</b> )                                  | <b>-0.441</b><br>( <b>0.150</b> ) | 0.191<br>(0.361)                  | 0.163<br>(0.224)                  | <b>-0.416</b><br>( <b>0.186</b> ) | -0.119<br>(0.101)                 | <b>-0.971</b><br>( <b>0.452</b> ) | n.a.<br>(n.a.)                    | <b>-0.692</b><br>( <b>0.376</b> ) | 0.144<br>(0.345)                  | <b>-0.378</b><br>( <b>0.123</b> ) | 0.171<br>(0.111)                  | 0.058<br>(0.421)                  |  |
| Savings account                       | <b>0.861</b><br>( <b>0.373</b> )                                  | 0.098<br>(0.241)                  | -0.153<br>(0.379)                 | 0.016<br>(0.324)                  | <b>-0.299</b><br>( <b>0.159</b> ) | <b>0.813</b><br>( <b>0.197</b> )  | 0.401<br>(0.415)                  | <b>0.152</b><br>( <b>0.089</b> )  | <b>-0.795</b><br>( <b>0.379</b> ) | 0.060<br>(0.487)                  | <b>-0.279</b><br>( <b>0.154</b> ) | <b>-0.516</b><br>( <b>0.139</b> ) | <b>-1.621</b><br>( <b>0.434</b> ) |  |
| Self-employed                         | 0.078<br>(0.226)  | -0.112<br>(0.278)                 | 0.462<br>(0.459)                  | 0.183<br>(0.310)                  | -0.239<br>(0.226)                 | <b>-0.505</b><br>( <b>0.146</b> ) | 0.006<br>(0.213)                  | -0.261<br>(0.157)                 | <b>-1.133</b><br>( <b>0.509</b> ) | -0.887<br>(0.693)                 | -0.265<br>(0.160)                 | 0.095<br>(0.166)                  | -0.143<br>(0.495)                 |  |
| Employment share                      | <b>0.033</b><br>( <b>0.018</b> )                                  | <b>0.049</b><br>( <b>0.020</b> )  | 0.028<br>(0.044)                  | <b>0.065</b><br>( <b>0.026</b> )  | <b>0.039</b><br>( <b>0.017</b> )  | <b>0.070</b><br>( <b>0.013</b> )  | 0.016<br>(0.021)                  | <b>0.034</b><br>( <b>0.011</b> )  | 0.017<br>(0.039)                  | 0.024<br>(0.038)                  | <b>0.018</b><br>( <b>0.011</b> )  | 0.011<br>(0.016)                  | 0.053<br>(0.034)                  |  |

(continues overleaf)

Table A2 (continued)

| Dependent variable:               | E(ihs(consumption-related debts)   consumption-related debts > 0) |                          |                   |                          |                          |                          |                          |                          |                         |                          |                         |                          |                          |
|-----------------------------------|---|--------------------------|-------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|--------------------------|
|                                   | AT  | BE                       | CY                | DE                       | ES                       | FR                       | GR                       | IT                       | LU                      | NL                       | PT                      | SK                       | SI                       |
| % with more jobs                  | <b>0.010</b><br>(0.003)   | 0.007<br>(0.004)         | -0.002<br>(0.009) | 0.000<br>(0.004)         | -0.002<br>(0.004)        | 0.006<br>(0.004)         | 0.007<br>(0.006)         | 0.000<br>(0.003)         | 0.010<br>(0.011)        | <b>0.017</b><br>(0.008)  | 0.003<br>(0.003)        | <b>0.010</b><br>(0.003)  | <b>0.039</b><br>(0.015)  |
| Informal fin. assistance          | <b>-0.262</b><br>(0.120)  | 0.076<br>(0.226)         | -0.268<br>(0.358) | <b>-0.445</b><br>(0.211) | n.a.                     | n.a.                     | 0.094<br>(0.178)         | n.a.                     | -0.059<br>(0.401)       | <b>-0.885</b><br>(0.304) | -0.092<br>(0.120)       | -0.006<br>(0.113)        | <b>-0.642</b><br>(0.380) |
| Low income expectations           | 0.219<br>(0.136)  | 0.193<br>(0.166)         | 0.159<br>(0.327)  | <b>0.430</b><br>(0.194)  | <b>-0.336</b><br>(0.175) | n.a.                     | 0.109<br>(0.184)         | <b>0.374</b><br>(0.107)  | 0.001<br>(0.314)        | -0.093<br>(0.365)        | -0.020<br>(0.104)       | -0.039<br>(0.114)        | <b>1.092</b><br>(0.372)  |
| Transitory shock                  | <b>0.574</b><br>(0.215)   | <b>0.750</b><br>(0.232)  | 0.003<br>(0.371)  | 0.093<br>(0.247)         | 0.091<br>(0.143)         | n.a.                     | 0.162<br>(0.186)         | <b>0.274</b><br>(0.117)  | -0.074<br>(0.417)       | -0.102<br>(0.555)        | <b>0.367</b><br>(0.117) | 0.142<br>(0.124)         | <b>-0.811</b><br>(0.355) |
| Low asset constraint              | <b>1.442</b><br>(0.269)   | 0.355<br>(0.502)         | 1.536<br>(0.993)  | <b>2.295</b><br>(0.321)  | <b>1.023</b><br>(0.315)  | <b>1.479</b><br>(0.224)  | <b>2.002</b><br>(0.366)  | <b>1.031</b><br>(0.306)  | 0.283<br>(0.723)        | <b>1.374</b><br>(0.421)  | <b>1.644</b><br>(0.249) | <b>1.073</b><br>(0.319)  | 0.568<br>(0.992)         |
| Financial assets, ihs-transformed | <b>-0.186</b><br>(0.050)  | <b>-0.209</b><br>(0.044) | -0.119<br>(0.075) | <b>-0.117</b><br>(0.067) | <b>-0.126</b><br>(0.027) | <b>-0.313</b><br>(0.033) | <b>-0.323</b><br>(0.040) | <b>-0.095</b><br>(0.013) | -0.170<br>(0.118)       | <b>-0.317</b><br>(0.082) | -0.059<br>(0.042)       | <b>-0.145</b><br>(0.033) | <b>-0.242</b><br>(0.049) |
| Real assets, ihs-transformed      | <b>0.201</b><br>(0.051)   | <b>0.183</b><br>(0.075)  | 0.119<br>(0.153)  | <b>0.243</b><br>(0.064)  | <b>0.349</b><br>(0.070)  | <b>0.348</b><br>(0.037)  | <b>0.466</b><br>(0.094)  | <b>0.264</b><br>(0.039)  | <b>0.311</b><br>(0.133) | <b>0.394</b><br>(0.082)  | <b>0.358</b><br>(0.049) | 0.074<br>(0.055)         | <b>0.510</b><br>(0.165)  |
| Observations                      | 2036  | 2100                     | 1122              | 3127                     | 5916                     | 14958                    | 2056                     | 7112                     | 888                     | 1201                     | 3687                    | 1777                     | 315                      |
| Pseudo-R <sup>2</sup>             | 0.033   | 0.033                    | 0.032             | 0.033                    | 0.025                    | 0.031                    | 0.032                    | 0.018                    | 0.025                   | 0.037                    | 0.028                   | 0.042                    | 0.025                    |

Note: Results are reported as average conditional marginal effects. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Results for 'n.a.' (not available) categories and 'negative income' dummy are not shown. Base group: lower secondary education.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: HFCS (2010) – UDB 1.5.

Table A3 Probit regressions: housing-related debts

| Dependent variable:                   | Pr(housing-related debts > 0)   |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |                                 |
|---------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                                       | AT                              | BE                              | CY                              | DE                              | ES                              | FR                              | GR                              | IT                              | LU                              | NL                              | PT                              | SK                              | SI                              |
| Relative deprivation, ihs-transformed | -0.011<br>(0.073)               | 0.007<br>(0.037)                | 0.000<br>(0.037)                | 0.008<br>(0.057)                | -0.063<br>(0.125)               | <b>0.123</b><br><b>(0.045)</b>  | 0.043<br>(0.053)                | 0.005<br>(0.019)                | -0.006<br>(0.054)               | 0.018<br>(0.018)                | <b>0.100</b><br><b>(0.030)</b>  | <b>0.108</b><br><b>(0.062)</b>  | <b>0.053</b><br><b>(0.021)</b>  |
| Gross income, ihs-transformed         | -0.017<br>(0.075)               | 0.016<br>(0.027)                | <b>0.057</b><br><b>(0.032)</b>  | 0.015<br>(0.053)                | 0.015<br>(0.061)                | <b>0.113</b><br><b>(0.031)</b>  | 0.046<br>(0.070)                | 0.017<br>(0.026)                | 0.003<br>(0.037)                | 0.021<br>(0.027)                | <b>0.115</b><br><b>(0.028)</b>  | <b>0.158</b><br><b>(0.093)</b>  | <b>0.023</b><br><b>(0.009)</b>  |
| Age household head                    | <b>-0.004</b><br><b>(0.001)</b> | <b>-0.009</b><br><b>(0.001)</b> | <b>-0.007</b><br><b>(0.002)</b> | <b>-0.003</b><br><b>(0.001)</b> | <b>-0.008</b><br><b>(0.001)</b> | <b>-0.006</b><br><b>(0.000)</b> | 0.000<br>(0.001)                | <b>-0.005</b><br><b>(0.001)</b> | <b>-0.011</b><br><b>(0.002)</b> | <b>-0.005</b><br><b>(0.001)</b> | <b>-0.009</b><br><b>(0.001)</b> | <b>-0.006</b><br><b>(0.001)</b> | <b>-0.002</b><br><b>(0.002)</b> |
| Female household head                 | -0.001<br>(0.021)               | 0.027<br>(0.022)                | 0.013<br>(0.037)                | 0.011<br>(0.020)                | 0.005<br>(0.016)                | -0.009<br>(0.011)               | 0.016<br>(0.020)                | <b>-0.025</b><br><b>(0.012)</b> | 0.016<br>(0.033)                | 0.004<br>(0.034)                | 0.023<br>(0.020)                | 0.001<br>(0.019)                | -0.014<br>(0.035)               |
| Primary educ. or below                | 0.200<br>(0.277)                | 0.027<br>(0.051)                | <b>0.173</b><br><b>(0.088)</b>  | <b>-0.267</b><br><b>(0.132)</b> | -0.002<br>(0.026)               | 0.014<br>(0.023)                | -0.058<br>(0.039)               | -0.002<br>(0.019)               | 0.019<br>(0.061)                | 0.007<br>(0.077)                | -0.033<br>(0.020)               | 0.022<br>(0.230)                | 0.028<br>(0.083)                |
| Upper secondary educ.                 | -0.003<br>(0.033)               | -0.001<br>(0.033)               | <b>0.162</b><br><b>(0.075)</b>  | 0.006<br>(0.038)                | <b>0.048</b><br><b>(0.027)</b>  | 0.028<br>(0.022)                | 0.008<br>(0.030)                | -0.001<br>(0.015)               | 0.034<br>(0.051)                | 0.007<br>(0.036)                | -0.023<br>(0.025)               | 0.017<br>(0.110)                | <b>-0.078</b><br><b>(0.043)</b> |
| Tertiary educ.                        | -0.001<br>(0.044)               | 0.009<br>(0.033)                | <b>0.147</b><br><b>(0.075)</b>  | 0.032<br>(0.042)                | <b>0.064</b><br><b>(0.024)</b>  | <b>0.037</b><br><b>(0.022)</b>  | 0.010<br>(0.034)                | 0.022<br>(0.015)                | 0.071<br>(0.060)                | 0.024<br>(0.042)                | 0.002<br>(0.030)                | 0.012<br>(0.116)                | -0.018<br>(0.053)               |
| Age diff: within HH                   | 0.001<br>(0.001)                | 0.000<br>(0.001)                | <b>0.005</b><br><b>(0.002)</b>  | 0.000<br>(0.001)                | -0.001<br>(0.001)               | <b>0.001</b><br><b>(0.001)</b>  | 0.000<br>(0.001)                | <b>0.001</b><br><b>(0.000)</b>  | 0.001<br>(0.002)                | 0.000<br>(0.002)                | <b>0.001</b><br><b>(0.001)</b>  | -0.001<br>(0.001)               | 0.000<br>(0.002)                |
| Educ. diff: within HH                 | 0.011<br>(0.014)                | 0.007<br>(0.012)                | 0.000<br>(0.000)                | 0.006<br>(0.010)                | -0.005<br>(0.008)               | 0.000<br>(0.005)                | 0.001<br>(0.010)                | -0.007<br>(0.006)               | <b>0.034</b><br><b>(0.017)</b>  | -0.004<br>(0.014)               | 0.012<br>(0.007)                | 0.021<br>(0.013)                | -0.022<br>(0.018)               |
| Married household head                | <b>0.066</b><br><b>(0.027)</b>  | -0.026<br>(0.023)               | -0.017<br>(0.050)               | 0.024<br>(0.026)                | <b>0.040</b><br><b>(0.021)</b>  | -0.008<br>(0.012)               | <b>0.087</b><br><b>(0.027)</b>  | 0.018<br>(0.015)                | <b>0.088</b><br><b>(0.038)</b>  | 0.001<br>(0.033)                | <b>0.042</b><br><b>(0.021)</b>  | <b>0.084</b><br><b>(0.027)</b>  | -0.005<br>(0.038)               |
| # of adults                           | -0.028<br>(0.029)               | -0.035<br>(0.020)               | <b>-0.073</b><br><b>(0.025)</b> | -0.025<br>(0.022)               | 0.005<br>(0.021)                | <b>-0.060</b><br><b>(0.013)</b> | -0.008<br>(0.028)               | <b>-0.023</b><br><b>(0.012)</b> | <b>-0.060</b><br><b>(0.028)</b> | 0.009<br>(0.030)                | <b>-0.074</b><br><b>(0.015)</b> | <b>-0.061</b><br><b>(0.025)</b> | -0.011<br>(0.030)               |
| # of children                         | 0.036<br>(0.025)                | 0.031<br>(0.020)                | -0.013<br>(0.028)               | 0.019<br>(0.020)                | <b>0.110</b><br><b>(0.019)</b>  | 0.003<br>(0.009)                | 0.002<br>(0.024)                | -0.003<br>(0.010)               | -0.009<br>(0.025)               | 0.018<br>(0.028)                | -0.009<br>(0.015)               | -0.014<br>(0.022)               | <b>0.050</b><br><b>(0.028)</b>  |
| Inheritance received                  | <b>0.051</b><br><b>(0.022)</b>  | -0.017<br>(0.021)               | -0.026<br>(0.039)               | <b>-0.040</b><br><b>(0.019)</b> | <b>-0.057</b><br><b>(0.009)</b> | <b>-0.021</b><br><b>(0.009)</b> | -0.051<br>(0.056)               | n.a.<br>(n.a.)                  | <b>-0.078</b><br><b>(0.037)</b> | 0.020<br>(0.039)                | <b>-0.091</b><br><b>(0.018)</b> | 0.031<br>(0.021)                | 0.003<br>(0.039)                |
| Savings account                       | 0.062<br>(0.061)                | <b>0.066</b><br><b>(0.033)</b>  | -0.113<br>(0.036)               | 0.045<br>(0.031)                | -0.043<br>(0.019)               | <b>0.057</b><br><b>(0.020)</b>  | 0.010<br>(0.051)                | 0.001<br>(0.011)                | -0.032<br>(0.042)               | -0.032<br>(0.065)               | -0.008<br>(0.020)               | <b>-0.108</b><br><b>(0.024)</b> | -0.047<br>(0.041)               |
| Self-employed                         | <b>-0.130</b><br><b>(0.032)</b> | -0.056<br>(0.036)               | <b>-0.111</b><br><b>(0.046)</b> | <b>-0.122</b><br><b>(0.028)</b> | <b>-0.121</b><br><b>(0.030)</b> | <b>-0.055</b><br><b>(0.014)</b> | <b>-0.057</b><br><b>(0.026)</b> | <b>-0.094</b><br><b>(0.016)</b> | <b>-0.177</b><br><b>(0.058)</b> | <b>-0.203</b><br><b>(0.063)</b> | <b>-0.062</b><br><b>(0.031)</b> | 0.015<br>(0.030)                | 0.054<br>(0.052)                |
| Employment share                      | <b>0.007</b><br><b>(0.003)</b>  | <b>0.011</b><br><b>(0.003)</b>  | 0.000<br>(0.005)                | <b>0.008</b><br><b>(0.002)</b>  | <b>0.004</b><br><b>(0.002)</b>  | <b>0.005</b><br><b>(0.001)</b>  | 0.004<br>(0.002)                | <b>0.004</b><br><b>(0.001)</b>  | <b>0.008</b><br><b>(0.004)</b>  | -0.005<br>(0.003)               | <b>0.004</b><br><b>(0.002)</b>  | 0.001<br>(0.003)                | <b>0.014</b><br><b>(0.004)</b>  |

(continues overleaf)

Table A3 (continued)

| Dependent variable:               | Pr(housing-related debts > 0) |                          |                         |                          |                          |                          |                          |                          |                          |                         |                          |                          |                          |
|-----------------------------------|-------------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
|                                   | AT                            | BE                       | CY                      | DE                       | ES                       | FR                       | GR                       | IT                       | LU                       | NL                      | PT                       | SK                       | SI                       |
| % with more jobs                  | <b>0.001</b><br>(0.001)       | <b>0.001</b><br>(0.001)  | 0.001<br>(0.001)        | <b>0.001</b><br>(0.000)  | 0.001<br>(0.001)         | 0.000<br>(0.000)         | -0.001<br>(0.001)        | <b>0.001</b><br>(0.000)  | 0.001<br>(0.001)         | 0.000<br>(0.001)        | <b>0.001</b><br>(0.000)  | <b>0.001</b><br>(0.001)  | 0.000<br>(0.000)         |
| Informal fin. assistance          | 0.005<br>(0.022)              | 0.032<br>(0.026)         | 0.030<br>(0.036)        | <b>-0.036</b><br>(0.021) | n.a.<br>(n.a.)           | n.a.<br>(n.a.)           | <b>0.049</b><br>(0.021)  | n.a.<br>(n.a.)           | -0.030<br>(0.042)        | 0.030<br>(0.029)        | -0.001<br>(0.019)        | 0.018<br>(0.021)         | <b>-0.112</b><br>(0.041) |
| Low income expectations           | <b>0.034</b><br>(0.018)       | 0.018<br>(0.022)         | 0.006<br>(0.038)        | 0.039<br>(0.021)         | -0.024<br>(0.027)        | n.a.<br>(n.a.)           | 0.006<br>(0.023)         | <b>0.035</b><br>(0.011)  | -0.031<br>(0.032)        | -0.004<br>(0.041)       | -0.004<br>(0.018)        | 0.014<br>(0.019)         | <b>0.073</b><br>(0.038)  |
| Transitory shock                  | 0.024<br>(0.035)              | 0.021<br>(0.030)         | 0.012<br>(0.041)        | 0.017<br>(0.024)         | -0.003<br>(0.021)        | n.a.<br>(n.a.)           | 0.020<br>(0.025)         | 0.021<br>(0.015)         | -0.012<br>(0.043)        | -0.042<br>(0.063)       | 0.005<br>(0.018)         | 0.020<br>(0.022)         | <b>-0.092</b><br>(0.034) |
| Low asset constraint              | <b>0.109</b><br>(0.044)       | 0.046<br>(0.065)         | -0.036<br>(0.108)       | <b>0.140</b><br>(0.039)  | 0.080<br>(0.045)         | <b>0.052</b><br>(0.024)  | 0.048<br>(0.061)         | <b>-0.092</b><br>(0.043) | 0.041<br>(0.067)         | <b>0.187</b><br>(0.042) | <b>0.164</b><br>(0.043)  | <b>0.191</b><br>(0.056)  | -0.022<br>(0.093)        |
| Financial assets, ihs-transformed | -0.008<br>(0.009)             | <b>-0.030</b><br>(0.007) | -0.012<br>(0.009)       | <b>-0.019</b><br>(0.007) | <b>-0.018</b><br>(0.004) | <b>-0.019</b><br>(0.003) | <b>-0.036</b><br>(0.005) | <b>-0.008</b><br>(0.002) | <b>-0.020</b><br>(0.012) | -0.012<br>(0.010)       | <b>-0.025</b><br>(0.005) | <b>-0.015</b><br>(0.006) | -0.003<br>(0.006)        |
| Real assets, ihs-transformed      | <b>0.079</b><br>(0.008)       | <b>0.118</b><br>(0.008)  | <b>0.084</b><br>(0.015) | <b>0.120</b><br>(0.007)  | <b>0.107</b><br>(0.010)  | <b>0.096</b><br>(0.005)  | <b>0.096</b><br>(0.009)  | <b>0.060</b><br>(0.004)  | <b>0.138</b><br>(0.012)  | <b>0.167</b><br>(0.013) | <b>0.146</b><br>(0.008)  | <b>0.062</b><br>(0.011)  | <b>0.072</b><br>(0.019)  |
| Observations                      | 2036                          | 2100                     | 1122                    | 3127                     | 5914                     | 14958                    | 2056                     | 7113                     | 888                      | 1201                    | 3687                     | 1777                     | 309                      |
| Pseudo- $R^2$                     | 0.203                         | 0.411                    | 0.250                   | 0.357                    | 0.296                    | 0.391                    | 0.171                    | 0.246                    | 0.372                    | 0.435                   | 0.406                    | 0.176                    | 0.187                    |

Note: Results are reported as average marginal effects. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Results for 'n.a.' (not available) categories and 'negative income' dummy are not shown. Base group: lower secondary education of household head.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: HFCS (2010) – UDB 1.5.

Table A4 Tobit regressions: housing-related debts

| Dependent variable:                   | E(ihs(housing-related debts)   housing-related debts > 0) |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                  |
|---------------------------------------|---|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|
|                                       | AT  | BE                                | CY                                | DE                                | ES                                | FR                                | GR                                | IT                                | LU                                | NL                                | PT                                | SK                                | SI                               |
| Relative deprivation, ihs-transformed | -0.161<br>(0.768)   | 0.126<br>(0.523)                  | 0.207<br>(0.509)                  | 0.163<br>(0.733)                  | -0.889<br>(1.609)                 | <b>1.502</b><br>( <b>0.558</b> )  | 0.524<br>(0.566)                  | 0.054<br>(0.230)                  | -0.127<br>(0.804)                 | 0.259<br>(0.266)                  | <b>1.469</b><br>( <b>0.414</b> )  | <b>1.102</b><br>( <b>0.655</b> )  | <b>0.482</b><br>( <b>0.211</b> ) |
| Gross income, ihs-transformed         | -0.190<br>(0.798)   | 0.251<br>(0.394)                  | <b>0.935</b><br>( <b>0.476</b> )  | 0.220<br>(0.702)                  | 0.206<br>(0.801)                  | <b>1.416</b><br>( <b>0.391</b> )  | 0.507<br>(0.755)                  | 0.206<br>(0.315)                  | 0.098<br>(0.526)                  | 0.329<br>(0.375)                  | <b>1.683</b><br>( <b>0.398</b> )  | <b>1.606</b><br>( <b>0.985</b> )  | <b>0.255</b><br>( <b>0.095</b> ) |
| Age household head                    | <b>-0.048</b><br>( <b>0.011</b> )                         | <b>-0.119</b><br>( <b>0.015</b> ) | <b>-0.075</b><br>( <b>0.023</b> ) | <b>-0.039</b><br>( <b>0.010</b> ) | <b>-0.100</b><br>( <b>0.015</b> ) | <b>-0.073</b><br>( <b>0.006</b> ) | -0.005<br>(0.010)                 | <b>-0.056</b><br>( <b>0.007</b> ) | <b>-0.158</b><br>( <b>0.022</b> ) | <b>-0.076</b><br>( <b>0.018</b> ) | <b>-0.122</b><br>( <b>0.012</b> ) | <b>-0.054</b><br>( <b>0.008</b> ) | -0.026<br>(0.019)                |
| Female household head                 | (0.238)   | (0.285)                           | (0.496)                           | (0.258)                           | (0.195)                           | (0.133)                           | (0.231)                           | ( <b>0.144</b> )                  | (0.433)                           | (0.494)                           | (0.242)                           | (0.196)                           | (0.359)                          |
| Primary educ. or below                | 1.616<br>(2.055)  | 0.423<br>(0.791)                  | 2.329<br>(1.396)                  | -3.761<br>(7.436)                 | -0.066<br>(0.362)                 | 0.151<br>(0.295)                  | -0.714<br>(0.464)                 | -0.043<br>(0.236)                 | -0.039<br>(0.844)                 | 0.375<br>(1.289)                  | <b>-0.445</b><br>( <b>0.253</b> ) | 0.050<br>(2.449)                  | 0.360<br>(0.893)                 |
| Upper secondary educ.                 | -0.012<br>(0.390)   | 0.029<br>(0.452)                  | <b>2.258</b><br>( <b>1.199</b> )  | 0.092<br>(0.463)                  | 0.594<br>(0.330)                  | 0.344<br>(0.275)                  | 0.103<br>(0.355)                  | -0.003<br>(0.175)                 | 0.286<br>(0.703)                  | 0.150<br>(0.537)                  | <b>-0.360</b><br>( <b>0.304</b> ) | 0.158<br>(1.193)                  | -0.723<br>(0.449)                |
| Tertiary educ.                        | 0.019<br>(0.510)  | 0.203<br>(0.433)                  | <b>2.198</b><br>( <b>1.194</b> )  | 0.460<br>(0.512)                  | <b>0.749</b><br>( <b>0.302</b> )  | <b>0.472</b><br>( <b>0.274</b> )  | 0.109<br>(0.396)                  | 0.240<br>(0.177)                  | 0.551<br>(0.810)                  | 0.398<br>(0.611)                  | -0.075<br>(0.350)                 | 0.111<br>(1.251)                  | -0.157<br>(0.531)                |
| Age diff. within HH                   | 0.008<br>(0.013)  | 0.006<br>(0.015)                  | <b>0.060</b><br>( <b>0.025</b> )  | 0.007<br>(0.012)                  | -0.014<br>(0.013)                 | <b>0.017</b><br>( <b>0.006</b> )  | -0.004<br>(0.013)                 | <b>0.011</b><br>( <b>0.005</b> )  | 0.011<br>(0.023)                  | 0.009<br>(0.021)                  | <b>0.025</b><br>( <b>0.010</b> )  | -0.011<br>(0.013)                 | -0.001<br>(0.018)                |
| Educ. diff. within HH                 | 0.089<br>(0.151)  | 0.060<br>(0.143)                  | 0.000<br>(0.000)                  | 0.072<br>(0.117)                  | -0.045<br>(0.093)                 | 0.012<br>(0.054)                  | 0.011<br>(0.118)                  | -0.083<br>(0.073)                 | <b>0.403</b><br>( <b>0.216</b> )  | -0.066<br>(0.188)                 | <b>0.168</b><br>( <b>0.100</b> )  | <b>0.216</b><br>( <b>0.128</b> )  | -0.155<br>(0.186)                |
| Married household head                | <b>0.809</b><br>( <b>0.316</b> )                          | -0.464<br>(0.288)                 | -0.288<br>(0.718)                 | 0.331<br>(0.337)                  | <b>0.459</b><br>( <b>0.264</b> )  | -0.151<br>(0.135)                 | <b>1.039</b><br>( <b>0.324</b> )  | 0.193<br>(0.177)                  | <b>1.070</b><br>( <b>0.515</b> )  | 0.100<br>(0.456)                  | 0.382<br>(0.266)                  | <b>0.871</b><br>( <b>0.278</b> )  | -0.043<br>(0.384)                |
| # of adults                           | -0.318<br>(0.318)   | <b>-0.481</b><br>( <b>0.253</b> ) | <b>-1.028</b><br>( <b>0.336</b> ) | -0.348<br>(0.280)                 | 0.070<br>(0.256)                  | <b>-0.721</b><br>( <b>0.152</b> ) | -0.095<br>(0.310)                 | -0.270<br>(0.140)                 | -0.712<br>(0.399)                 | 0.076<br>(0.365)                  | <b>-1.072</b><br>( <b>0.210</b> ) | <b>-0.621</b><br>( <b>0.262</b> ) | -0.111<br>(0.286)                |
| # of children                         | 0.374<br>(0.272)  | 0.168<br>(0.208)                  | -0.309<br>(0.364)                 | 0.185<br>(0.241)                  | <b>1.144</b><br>( <b>0.214</b> )  | -0.083<br>(0.103)                 | 0.008<br>(0.280)                  | -0.038<br>(0.116)                 | -0.175<br>(0.324)                 | 0.091<br>(0.320)                  | <b>-0.393</b><br>( <b>0.183</b> ) | -0.134<br>(0.228)                 | <b>0.456</b><br>( <b>0.258</b> ) |
| Inheritance received                  | <b>0.581</b><br>( <b>0.249</b> )                          | -0.204<br>(0.276)                 | -0.420<br>(0.519)                 | <b>-0.516</b><br>( <b>0.233</b> ) | <b>-0.808</b><br>( <b>0.286</b> ) | <b>-0.261</b><br>( <b>0.107</b> ) | -0.632<br>(0.688)                 | n.a.                              | <b>-1.022</b><br>( <b>0.541</b> ) | 0.151<br>(0.533)                  | <b>-1.278</b><br>( <b>0.252</b> ) | 0.287<br>(0.217)                  | 0.048<br>(0.387)                 |
| Savings account                       | 0.672<br>(0.739)  | <b>0.809</b><br>( <b>0.452</b> )  | -1.577<br>(0.506)                 | 0.597<br>(0.404)                  | -0.555<br>(0.244)                 | <b>0.666</b><br>( <b>0.255</b> )  | 0.100<br>(0.614)                  | 0.010<br>(0.137)                  | -0.548<br>(0.574)                 | -0.467<br>(0.946)                 | -0.213<br>(0.257)                 | <b>-1.115</b><br>( <b>0.260</b> ) | -0.441<br>(0.411)                |
| Self-employed                         | <b>-1.513</b><br>( <b>0.362</b> )                         | -0.760<br>(0.444)                 | <b>-1.424</b><br>( <b>0.653</b> ) | -1.671<br>(0.355)                 | <b>-1.545</b><br>( <b>0.374</b> ) | <b>-0.712</b><br>( <b>0.155</b> ) | <b>-0.645</b><br>( <b>0.301</b> ) | <b>-1.135</b><br>( <b>0.201</b> ) | <b>-2.581</b><br>( <b>0.877</b> ) | <b>-3.327</b><br>( <b>1.060</b> ) | <b>-0.905</b><br>( <b>0.388</b> ) | 0.155<br>(0.300)                  | 0.317<br>(0.477)                 |
| Employment share                      | <b>0.076</b><br>( <b>0.039</b> )                          | <b>0.149</b><br>( <b>0.033</b> )  | -0.001<br>(0.072)                 | 0.090<br>(0.031)                  | <b>0.055</b><br>( <b>0.027</b> )  | <b>0.062</b><br>( <b>0.015</b> )  | <b>0.047</b><br>( <b>0.028</b> )  | <b>0.048</b><br>( <b>0.017</b> )  | <b>0.116</b><br>( <b>0.054</b> )  | -0.070<br>(0.045)                 | <b>0.053</b><br>( <b>0.026</b> )  | 0.010<br>(0.033)                  | <b>0.142</b><br>( <b>0.040</b> ) |

(continues overleaf)

Table A4 (continued)

| Dependent variable:               | E(ihs(housing-related debts)   housing-related debts > 0) |                          |                         |                          |                          |                          |                          |                          |                         |                         |                          |                          |                          |
|-----------------------------------|---|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
|                                   | AT  | BE                       | CY                      | DE                       | ES                       | FR                       | GR                       | IT                       | LU                      | NL                      | PT                       | SK                       | SI                       |
| % with more jobs                  | <b>0.011</b><br>(0.006)                                   | <b>0.014</b><br>(0.007)  | 0.008<br>(0.016)        | 0.010<br>(0.004)         | 0.010<br>(0.007)         | 0.000<br>(0.004)         | -0.009<br>(0.017)        | <b>0.011</b><br>(0.004)  | 0.015<br>(0.013)        | -0.004<br>(0.010)       | <b>0.012</b><br>(0.004)  | <b>0.013</b><br>(0.005)  | <b>0.087</b><br>(0.010)  |
| Informal fin. assistance          | 0.022<br>(0.249)  | 0.309<br>(0.349)         | 0.351<br>(0.498)        | -0.451<br>(0.260)        | n.a.<br>(n.a.)           | n.a.<br>(n.a.)           | <b>0.541</b><br>(0.257)  | n.a.<br>(n.a.)           | -0.550<br>(0.612)       | 0.333<br>(0.451)        | -0.040<br>(0.264)        | 0.173<br>(0.211)         | <b>-1.032</b><br>(0.425) |
| Low income expectations           | <b>0.395</b><br>(0.207)                                   | 0.198<br>(0.285)         | 0.018<br>(0.510)        | 0.482<br>(0.258)         | -0.331<br>(0.352)        | n.a.<br>(n.a.)           | 0.074<br>(0.270)         | 0.410<br>(0.126)         | -0.446<br>(0.455)       | -0.009<br>(0.601)       | -0.005<br>(0.236)        | 0.113<br>(0.196)         | 0.613<br>(0.373)         |
| Transitory shock                  | 0.304<br>(0.387)  | 0.214<br>(0.367)         | 0.243<br>(0.558)        | 0.178<br>(0.298)         | 0.067<br>(0.263)         | n.a.<br>(n.a.)           | 0.227<br>(0.291)         | 0.254<br>(0.175)         | -0.011<br>(0.632)       | -0.918<br>(0.947)       | 0.074<br>(0.234)         | 0.173<br>(0.230)         | <b>-0.821</b><br>(0.340) |
| Low asset constraint              | <b>1.396</b><br>(0.523)                                   | 0.771<br>(0.937)         | -0.412<br>(1.677)       | <b>1.904</b><br>(0.473)  | <b>1.187</b><br>(0.485)  | <b>0.759</b><br>(0.308)  | 0.624<br>(0.697)         | -1.120<br>(1.943)        | 0.667<br>(1.004)        | <b>2.161</b><br>(0.481) | <b>1.952</b><br>(0.442)  | <b>1.995</b><br>(0.544)  | -0.114<br>(0.993)        |
| Financial assets, ihs-transformed | -0.083<br>(0.100)   | <b>-0.383</b><br>(0.081) | -0.152<br>(0.114)       | <b>-0.244</b><br>(0.083) | <b>-0.227</b><br>(0.042) | <b>-0.239</b><br>(0.043) | <b>-0.386</b><br>(0.052) | <b>-0.097</b><br>(0.018) | -0.254<br>(0.166)       | -0.175<br>(0.136)       | <b>-0.321</b><br>(0.068) | <b>-0.152</b><br>(0.057) | -0.039<br>(0.056)        |
| Real assets, ihs-transformed      | <b>0.965</b><br>(0.099)                                   | <b>1.790</b><br>(0.122)  | <b>1.342</b><br>(0.216) | <b>1.734</b><br>(0.109)  | <b>1.585</b><br>(0.133)  | <b>1.362</b><br>(0.065)  | <b>1.169</b><br>(0.117)  | <b>0.761</b><br>(0.057)  | <b>2.244</b><br>(0.194) | <b>3.036</b><br>(0.264) | <b>2.272</b><br>(0.106)  | <b>0.677</b><br>(0.110)  | <b>0.784</b><br>(0.215)  |
| Observations                      | 2 036   | 2 100                    | 1 122                   | 3 127                    | 5 916                    | 14 958                   | 2 056                    | 7 112                    | 888                     | 1 201                   | 3 687                    | 1 777                    | 315                      |
| Pseudo-R <sup>2</sup>             | 0.033   | 0.033                    | 0.032                   | 0.033                    | 0.025                    | 0.032                    | 0.032                    | 0.018                    | 0.025                   | 0.037                   | 0.028                    | 0.025                    | 0.042                    |

Note: Results are reported as average conditional marginal effects. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Results for 'n.a.' (not available) categories and 'negative income' dummy are not shown. Base group: lower secondary education.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; IT = Italy; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: HFCS (2010) – UDB 1.5.

Table A5 Probit estimation: applied for new credit

| Dependent variable:                   | Pr(applied for new credit > 0)    |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |                                   |
|---------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                                       | AT                                | BE                                | CY                                | DE                                | ES                                | FR                                | GR                                | LU                                | NL                                | PT                                | SK                                | SI                                |
| Relative deprivation, ihs-transformed | 0.026<br>(0.049)                  | -0.040<br>(0.042)                 | 0.020<br>(0.036)                  | 0.030<br>(0.048)                  | -0.045<br>(0.044)                 | <b>0.233</b><br>( <b>0.058</b> )  | <b>0.107</b><br>( <b>0.040</b> )  | 0.049<br>(0.064)                  | 0.024<br>(0.067)                  | 0.013<br>(0.033)                  | 0.004<br>(0.046)                  | 0.028<br>(0.021)                  |
| Gross income, ihs-transformed         | 0.029<br>(0.053)                  | 0.010<br>(0.032)                  | 0.014<br>(0.027)                  | 0.042<br>(0.045)                  | -0.007<br>(0.011)                 | <b>0.190</b><br>( <b>0.039</b> )  | <b>0.097</b><br>( <b>0.050</b> )  | 0.070<br>(0.054)                  | 0.041<br>(0.125)                  | 0.046<br>(0.030)                  | 0.026<br>(0.057)                  | <b>0.055</b><br>( <b>0.027</b> )  |
| Age household head                    | <b>-0.003</b><br>( <b>0.001</b> ) | <b>-0.008</b><br>( <b>0.002</b> ) | <b>-0.006</b><br>( <b>0.001</b> ) | <b>-0.005</b><br>( <b>0.001</b> ) | <b>-0.004</b><br>( <b>0.001</b> ) | <b>-0.005</b><br>( <b>0.001</b> ) | -0.001<br>(0.001)                 | <b>-0.011</b><br>( <b>0.002</b> ) | <b>-0.004</b><br>( <b>0.002</b> ) | <b>-0.008</b><br>( <b>0.001</b> ) | <b>0.003</b><br>( <b>0.001</b> )  | <b>-0.006</b><br>( <b>0.001</b> ) |
| Female household head                 | 0.011<br>(0.014)                  | 0.055<br>(0.038)                  | -0.012<br>(0.016)                 | -0.007<br>(0.029)                 | 0.005<br>(0.017)                  | -0.010<br>(0.012)                 | 0.008<br>(0.014)                  | -0.043<br>(0.037)                 | -0.024<br>(0.031)                 | 0.032<br>(0.027)                  | 0.011<br>(0.029)                  | <b>0.063</b><br>( <b>0.034</b> )  |
| Primary educ. or below                | 0.057<br>(0.170)                  | <b>0.178</b><br>( <b>0.080</b> )  | -0.067<br>(0.048)                 | 0.144<br>(0.119)                  | 0.012<br>(0.025)                  | -0.021<br>(0.027)                 | <b>-0.069</b><br>( <b>0.029</b> ) | 0.055<br>(0.070)                  | -0.014<br>(0.220)                 | <b>-0.067</b><br>( <b>0.027</b> ) | 0.096<br>(0.313)                  | <b>0.257</b><br>( <b>0.086</b> )  |
| Upper secondary educ.                 | 0.015<br>(0.022)                  | 0.062<br>(0.074)                  | -0.035<br>(0.028)                 | 0.069<br>(0.044)                  | 0.027<br>(0.025)                  | 0.021<br>(0.026)                  | -0.021<br>(0.021)                 | 0.034<br>(0.063)                  | -0.036<br>(0.033)                 | <b>-0.065</b><br>( <b>0.032</b> ) | -0.062<br>(0.099)                 | 0.046<br>(0.049)                  |
| Tertiary educ.                        | 0.033<br>(0.029)                  | 0.068<br>(0.074)                  | -0.029<br>(0.028)                 | 0.067<br>(0.050)                  | 0.032<br>(0.028)                  | 0.001<br>(0.026)                  | 0.007<br>(0.027)                  | 0.050<br>(0.067)                  | 0.018<br>(0.037)                  | -0.024<br>(0.035)                 | -0.083<br>(0.104)                 | -0.005<br>(0.056)                 |
| Age diff. within HH                   | <b>0.001</b><br>( <b>0.001</b> )  | <b>0.004</b><br>( <b>0.002</b> )  | -0.001<br>(0.001)                 | 0.000<br>(0.001)                  | -0.001<br>(0.001)                 | 0.000<br>(0.001)                  | 0.000<br>(0.001)                  | -0.002<br>(0.002)                 | 0.000<br>(0.002)                  | -0.001<br>(0.001)                 | <b>-0.004</b><br>( <b>0.002</b> ) | 0.003<br>(0.002)                  |
| Educ diff. within HH                  | 0.003<br>(0.009)                  | 0.000<br>(0.000)                  | -0.015<br>(0.010)                 | -0.003<br>(0.011)                 | -0.010<br>(0.007)                 | 0.006<br>(0.006)                  | -0.004<br>(0.006)                 | 0.025<br>(0.020)                  | 0.019<br>(0.014)                  | 0.006<br>(0.010)                  | 0.017<br>(0.018)                  | 0.021<br>(0.019)                  |
| Married household head                | 0.022<br>(0.019)                  | -0.041<br>(0.055)                 | <b>-0.052</b><br>( <b>0.023</b> ) | 0.051<br>(0.028)                  | <b>-0.048</b><br>( <b>0.023</b> ) | 0.001<br>(0.017)                  | 0.032<br>(0.020)                  | 0.023<br>(0.046)                  | -0.017<br>(0.038)                 | 0.007<br>(0.021)                  | -0.008<br>(0.041)                 | 0.003<br>(0.045)                  |
| # of adults                           | -0.019<br>(0.020)                 | -0.002<br>(0.030)                 | -0.009<br>(0.017)                 | -0.029<br>(0.029)                 | <b>0.065</b><br>( <b>0.015</b> )  | <b>-0.051</b><br>( <b>0.015</b> ) | <b>-0.044</b><br>( <b>0.020</b> ) | 0.029<br>(0.035)                  | -0.017<br>(0.033)                 | <b>0.038</b><br>( <b>0.018</b> )  | 0.048<br>(0.044)                  | -0.016<br>(0.032)                 |
| # of children                         | <b>-0.028</b><br>( <b>0.013</b> ) | -0.027<br>(0.032)                 | 0.012<br>(0.014)                  | -0.032<br>(0.021)                 | <b>0.046</b><br>( <b>0.016</b> )  | <b>-0.021</b><br>( <b>0.011</b> ) | -0.021<br>(0.015)                 | 0.011<br>(0.030)                  | -0.017<br>(0.028)                 | 0.022<br>(0.016)                  | 0.051<br>(0.048)                  | 0.004<br>(0.031)                  |
| Inheritance received                  | <b>0.038</b><br>( <b>0.016</b> )  | 0.002<br>(0.040)                  | -0.004<br>(0.019)                 | <b>-0.042</b><br>( <b>0.023</b> ) | -0.015<br>(0.022)                 | -0.012<br>(0.012)                 | -0.036<br>(0.032)                 | -0.031<br>(0.041)                 | 0.023<br>(0.038)                  | 0.005<br>(0.022)                  | <b>-0.070</b><br>( <b>0.029</b> ) | -0.007<br>(0.042)                 |
| Savings account                       | 0.011<br>(0.040)                  | -0.030<br>(0.040)                 | 0.011<br>(0.028)                  | 0.027<br>(0.039)                  | 0.004<br>(0.022)                  | <b>0.080</b><br>( <b>0.021</b> )  | <b>0.057</b><br>( <b>0.027</b> )  | 0.032<br>(0.049)                  | 0.041<br>(0.047)                  | <b>-0.062</b><br>( <b>0.022</b> ) | <b>0.049</b><br>( <b>0.038</b> )  | <b>-0.086</b><br>( <b>0.043</b> ) |
| Self-employed                         | -0.005<br>(0.021)                 | 0.017<br>(0.052)                  | <b>-0.077</b><br>( <b>0.031</b> ) | <b>-0.056</b><br>( <b>0.032</b> ) | 0.026<br>(0.025)                  | -0.019<br>(0.020)                 | 0.028<br>(0.020)                  | -0.045<br>(0.064)                 | -0.002<br>(0.067)                 | 0.027<br>(0.033)                  | <b>0.139</b><br>( <b>0.047</b> )  | <b>-0.200</b><br>( <b>0.055</b> ) |
| Employment share within HH            | 0.001<br>(0.002)                  | 0.007<br>(0.004)                  | <b>0.002</b><br>( <b>0.002</b> )  | <b>0.006</b><br>( <b>0.002</b> )  | <b>0.003</b><br>( <b>0.002</b> )  | <b>0.007</b><br>( <b>0.002</b> )  | <b>0.004</b><br>( <b>0.002</b> )  | -0.004<br>(0.005)                 | -0.003<br>(0.003)                 | 0.001<br>(0.002)                  | <b>-0.010</b><br>( <b>0.004</b> ) | <b>0.007</b><br>( <b>0.004</b> )  |

(continues overleaf)



Table A5 (continued)

| Dependent variable:               | Pr(applied for new credit > 0) |                         |                         |                          |                          |                          |                         |                         |                          |                         |                         |                         |
|-----------------------------------|--------------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
|                                   | AT                             | BE                      | CY                      | DE                       | ES                       | FR                       | GR                      | LU                      | NL                       | PT                      | SK                      | SI                      |
| % with more jobs                  | <b>0.001</b><br>(0.000)        | 0.000<br>(0.001)        | <b>0.001</b><br>(0.000) | 0.000<br>(0.001)         | 0.000<br>(0.001)         | 0.000<br>(0.001)         | 0.001<br>(0.001)        | 0.001<br>(0.001)        | 0.001<br>(0.001)         | 0.001<br>(0.001)        | 0.001<br>(0.001)        | <b>0.009</b><br>(0.003) |
| Informal fin. assistance          | -0.014<br>(0.016)              | 0.007<br>(0.041)        | 0.009<br>(0.024)        | <b>-0.069</b><br>(0.022) | 0.000<br>(0.000)         | n.a.<br>(n.a.)           | -0.010<br>(0.016)       | <b>0.093</b><br>(0.055) | 0.033<br>(0.032)         | 0.014<br>(0.021)        | <b>0.106</b><br>(0.030) | -0.004<br>(0.043)       |
| Low income expectations           | 0.001<br>(0.015)               | -0.040<br>(0.037)       | -0.019<br>(0.021)       | -0.003<br>(0.020)        | -0.008<br>(0.025)        | n.a.<br>(n.a.)           | 0.013<br>(0.014)        | -0.014<br>(0.039)       | 0.065<br>(0.040)         | 0.013<br>(0.022)        | <b>0.103</b><br>(0.026) | <b>0.103</b><br>(0.039) |
| Transitory shock                  | <b>0.048</b><br>(0.021)        | 0.033<br>(0.041)        | -0.020<br>(0.027)       | -0.016<br>(0.028)        | 0.047<br>(0.018)         | n.a.<br>(n.a.)           | 0.007<br>(0.018)        | -0.016<br>(0.050)       | -0.056<br>(0.058)        | 0.016<br>(0.023)        | 0.019<br>(0.032)        | 0.024<br>(0.038)        |
| Low asset constraint              | <b>0.068</b><br>(0.028)        | 0.163<br>(0.111)        | -0.036<br>(0.063)       | <b>0.104</b><br>(0.042)  | <b>0.224</b><br>(0.051)  | <b>0.144</b><br>(0.026)  | <b>0.096</b><br>(0.048) | 0.056<br>(0.091)        | <b>0.075</b><br>(0.041)  | <b>0.180</b><br>(0.040) | <b>0.220</b><br>(0.094) | <b>0.149</b><br>(0.087) |
| Financial assets, ihs-transformed | -0.003<br>(0.005)              | 0.004<br>(0.010)        | -0.005<br>(0.004)       | -0.011<br>(0.007)        | <b>-0.010</b><br>(0.004) | <b>-0.028</b><br>(0.004) | -0.007<br>(0.005)       | -0.018<br>(0.015)       | <b>-0.016</b><br>(0.009) | -0.001<br>(0.006)       | -0.001<br>(0.010)       | 0.003<br>(0.006)        |
| Real assets, ihs-transformed      | <b>0.023</b><br>(0.006)        | <b>0.041</b><br>(0.019) | <b>0.074</b><br>(0.009) | <b>0.037</b><br>(0.007)  | <b>0.037</b><br>(0.008)  | <b>0.040</b><br>(0.004)  | <b>0.033</b><br>(0.009) | <b>0.028</b><br>(0.016) | <b>0.035</b><br>(0.009)  | <b>0.041</b><br>(0.008) | -0.002<br>(0.019)       | <b>0.054</b><br>(0.019) |
| Observations                      | 2036                           | 2088                    | 1122                    | 3127                     | 5914                     | 14958                    | 2056                    | 888                     | 1188                     | 3683                    | 1777                    | 313                     |
| Pseudo-R <sup>2</sup>             | 0.137                          | 0.291                   | 0.171                   | 0.104                    | 0.121                    | 0.155                    | 0.120                   | 0.135                   | 0.147                    | 0.175                   | 0.100                   | 0.208                   |

Note: Results are reported as average conditional marginal effects. Results shown in bold are statistically significant at least at the 10 per cent level. Standard errors in parentheses. Standard errors computed based on replicate weights. Results for 'n.a.' (not available) categories and 'negative income' dummy are not shown. Base group: lower secondary education. Information for the dependent variable is derived from the survey question: 'In the last three years, have you (or any member of your household) applied for a loan or other credit?'. Information is not available for Italy.

AT = Austria; BE = Belgium; CY = Cyprus; DE = Germany; ES = Spain; FR = France; GR = Greece; LU = Luxembourg; NL = the Netherlands; PT = Portugal; SI = Slovenia; SK = Slovakia.

Source: HFCS (2010) – UDB 1.5.