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Beyond Income Poverty: Subjective Poverty and Indebtedness

Martina Mysíková

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Contact: Katarina Jaksic
E-mail: Katarina.jaksic@ec.europa.eu

European Commission
B-1049 Brussels

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Martina Mysíková
Corresponding author
Institute of Sociology of the Czech Academy of Sciences
email: martina.mysikova@soc.cas.cz

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INTRODUCTION

Social policies in every country target poverty, which remains an issue even in the developed world. The causes and consequences of poverty are likely to intensify during and after the Covid-19 pandemic and the current energy crises. The pandemic suppressed employment and earnings, while the energy crisis and inflation pressures have increased housing and living costs, led to growing payment arrears and debt payment deferments, and may have incentivized many people to take out loans to maintain their regular living standards. Lost income, rising costs and consumption expenditure, and over-indebtedness worsen subjective well-being, social involvement and mental health, and can even threaten household subsistence. Understanding the interlinkages between income, expenditure, indebtedness and well-being is now more urgent than ever.

Poverty is a multidimensional phenomenon. It is well recognised that income alone cannot fully capture the complex nature of well-being, that poverty includes both objective and subjective aspects, and that omitting the dimensions of costs and liabilities in income-based measures can distort the overall picture. Although the European Commission applies various concepts, including material deprivation and social exclusion (e.g. Decancq et al., 2014; Mysíková, 2021; Nolan and Whelan, 2011), income poverty indicators remain the most frequently applied metrics to inform statistics and national social policy.

While the developing world struggles with extreme poverty, developed countries, including EU Member States, typically aim to achieve targets far above basic survival. Relative poverty concepts are applied to identify populations below the common living standard in a society (Hagenaars and van Praag, 1985). The economic approach builds on individual welfare described by utility functions, monetary approaches typically applied to proxy utility by income. The most commonly applied indicator of income poverty in the European Union (EU) – the at-risk-of-poverty (AROP) rate – conforms to this monetary and relative approach.

The relativity of the AROP measure ensures that people's incomes are compared to the standard established for their country. In higher-income countries, such as the EU Member States, the relative approach emphasises people's degree of social inclusion or relative position than their achievement of a minimum living standard. With social policies in the EU implemented at national level, the AROP rate helps to inform policies that will target the most disadvantaged populations of particular countries. On the other hand, the relativity of AROP lines limits the comparability of absolute living standards within the EU region because income levels, their distribution, and purchasing power differ substantially across the Member States. While the relative approach to measurement of poverty would benefit from a complementary absolute measure, the development of an absolute monetary poverty

standard applicable across EU countries is fraught with difficulties. These stem from national differences in consumption patterns, in interpretations of the absolute minimum necessary to avoid poverty, and in the methodologies used to arrive at such an absolute minimum.

To increase international comparability, official EU statistics monitor a multidimensional indicator, 'at risk of poverty or social exclusion' (AROPE). AROPE is a complex indicator that includes three main dimensions: income poverty, material and social deprivation, and low work intensity. The complexity of AROPE arises from its combining various conceptual approaches: income poverty is captured by the objective and relative AROP, material and social exclusion are represented by a multidimensional index that includes objective, subjective, relative, and absolute items, and low work intensity is a more objective index that captures degrees of exclusion from employment. This research note focuses on the first dimension, income poverty, and reviews potential complementary measures of income poverty that can supplement the 'objective income' view with data on 'subjective' income poverty and the dimension of household expenses.

AROP has been criticised for several reasons. The first focuses on the methodological steps of its construction, i.e. the equivalence scale and definition of the poverty line applied - essentially all of its methodological steps were already denoted as arbitrary at the time the methodology was being established (Hagenaars et al., 1994). Another criticism highlights AROP's limited information value for international comparisons. Given its relativity, it measures income inequality at the bottom of the income distribution, rather than measuring poverty (Fahey, 2007), although the absolute level of income poverty lines in some countries do not ensure that those whose incomes are at the line enjoy a sufficient standard of living (Förster, 2005). Finally, the concept of AROP assumes that households with the same income within a country have the same utility from their income. This assumption fails because household costs and liabilities vary.

There is a prevailing understanding that research and statistics should consider people's basic costs and expenditures rather than relying solely on their incomes, particularly given the energy crisis and rising global inflation. Although the income poverty concept refers to disposable household income, in reality, income remaining after necessary regular expenses (e.g. housing costs, food expenditure, loan payment) constitutes actual disposable income that can be spent on beyond-subsistence items. This remaining amount is what affects people's ability to participate in society and increases their well-being above a subsistence level.

This research note offers several complementary views that go beyond income poverty, using the most recent (2020) EU Statistics on Income and Living Conditions (EU-SILC) data, a survey that provides official poverty statistics in the EU. The study first estimates subjective poverty (SP), which builds on income, but that describes income as it is reported by households themselves: the necessary minimum monthly amount they require to make ends meet and to cover regular necessary expenses. Therefore, the measurement of SP will reflect people's own perceptions of their needs and actual situations, rather than an externally set 'sufficient' income threshold.

Second, given the unique opportunity of the EU-SILC 2020 module to engage with '[o]ver-indebtedness, consumption and wealth', the study compares household indebtedness across EU Member States and assesses factors related to households' over-indebtedness, either based on their self-reported degree of financial strain, or on the amount of their loan payments where such payments consume relatively high shares of their incomes.

Third, the study turns to overall populations and examines regular household expenses. Relative to their incomes, it looks at how households cope with housing costs and, more importantly, how additional regular expenses such as loan payments and necessary expenditure on food and transport affect the household's 'disposable' income that remains for consumption of 'unnecessary' goods and services, which signals the degree to which a household is able to participate in the society. It assesses factors related to 'expense-overburden' in EU countries. Finally, it contrasts income poverty rates with SP and expense-overburden rates. The purpose of this research note is to provide complementary views to the monetary dimensions of measuring poverty.

LITERATURE OVERVIEW

A variety of concepts and approaches for measuring income poverty have recently emerged to complement the AROP rate. For example, the concept of a weakly relative poverty line that combines relative and absolute features (Ravallion and Chen, 2011), or several approaches to the development of an EU-wide absolute monetary measure of poverty that should represent constant or comparable purchasing power over commodities across countries and time (see discussion in Menyhért et al., 2021). The terms *living wage*, *decent minimum wages,* and *decent income* in recent literature stress the need for the incomes of the poor to be sufficient to enable their participation in society above a subsistence level (Cantillon et al., 2017; Yao et al., 2017). *Budget standards* and *reference budgets* are tools to define income-based poverty thresholds, with the advantage that they do not depend on a national income distribution but rather aim to empirically assess the level of income needed at a minimum to enable adequate social participation (Penne et al., 2016). Reference budgets that estimate monthly or annual costs include goods and services that households need in order to exist at a designated level of well-being. Finally, the concept of subjective income poverty has recently reappeared (Želinský et al., 2021), having taken a backseat to subjective approaches developed in the 1970s (Goedhart et al., 1977).

Applications of subjective approaches to estimate income poverty developed in the 1970s and 1980s are typically limited by available comparable data. In addition, there is no single accepted method for estimating subjective poverty. The methods that are generally applied can be broadly distinguished by the types of variables used: methods that rely on money-metric responses by households, or categorical answers (or combinations of these, Flik and van Praag, 1991). EU-SILC data provide both a categorical question on the ability to make ends meet and a minimum income question (MIQ).

The MIQ offers several options for deriving the subjective poverty level. The 'individual method' applied in empirical works (Vrooman and Hoff, 2004; Thijssen and Wildeboer Schut, 2005; Mysíková et al., 2019) is based on a simple comparison of actual household income and their reported subjective minimum income required to make ends meet. By contrast, the 'model-based' method allows researchers to derive the so-called subjective poverty line (SPL) (Goedhart et al., 1977; Kapteyn et al., 1988), where MIQ responses are intersected with actual reported income, controlling for other household and economic variables (see next section).

Most earlier studies showed that estimated SPLs were higher than the official income poverty lines, thus SP rates were higher than the official standards (García-Carro and Sánchez-Sellero, 2019, focused on Spain in the 2010s; De Vos and Garner, 1991; and Garner and De Vos, 1995, compared United States (US) and Dutch data from the 1980s; Saunders et al., 1994, analysed Sweden and Australia in the 1980s and 1990s). Nevertheless, a recent study on EU countries (Želinský et al., 2021) shows that SPLs – and thus SP rates – are in fact *lower* than income poverty lines and rates in some Western European countries. SPLs define a households' minimum income required to cover regular expenses, including housing and food and possibly payments of debts and loans.

Household indebtedness is common in all developed countries and does not necessarily have negative consequences. Some degree of indebtedness can be beneficial for borrowers and for society, because credit availability is an important factor in economic development. A modern consumer society is accustomed to living at least partially on credit, and borrowing is widespread across all demographic groups (Dynan, 2009). Debt enables households to increase their welfare, especially by allowing for smoothed consumption. However, one stream of theoretical and empirical literature relates higher levels of indebtedness to greater national income inequality (Merisha and Meszaros, 2018). It is not only an individual's personal situation that matters; interpersonal comparisons also matter to individual utility, and influence behaviour and decision-making. Their relative or comparative income influences people's sense of well-being and satisfaction (Clark et al., 2008). Higher income inequality can spur low-income household borrowing, as people seek to be equivalent to groups to which they compare themselves, typically richer households. Carr and Jayadev (2015) found support for the hypothesis that lower relative income and Veblen effects[1] contributed to rising US household indebtedness in the 2000s.

Another literature stream focuses on factors leading to indebtedness and its consequences. Although most loans can be repaid without financial harm to households, the literature often focuses on negative aspects of debt: low financial literacy being an often-cited cause of negative consequences of debt (Atkinson and Messy, 2012; McKnight, 2019), with diminished psychological well-being and mental health frequently noted as consequences of over-indebtedness (Shen et al., 2014). Therefore, distinctions should be drawn between indebtedness and over-indebtedness. The latter refers to situations

[1] A Veblen good is a type of luxury or positional good whose higher price makes it more desirable. Veblen (1899) identified conspicuous consumption as a mode of status-seeking.

in which households are unable to manage their debts, causing financial stress and threatening their subsistence. The evidence shows that the effect of indebtedness on individual welfare has an inverse-U shape, i.e. a high debt payment to income ratio actually decreases welfare (see Ntsalaze and Ikhide, 2017, for effects on multidimensional poverty). Therefore, low-income households, which have low living standards by definition, are more prone to high debt payment to income ratios and are most vulnerable to the negative impacts of over-indebtedness.

The literature distinguishes between three approaches to measuring over-indebtedness: objective, subjective, and administrative (Betti et al., 2007). Objective approaches describe the ability to make payments on debt, in terms of debt payment to income ratio, debt to asset ratio, consumption to income ratio, or an indicator of arrears (Anioła and Gołaś, 2012; McKnight, 2019). Subjective approaches utilise household survey responses about the degree of financial burden posed by their debts, and how they cope with them. Administrative approaches apply official data on the formal procedures used to address payment problems, for example, the share of people whose property is distrained.

To date, there is no single common definition of over-indebtedness, i.e., there is no consensus about where to draw a threshold between reasonable indebtedness and over-indebtedness. However, it is recognised that over-indebtedness should describe situations where meeting financial commitments requires a household to reduce its expenditure and lower its living standards substantially, and when a household's financial situation cannot be resolved simply by additional borrowing (Fondeville et al., 2007). Although accepted in principle, measurements of over-indebtedness are difficult. An increase in debt-to-income or debt payment-to-income ratios, or similar objective indicators, does not necessarily imply problems managing household debt. Subjective indicators can reflect differences in individual attitudes to definitions of difficulties, possibly differing between households and across countries. Being in arrears on payments – considered an objective rather than a subjective indicator – can still differ in terms of the degree of the arrears. Nevertheless, studies usually find associations between high debt-to-income ratios, the probability of a debt resulting in difficulty making ends meet, and higher amounts of arrears (e.g. Rinaldi and Sanchez-Arellano, 2006).

According to a life-cycle permanent income conceptual framework (Modigliani, 1966; Friedman, 1957), a rational, far-sighted consumer deciding under conditions of unrestricted access to consumer credit optimises consumption as a constant fraction of discounted resources at any time in their life span (see Betti et al., 2007, for a more detailed overview). This implies that indebtedness is optimal under certain circumstances and at various stages of a life cycle, especially in earlier phases. Under this framework, *over*-indebtedness can only be explained by unexpected adverse shocks. In reality, household resources and expenditure are subject to both positive and negative unexpected events. Loosening the assumptions of the theory can explain additional causes of over-indebtedness: irrational behaviour (myopia or inertia), market imperfections (liquidity constraint), and more (Betti at el., 2007).

Market imperfections can constitute substantial differences in the levels of indebtedness across countries. Betti et al. (2007) classified EU countries in the 1990s as low-borrowing if fewer than 15% of households had a consumer debt (Italy, Greece, Portugal), medium-borrowing countries with 15-30% indebted households (Austria, Belgium, Spain, Germany), and high-borrowing countries with 30-50% of households in debt (Finland, Ireland, France, the UK, Luxembourg and Denmark). Using a subjective approach, households that reported difficulty or serious difficulty in making debt payments (credit debt, mortgage, and hire purchase instalments) were identified as over-indebted. Over-indebtedness was found to be more frequent in low-borrowing than in high-borrowing countries: 96% of indebted households were over-indebted in Greece, while 29% of indebted households were over-indebted in Luxembourg. A negative relationship was observed between the country levels of indebtedness and over-indebtedness (Betti et al., 2007), possibly because the consumer credit market is restricted in low-borrowing countries, thus only households in a strong financial state take out a loan, making them most likely to face debt-service problems and payment difficulties.

Liquidity constraints in low-borrowing countries can prevent households from smoothing their consumption or successfully handling adverse shocks, and thus lower their well-being. Although these constraints can differ substantially across countries due to differences in financial institutions, the literature confirms that some types of households are more likely to be credit-constrained than others. Blanc et al. (2015) argued that female, young, divorced, self-employed or unemployed people, larger households, and lower-income and lower-wealth households have less access to credit. Accordingly, there may be situations in which households may need a loan, but do not have access to one, either from formal bank or non-bank institutions, or through informal channels such as family or friends. Betti et al. (2007) classified households with no loans that experienced difficulty in making ends meet as ‘under-indebted’. That term defines a possible pool of households that may not have access to credit. In addition, under-indebted households had low levels of current income and consumption, and high consumption-to-income ratios, making them more likely to be in poverty than over-indebted households.

From a life-cycle perspective, it follows that the overall lifetime stock of debt and resources should be compared. However, even if such data could be obtained, the threshold of what defines over-indebtedness remains unclear. Consumption is assumed to be smoothed by debt, while income changes over time, thus the optimal debt-to-income ratio varies over a lifetime, as does the threshold of over-indebtedness. A lifetime perspective cannot be reflected in the analysis due to the lack of data. On the contrary, this study focuses on households’ current situation, and how they are able to make ends meet on a month-to-month basis. However, a lifetime perspective indicates that indebtedness should decline with age.

Household indebtedness measured in objective terms has generally increased in EU countries over time (Anioła and Gołaś, 2012). Indebtedness is not limited to low-income households and individuals,

as debt levels increase along with income distribution (Černohorská and Linhartová, 2011). This is unsurprising, as it follows from financial regulations allowing wealthier people to borrow more. An analysis of the determinants of over-indebtedness in Poland used the negative margin (i.e., a negative amount left in household disposable income after deducting regular debt payments and fixed expenditure) (Anioła-Mikołajczak, 2016). The findings associated low-income, low-educated, older, and single-person households with a greater probability of being over-indebted. Low-income households may often be considered high-risk borrowers and have less access to mainstream banking services and/or be offered loans with higher interest rates (Flaherty and Banks, 2013). Generally, low-income households are more prone to becoming over-indebted and even insolvent because their debt payment to income ratio can easily become unmanageably high.

This note analysed the propensity of households to take a loan. Assuming a transparent world with rational agents, taking a loan is a welfare-enhancing instrument to smoothen consumption across the life-cycle. It is expected that middle and high-income households borrow more often in order to increase their well-being, combined with their greater eligibility to consumer credit than low-income households. In reality, taking a loan can be often related to unexpected adverse shocks (unemployment, family issues, health problems), possibly taken rather involuntarily by low-income households.[2] This study hypothesised that middle and high-income households borrowed more often, however, low-income households were more likely over-indebted in terms of financial difficulties and/or high loan repayment relative to income.

DATA AND EMPIRICAL METHODS

This study uses EU-SILC 2020 data, the source of official poverty statistics in the EU. The survey is mandatory for Member States, with data collected by national statistical offices and harmonised by Eurostat. The survey collects data at both household and individual levels, and all household members older than 15 are surveyed. While the core questionnaire gathers information annually on disposable income, housing costs, mortgage payments, the overall financial burden of the household, any arrears on payments, and the minimum income needed to make ends meet, the 2020 EU-SILC ad hoc module focused specifically on over-indebtedness. The 2020 ad hoc module provides a more complex view, including regular payments on household loans, the number, purpose, and source of loans, ability to save, and regular expenditure on food (distinguishing between meals ‘at home’ and ‘outside’) and transport (distinguishing between public and private).

The EU-SILC survey generally takes place in spring, thus 2020 data were collected at the beginning of the COVID-19 pandemic in most countries. While debt payments and consumption expenditure refer

[2] In general, disadvantaged households might have debts in terms of arrears and delayed regular payments even without (the possibility of) borrowing (considered as under-indebted in this study).

to the previous month, income typically refers to the previous calendar year, in this case, 2019. Therefore, any analysis may be affected by the COVID-19 pandemic, depending on the phase of the pandemic and the data collection period in individual countries. The EU-SILC 2020 data version of 01-2020 does not include Germany and Italy (or the UK), thus this analysis includes 25 EU Member States.

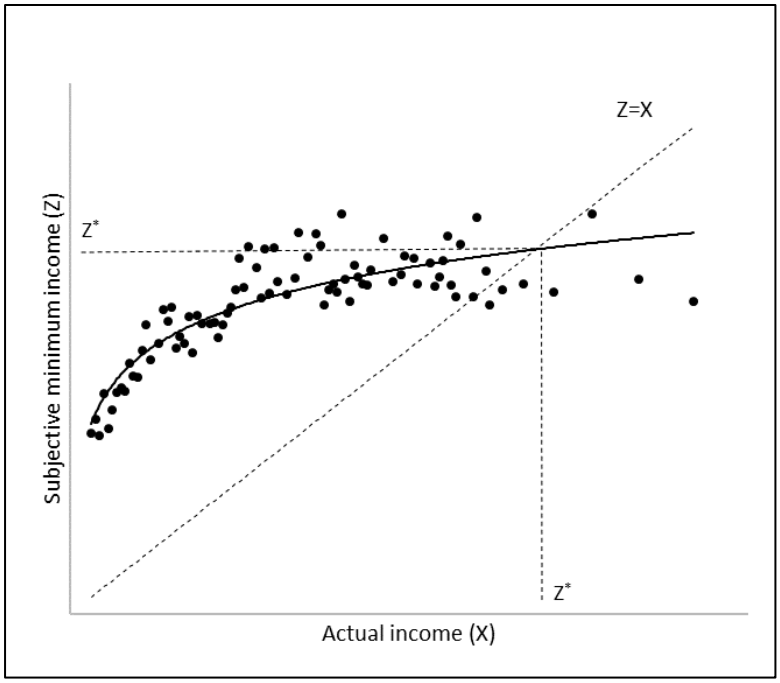
All analysis is at country level. Results are provided for individual countries and no data are pooled by regions or at EU level. Country household cross-sectional weights were employed in all regression models. The resulting income poverty rates were then weighted using individual cross-sectional weights, so that the poverty rates represent shares of income-poor individuals (not households), in line with the official EU AROP rate, also referred to as the objective income poverty rate.

SUBJECTIVE POVERTY BASED ON THE MIQ

Subjective poverty (SP) lines and rates can be derived using various approaches. The EU-SILC data allow for a money-metric approach based on the 'minimum income question' (MIQ), where respondents are asked to state the monthly minimum income needed by their households to make ends meet. 'Subjective minimum income' therefore represents the self-assessed amount needed to cover usual necessary expenses. Following an established methodology (Goedhart et al., 1977), the study estimates are based on the 'intersection method', which regresses the subjective minimum income primarily on actual total household disposable income separately for each country in the study. The estimated function of subjective minimum income is assumed to increase along with actual household income. The level of income at which the estimated subjective minimum income equals actual total household disposable income (intersection point, Z^*, see Figure 1) represents the subjective poverty line (SPL). Populations living in households with an actual total household disposable income of less than the SPL are identified as 'subjectively poor'. Our model-based estimations enable the derivation of SPLs for various household types and sub-populations, and to compare populations identified as 'income-poor' using both objective and subjective approaches.

Figure 1 depicts the intersection method (see Goedhart et al., 1977, in double logarithmic form). The subjective minimum income typically rises with actual income, and the function is typically concave. The vertical axis represents the subjective minimum income (Z), and the horizontal axis is actual income (X). The intersection (Z^*), where $Z = X$, determines the amount of income that can be considered the SPL.

Figure 1 Intersection method to derive the subjective poverty line



Source: author's illustration.

Focusing first on actual income as the sole key explanatory variable, the SPL is estimated as the income level at which $Z = X = Z^*$ given the function:

$$\ln(\hat{Z}) = \alpha + \beta \ln(X), \text{ with } \alpha > 0 \text{ and } 0 < \beta < 1, \quad (1)$$

which yields

$$\ln(Z^*) = \frac{\alpha}{1-\beta}, \quad (2)$$

and a household *i* is identified as subjectively poor if the following inequality holds:

$$X_i < Z^*. \quad (3)$$

The SPLs inevitably differ for households with different numbers of adult and child members, but they are also affected by other factors: 'In fact, any quantifiable factor that has a measurable effect on the individual's welfare parameter μ (and thus presumably on y_{min} as well) might be incorporated into the definition of the poverty line' (Goedhart et al., 1977, p. 518). The additional explanatory variables enter the right-hand-side of Equation (1):

$$\ln(\hat{Z}) = \alpha + \beta \ln(X) + \sum_{j=1}^{n} \gamma_j C_j, \text{ with } \alpha > 0 \text{ and } 0 < \beta < 1, \quad (4)$$

where C stands for the n number of control variables (household size and structure by economic activity, gender, education, age, employment tenure status, degree of urbanisation of the place of residence, and material deprivation; see the next section). α, β, and γ represent the corresponding regression coefficients.

Subsequently, the SPL estimate is given by an extension of Equation (2):

$$\ln(Z^*) = \frac{\alpha + \sum_{j=1}^{n} \gamma_j C_j}{1-\beta}. \quad (5)$$

For instance, assuming a model with one (binary) control variable, two different SPLs are obtained. Employing control variables in Equation (4) enables the identification of various SPLs for numerous household characteristics. The traditional approach proposes two ways to calculate SPLs (Garner and Short, 2004). The first identifies a specific line for each household. More specifically, SPLs for all possible combinations of the (binary) control variables are derived. This method is particularly useful in applications aimed at identifying subjectively poor households when it is not necessary to explicitly express the national SPL (or a set of SPLs for different sub-populations). The second method calculates a set of lines differentiated by the variables defining sub-populations of interest, holding the values of other control variables at their national mean.

This study adopted the former approach, identifying an individual SPL for each household, as it sought to identify subjectively poor populations, rather than poverty lines. For $\alpha > 0$ and $0 < \beta < 1$, the Inequality $X_i < Z^*$ (3) is equivalent to

$$X_i < \hat{Z}. \quad (6)$$

Simply put, actual household incomes can be compared with the model 'fitted values'. We can also easily show that inequalities (3) and (6) are equivalent for models that employ a set of control variables.

VARIABLES IN SUBJECTIVE POVERTY ESTIMATIONS

Data on self-evaluated living conditions are collected at household level, meaning that a household reference person answers on behalf of their household. The dependent variable in the regression models is the MIQ, framed as: 'In your opinion, what is the very lowest net monthly income that your household would have to have in order to make ends meet, that is, to pay its usual necessary expenses? Please answer in relation to the present circumstances of your household, and what you consider to be usual necessary expenses (to make ends meet)'. Subjective minimum income thus represents monthly net income and is transformed into its natural logarithm form.

The MIQ was missing for a relatively substantial share of households in some countries: Denmark (28% of households), the Netherlands (27%), Sweden (23%), Croatia (15%), and Ireland (13%). Nevertheless,

results were calculated for these five countries, although these should be interpreted with caution. The regression models were estimated omitting observations with missing MIQ values, but fitted values were imputed to them and the subjective poverty lines and rates were calculated for the whole sample within a country. The MIQ was completely absent in Poland, which was accordingly excluded from the analysis of subjective poverty.

Actual income is the crucial explanatory variable. Information on income is collected at both individual and household levels, depending on the income source/s and the country's specificities, to capture all income sources as accurately as possible. A variable of total household disposable income is then constructed by the national statistics offices[3]. The actual total disposable household income includes the net labour and non-labour income of all household members after taxes and social deductions, and various social benefits (including pensions) received at either individual or household level, and is transformed into its natural logarithmic form. Households with non-positive actual income were excluded (0.3% of the European unweighted sample, with the highest share – 1.1% – in Romania).

An important control variable is household size. Although both subjective minimum income and actual income represent household-level income, respondents reflect their household size in their subjective evaluations of necessary minimum income. Marginal subjective minimum income is assumed to diminish with additional household members, thus dummy variables were preferred over a discrete number of household members here. The study distinguished adult and child household members and specified them in terms of two sets of dummy variables. Three dummy variables represented households with two adults, three adults, and four or more adults; the reference group consisted of households with one adult (16 and older); and three dummy variables representing households with one child, two children, and with three or more children; the reference group included households with no children (15 and younger)[4].

In addition to key explanatory variables, the study controlled for a range of household characteristics. The original individual-level variables were transformed to household-level variables as a share of adult household members from the total number of adult members who possessed a specific charac-

[3] As actual income corresponds to annual income, the study took one-twelfth of the reported value into account. EU-SILC is usually conducted in the second quarter of a given year in most countries, and the income reference period corresponds to the previous calendar year, while some questions, including the MIQ, relate to the current situation of the household. There are possible inconsistencies between current and previous year reference periods. However, the income reference period is considered to provide the best approximation of current income, as suggested by Eurostat (2010) and is also used in this manner in official statistics.

[4] The age definition of children differs from the definition applied in the OECD-modified equivalence scale applied to the AROP rate, where children are defined as those aged 13 or less. Ultimately, 'This is a rather arbitrary choice which we do not want to follow in all empirical research. A majority of the National Statistical Institutes use 16 as the age cut-off point between children and adults' (Hagenaars et al., 1994, p. 16). Malta is the exception, where children are defined as those aged 13 or less.

teristic. These included: the share of members currently working in paid employment, females, members with tertiary education (defined by International Standard Classification of Education (ISCED) codes 5-6), and younger members aged 16 to 30[5].

Household-level control variables include the type of ownership of the dwelling, the degree of urbanisation of the place of residence, and material deprivation of households. Type of ownership of the dwelling impacts the financial demands of a household. This study distinguished between a dummy variable for outright owners (and for those with free accommodation, e.g. living at a relative's home rent-free) and a dummy variable for owners paying a mortgage (the reference group being tenants paying either full market or reduced rate rent). The financial burden of paying a mortgage and renting can be similar in some countries, while it can differ in others, depending on the conditions of financial and housing markets. The degree of urbanisation was defined in terms of two dummies for densely and medium populated areas (with 'thinly populated' as a reference group). The degree of urbanisation was not available for the Netherlands and Slovenia, and only two categorical groups were provided in the data in Estonia, Latvia, and Malta. Regression models (Table 1) were run without these control variables for the Netherlands and Slovenia, and with one dummy only for Estonia, Latvia, and Malta, which should be kept in mind. Finally, the study included a binary indicator for 'severely materially deprived' households, provided by official EU statistics, to further capture the financial strain on households[6].

VARIABLES IN ANALYSIS OF INDEBTEDNESS

Indebted households were defined as those having any loan other than a mortgage used to purchase the main residence[7]. Households were asked about the number of loans they had, their purpose, and the entity they were borrowed from. Finally, they were asked about the amount they spent in the previous month on these loans.[8] This section does not consider payments on mortgages (used to purchase the main residence) for several reasons. Firstly, mortgage payments were included in housing costs. For the purposes of this study, tenants paying a rent and owners paying a mortgage towards the purchase of their primary dwelling are in similar financial situations in respect of their disposable income beyond housing costs. In addition, populations with mortgages are generally assumed to be

[5] Defined as those aged 16-28 in Malta.
[6] The list of control variables affecting household financial demand was far from complete, e.g. health status of household members can substantially increase financial needs to cover health expenditure.
[7] The variables on loans include mortgages for the main dwelling (residence) taken to obtain money for purposes other than purchase of the main dwelling, mortgages for any secondary properties, loans for a car, education, or holidays, as well as expenses not defined in advance. Any loans including those that are taken from non-banking organisations were included here (Eurostat, 2020).
[8] This amount does not include payments of debts in general. If a households owe on regular payments such as rent, utility bills or health and social contributions, their repayments are not included unless the household has borrowed for such purpose.

different from those taking out other loans. Mortgages, as an investment loan, are likely to be distributed more evenly across a population, while other – especially consumption – loans are more likely to be taken out by households experiencing financial strain.

The study looked first at the propensity to have a loan, applying a probit regression model. The dependent variable was a binary indicator that equals one if households have one or more loans (other than a mortgage), regardless of the amount borrowed or the amount of loan payments, and zero otherwise. Probit regression is a model for a binary dependent variable, assuming that the probability of a positive outcome is determined by the standard normal cumulative distribution function:

$$\Pr(Y = 1|X) = \Phi(\alpha + \beta X), (7)$$

where Y is the dependent binary variable, X represents the explanatory variables, α and β are the corresponding regression coefficients, and Φ is the cumulative normal distribution. The explanatory variables capture household income, household size, and composition (age, gender, education, employment), various factors of household living and financial situations, and the degree of urbanisation of the place of residence. The models were estimated using stepwise (backward) procedures, so that only coefficients of explanatory variables relevant in each country appear with the results.

Household income was included as four dummy variables defined by quintiles of equivalised total disposable household income (Q1 represents a reference group of the one-fifth of households with lowest income, the bottom 20%). Households with non-positive total disposable income were excluded. In contrast to the analysis of subjective poverty, which assumed a specific relationship between the number of adult/child household members and the dependent variable, the practice was less unified in previous studies on (over-)indebtedness. Some studies included the number of all household members as a single discrete variable (Wałęga and Wałęga, 2021), while others distinguished the number of children (Anioła-Mikołajczak, 2016). This study included two dummies for the presence of children (0–15) in a household (1 child, 2+ children; ref. no children) and a discrete variable of the number of adult (aged 16+) household members to describe household size. As in the previous section, for age, gender, and tertiary education, shares of adult household members with respective characteristics were constructed. Shares of adult household members aged 16–29, 30–44, and 45–64 were included (although these shares are not dummy variables, the complement was represented by the share of adult household members aged 65+). Employment of household members was captured by 'work intensity'[9], which reflects the employment of household members during the prior year. Without exact

[9] Work intensity is an indicator applied by Eurostat in official statistics. The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year, and the total number of months the same household members theoretically could have worked in the same period. The computation includes household members aged 18-59, and excludes students aged 18-24. Households composed only of children, of students aged less than 25, and/or people aged 60 or more are excluded from the indicator calculation; therefore it reaches a zero value in this analysis.

data on the timing of households taking out loans, it was preferable to reflect their employment during the year prior to their current situation. Work intensity ranged from zero to one and can be described as the share of the year that adult household members worked, on average.

Household living conditions were described by dummies for having a mortgage, paying rent (ref. outright owners), and the number of rooms in the dwelling. It was assumed that reasons for taking a mortgage versus taking other types of loans could differ, but households with a mortgage may more often be eligible to take other loans and to meet the eligibility conditions of financial institutions. Rent might represent a financial strain and a need to borrow for some households, while other renters may tend to avoid taking out a loan or might not be eligible to borrow, depending on national specificities. When controlling for household income, the effect of paying rent on the propensity to take a loan was ambiguous. The number of rooms in a dwelling was included as a control variable to capture household comfort.

Household financial situation was described by two variables of a rather subjective nature: inability to deal with unexpected expenses, and the ability to build savings. Although these were related to the current period or a typical month in the data, they were considered to serve as a proxy for long-term household financial conditions that might have led households to take a loan. The first question asked about the capacity to deal with unexpected financial expenses: 'Can your household afford an unexpected required expense (amount X) and pay through its own resources?' The amount of the unexpected expense should be payable from the household's own resources, i.e. without requiring outside assistance or borrowing, and should not deteriorate the household debt situation. The amount differed across countries and corresponded to the monthly AROP threshold obtained from EU-SILC data collected two years earlier (Eurostat, 2020). A dummy variable captured the inability to deal with unexpected expenses (ref. households that can handle unexpected expenses). The second question asked about households' ability to build savings (in a typical month). Two dummies were included for households with a balanced budget and building savings in a typical month (ref. drawing on savings or borrowing in a typical month). The long-term nature of these variables was assumed by the reference period being defined as a typical month.

Finally, two dummies were included for the degree of urbanisation of the location of the dwelling (densely and medium-populated area; ref. thinly populated area). As stated above, the degree of urbanisation was not available for the Netherlands and Slovenia, and only two category groups were provided in the data for Estonia, Latvia and Malta.

The study then analysed indebted households only. Subjectively over-indebted households were defined as households that reported experiencing financial difficulties (Fondeville et al., 2010; Betti et

Months worked were measured in terms of full-time job equivalent: For persons declaring they worked part-time, an estimate of the number of months in terms of full time-equivalent was computed on the basis of the number of hours commonly worked at the time of the interview (see Eurostat website; Ward and Ozdemir, 2013).

al., 2007). The indicators used to identify households in financial difficulties were based on several EU-SILC questions on arrears on payments and in/ability to make ends meet. Households were asked whether they had been in arrears on the following types of payments in the previous 12 months: (a) mortgage or rental payments, (b) utility bills, and (c) hire purchase instalments or other loan payments. If a household had these particular payments, the possible answers were: once, twice or more, or no arrears. Being in arrears on any of these types of payments was considered decisive, in accordance with Eurostat measures of severe material deprivation, or material and social deprivation, where arrears on any of these payments are an item on the deprivation list.

Some households may avoid arrears but still experience financial stress, therefore, the second criterion was based on households' self-assessment of making ends meet. The question on in/ability to make ends meet asked: 'A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?', with a 6-point scale of possible answers: (1) with great difficulty, (2) with difficulty, (3) with some difficulty, (4) fairly easily, (5) easily, and (6) very easily. The two worst categories (great difficulty and difficulty) were considered to indicate a household under financial strain.

The binary dependent variable in the probit regression analysis (Equation (7)) of subjectively over-indebted households then equals one if a household had been in arrears on any payment at least once, or if it reported experiencing (great) difficulties making ends meet.

Objective over-indebtedness was based on the ratio of monthly loan payments and total household disposable income. The crucial variables were the amount spent in the previous month on loans (excluding mortgages on the primary residence) and one-twelfth of yearly total disposable household income (see the previous section on the definition of income). The loan payment-to-income ratio (LTI) was expressed in percentages, and a value of 100 meant that a household spent its full monthly disposable income on loan payments. The LTI was introduced to prevent misinterpretation and to distinguish this ratio from the commonly known term debt service-to-income ratio (DSTI), which includes both mortgage and other loan payments.

Observations with zero LTI were excluded from the analysis. Although zero monthly loan payment is possible in the data (overdue instalment, deferment of payments), it does not represent a typical situation: such households could be experiencing a current financial strain, so that zero values would bias the analysis. For example, zero values could result from loan moratoria introduced in many countries during the COVID-19 pandemic. This may be the case in several countries for which the shares of zero loan payments are highest: Finland (24% of unweighted sample of households having a loan), the Netherlands (15%), Cyprus (12%), and Denmark (8%); it is at most 3% in other countries.

Setting the threshold of over-indebtedness based on the LTI ratio was both theoretically and empirically tricky. Previous literature mentions a 30% threshold (Wałęga and Wałęga, 2021; D'Alessio and

Iezzi, 2013, 2016), but this related to the DSTI ratio (i.e. including mortgage payments). Another tranche of studies applied the threshold of debt-to-income (DTI) ratio, which relates the amount of outstanding household debt to annual income, which is not available in the EU-SILC data. A recent study defined over-indebted households as those with financial debts amounting to at least three months' household income, and severely over-indebted households as those with financial debts amounting to at least six months' household income (McKnight, 2019). These definitions correspond to 25% and 50% thresholds of the DTI ratio, respectively. The present study set the threshold rather arbitrarily at 20% of LTI, partly inspired by the subjective over-indebtedness defined above (and results discussed below)[10]. The binary dependent variable in the probit regression analysis of objectively over-indebted households then equalled one if a household's LTI ratio was higher than 20%, i.e. if their monthly loan payments exceeded 20% of their monthly disposable income.

To the extent possible, the list of explanatory variables was kept constant in the probit regression models of both subjective and objective over-indebtedness. Nevertheless, the models were estimated using stepwise (backward) procedures, and only coefficients of explanatory variables that are relevant in each country are presented with the results. The relationships of some of the explanatory variables with dependent variables were expected to differ, particularly when considering self-reported financial difficulties versus high LTI ratios as dependent variables.

The explanatory variables capture similar characteristics to the analysis of the propensity to take a loan, as most characteristics relate to the decision to take a loan and, subsequently, household ability to cope with that loan: household income, household size and structure (age, gender, education, employment), various factors of household living and financial situations, and the degree of urbanisation of their place of residence. The same explanatory variables as described above were applied for income quintiles, household size, age, gender, education, household structure, and degree of urbanisation. The over-indebtedness analysis included the share of adult household members working in the current period (as opposed to the previous year). Household living conditions were described using the same variables: dummies for having a mortgage, paying rent (ref. outright owners), and the number of rooms in a household's dwelling.

The household's financial situation included different variables. For example, there was still a dummy for the inability to deal with unexpected financial expenses to identify a household's degree of financial strain. With over-indebtedness, a dummy variable was included for households with two and more (non-mortgage) loans. Two dummy variables referring to the source of loans were included because loans from various sources can be more or less favourable: non-bank institutions are assumed to be

[10] Assuming that subjective over-indebtedness is strongly related to the LTI ratio, the study used the subjective over-indebtedness rate as an indicator of the threshold. More precisely, at least one-fifth of indebted households self-reported experiencing problems either being in arrears or in making ends meet in a majority of countries. Assuming that this one-fifth of households were those with the highest LTI ratios, the threshold of objective' over-indebtedness was set to the 8th decile of the LTI ratio distribution. Coincidentally, the 8th decile corresponded to a roughly 20% LTI ratio in most countries.

less favourable than loans from banks and may increase the household financial burden, while borrowing from family or friends could be much more favourable. Households can have loans from more than one source at a time, thus households were asked to indicate if they had a loan from the following: (1) bank or other financial institution (e.g. credit union, microcredit provider), (2) payday loan company or pawnbroker/cash converter (non-bank loans), (3) private sources (e.g. family, friends) and (4) other sources. These four variables are not mutually exclusive and were thus recoded into two dummy variables: having a loan from a bank only, and having a loan from a non-bank institution only – the reference group then consisted of households with a loan from private or other sources, or a mixture.

VARIABLES IN ANALYSIS OF EXPENSES

The analysis of household expenses included several variables: housing costs, mortgage (principal) payment, loan payments (see the previous section), and expenditure on food and transport. These types of expenses were assumed to be regular and necessary[11]. Total housing costs and mortgage payments are core variables in EU-SILC data, and include the costs of utilities (water, electricity, gas, and heat) and various mandatory services, regular payments, rent for housing, and interest payments of owners with a mortgage. The analysis also included mortgage principal payments in housing costs, because, from the perspective of poverty analysis and households' current ability to make ends meet, it is irrelevant whether a household pays a mortgage or rent; both types of households can be equally well off in terms of monthly money left over for consumption of other goods and services, which potentially increase their well-being[12].

Within households with a mortgage, the variable of mortgage payment was frequently missing in Estonia (49% of an unweighted sample of households with a mortgage; 9% of the total sample), Sweden (22%; 12%), Luxembourg (17%; 7%), and less than 10% in France and Spain. Mortgage payment was completely missing in data for Denmark, which was thus excluded from the analyses of expenses. The module variables of previous-month expenditure on food at home, food or drink outside the home, public transport, or private transport were missing for roughly 15% of households in several countries (LT, LU, LV, NL, PL, SE), which further lowered the sample sizes.

Finally, the expenses-to-income (ETI) ratio was derived, again rather arbitrarily, setting 80% as the threshold of expense-overburden. Eurostat applies a 40% threshold for the *housing cost overburden rate*[13], while, according to Households Budget Survey (HBS) 2015 data, housing expenditure accounts

[11] A definition of necessary expenses was beyond the scope of this study. While the necessity of all food and transport expenses could be questionable in some households, other types of expenditure (e.g. on health) might be strongly necessary in other households.

[12] This study focuses on current well-being, rather than lifelong well-being, wealth poverty, etc.

[13] The housing cost overburden rate is based on the ratio of housing costs (including mortgage interest payments, but excluding mortgage principal payments) to total household disposable income. In contrast to this study, both nominator and denominator are net of housing allowances. The rate is then published as a share of individuals (not households) in the population (see Eurostat website).

for 33% of total household consumption expenditure, on average (Mysíková and Želinský, 2019). Housing expenditure (Classification of Individual Consumption by Purpose (COICOP) 4) together with food (COICOP 1) and transport (COICOP 7) represent roughly 60% of total household consumption expenditure on average, according to HBS data.

Considering mortgage and debt payments (which do not apply to entire populations) in addition to housing, food, and transport expenditure, the threshold of the ETI ratio was (arbitrarily) set at 80%. Alternatively, the threshold could be set at 100%, which would correspond to the concept of a 'negative margin' (e.g. Anioła-Mikołajczak, 2016), where a negative amount remaining in household disposable income after deducting debt payments and fixed expenses (on housing, food, and transport) is considered a threshold. As the results show (Figure 11, bottom panel), the 80% threshold identified roughly 10% of expense-overburdened households in Hungary and Ireland, and about 50% of households in Greece.

In the probit regression analysis (Equation (7)), the dependent variable equalled one if a household spent more than 80% of its total income on regular expenses, including housing costs, mortgage and loan payments, and expenditure on food and transport, and zero otherwise. As in the analysis of (over-)indebtedness, the explanatory variables included income quintiles, two dummies for children, the number of adult household members, the share of adult household members aged 16-29, 30-44, 45-64, share of male, tertiary educated, and working adult household members, two dummies for paying a mortgage or rent, inability to deal with unexpected expenses, and two dummies for densely and medium populated areas. The analysis estimated the regression models using stepwise (backward) procedures and only the coefficients of explanatory variables that are relevant in each country appear in the results.

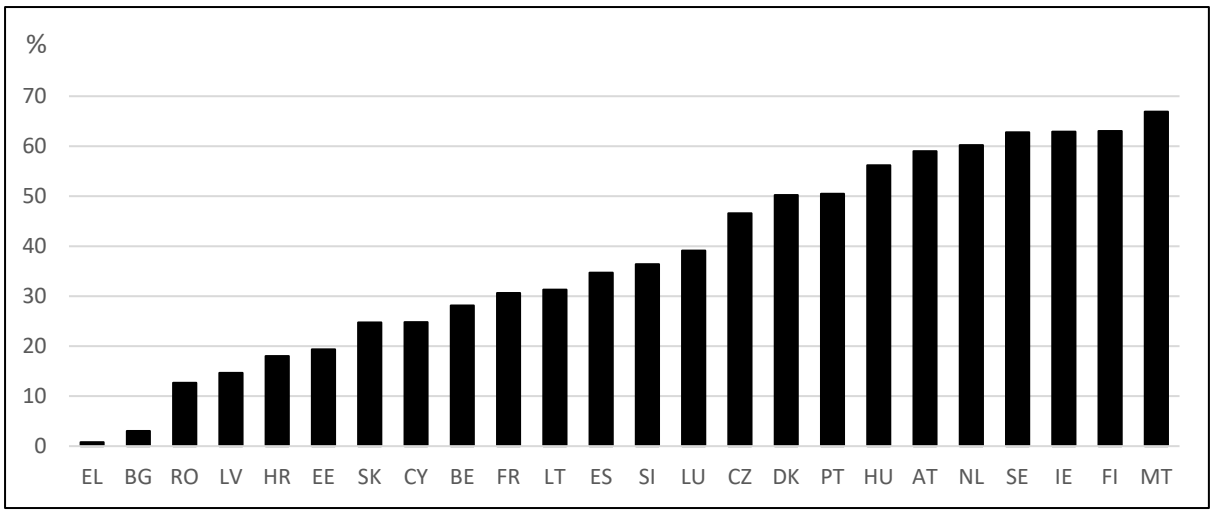
RESULTS

RESULTS ON SUBJECTIVE POVERTY

The minimum income question (MIQ) asks households to self-assess the amount of minimum income they need to make ends meet, i.e. to cover their usual necessary expenses. Figure 2 shows the proportion of individuals living in households that assessed their minimum necessary income lower than the officially binding at-risk-of-poverty (AROP) line (for a comparison to 2017, see European Commission, 2020). Although the subjective poverty (SP) presented below is model-based, these figures indicate how subjective income needs compare to the relative indicator of AROP. In Greece, barely 1% of the population was subjectively sufficient with income that falls below the poverty line, suggesting that the estimated subjective poverty lines would be higher than the official line, and the SP rate would be relatively high. By contrast, 50% or more of the populations in Malta, Scandinavian countries, Ireland, the Netherlands, Austria, Hungary, and Portugal stated that their subjective minimum income was below the official poverty line. These findings indicate that the official AROP line is, in fact, not

binding in these countries, and many people would be financially stable with income below the official poverty line corresponding to their household. SP rates can thus be expected to be relatively low in these countries.

Figure 2 Subjective minimum income lower than AROP line (% of population)



*Notes: AROP line (Eurostat database variable ilc_li01) corresponds to incomes of singles only. AROP lines comparable to incomes for households of more members correspond to a multiple of the 'single' AROP line by the 'equivalised household size', which equals (1 + (no. of adult members-1)*0.5 + no. of children*0.3), where adult household members are defined as those older than 13.*
Source: EU-SILC 2020 (author's calculations).

Generally, model-based estimations of subjective poverty lines (SPLs) assume a positive relationship between actual total household disposable income and total household subjective minimum income. It is empirically recognised that living standards, expenditure, and expectations and, thus, subjective minimum income rises with higher income[14]. This positive relationship was confirmed by the results for all countries (Table 1). In addition, the more adult and child household members, the higher the subjective minimum income, simply because needs increase with additional household members. Employment and high education typically raise peoples' living standards, as confirmed by the positive impact of higher shares of working and tertiary educated household members on subjective minimum income. On the other hand, the gender of adult household members was statistically irrelevant in roughly half of the countries, while male-dominated households tended to require a higher minimum income in most of the other half. Younger households usually needed less minimum income, although again, the effect was statistically significant in approximately half of the countries. Compared to households renting their dwellings, outright homeowners were more likely to be sufficient with lower incomes, while owners paying a mortgage needed higher minimum income than tenants in the majority of the countries. Finally, the place of residence played a statistically significant role in the ma-

[14] The necessary condition of the intersection method to derive SPLs is that the estimated coefficient of actual income (in logarithm) ranges between zero and one (and that the constant is positive). This was satisfied in all countries (Table 1).

jority of countries: the more densely populated the area of residence, the higher the subjective minimum income needed; in other words, households in larger cities required higher minimum income to make ends meet.

Table 1 Subjective minimum income: OLS regression model coefficients

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR
Actual income ln(X)	0.14***	0.22***	0.22***	0.47***	0.25***	0.35***	0.17***	0.16***	0.14***	0.32***	0.28***	0.19***
2 adults	0.33***	0.25***	0.34***	0.13***	0.22***	0.18***	0.37***	0.24***	0.20***	0.16***	0.24***	0.27***
3 adults	0.48***	0.33***	0.54***	0.32***	0.33***	0.25***	0.61***	0.41***	0.32***	0.29***	0.35***	0.39***
4+ adults	0.66***	0.51***	0.70***	0.48***	0.44***	0.20***	0.78***	0.62***	0.42***	0.38***	0.43***	0.52***
1 child	0.09***	0.10***	0.13***	0.12***	0.08***	0.13***	0.11***	0.12***	0.06***	0.10***	0.05***	0.13***
2 children	0.16***	0.17***	0.22***	0.17***	0.13***	0.15***	0.21***	0.21***	0.15***	0.19***	0.05***	0.17***
3+ children	0.19***	0.23***	0.28***	0.22***	0.18***	0.11	0.31***	0.58***	0.19***	0.24***	0.07***	0.31***
Working - share	0.14***	0.06***	0.30***	0.09***	0.13***	0.12***	0.29***	0.06***	0.09***	0.04**	0.07***	0.17***
Female - share	0.01	-0.00	-0.12***	-0.03*	-0.02	0.04*	-0.09***	-0.06***	-0.02	0.05**	-0.02	-0.04**
Tertiary educ. - share	0.12***	0.08***	0.10***	0.04***	0.04***	0.09***	0.06***	0.14***	0.12***	0.05***	0.06***	0.10***
Young 16-30 - share	-0.12***	-0.09***	0.01	-0.06**	-0.00	-0.24***	-0.01	-0.05**	-0.07**	-0.12***	-0.18***	0.02
Owners	-0.08***	-0.05***	0.04	-0.03*	-0.06***	0.02	-0.01	-0.01	-0.04**	-0.14***	0.00	0.05
Mortgage	0.08***	0.06***	-0.01	0.12***	0.07***	0.12***	0.07**	0.05***	0.08***	0.07***	0.13***	0.12***
Dense area	0.09***	0.01	0.09***	0.02	0.09***	-0.01	0.04***	0.04***	0.07***	0.09***	0.06***	0.11***
Medium area	0.07***	-0.03**	0.06***	0.03**	0.01	0.02		0.06***	0.04***	0.04**	0.01	0.11***
Material deprivation	-0.12***	0.07***	-0.06***	0.09***	-0.02	0.06	0.13***	-0.01	-0.14***	0.13***	0.08***	-0.04*
Constant	5.99***	5.76***	4.83***	3.53***	4.71***	4.55***	5.42***	5.89***	6.04***	4.57***	5.13***	5.06***
N	5,809	6,847	7,311	4,189	8,615	4,675	6,403	14,956	14,484	9,010	10,160	6,549
R^2	0.455	0.526	0.687	0.792	0.527	0.513	0.564	0.512	0.353	0.407	0.468	0.514

Table 1 Subjective minimum income: OLS regression model coefficients (cont.)

	HU	IE	LT	LU	LV	MT	NL	PT	RO	SE	SI	SK
Actual income ln(X)	0.15***	0.22***	0.13***	0.11***	0.22***	0.13***	0.27***	0.31***	0.19***	0.13***	0.15***	0.16***
2 adults	0.27***	0.19***	0.26***	0.26***	0.30***	0.24***	0.14***	0.12***	0.14***	0.17***	0.28***	0.29***
3 adults	0.40***	0.22***	0.36***	0.33***	0.52***	0.33***	0.18***	0.22***	0.21***	0.37***	0.45***	0.42***
4+ adults	0.52***	0.37***	0.58***	0.53***	0.73***	0.42***	0.22***	0.20***	0.18***	0.41***	0.55***	0.52***
1 child	0.04*	0.10***	0.10***	0.13***	0.10***	0.16***	0.08***	0.05**	0.06***	0.09***	0.11***	0.08***
2 children	0.15***	0.17***	0.20***	0.15***	0.19***	0.26***	0.09***	0.14***	0.05	0.18***	0.14***	0.13***
3+ children	0.27***	0.25***	0.30***	0.22***	0.29***	0.16**	0.13***	0.26***	0.15***	0.26***	0.18***	0.25***
Working - share	0.11***	0.13***	0.22***	0.05	0.16***	0.21***	0.03	-0.05***	0.08***	0.15***	0.16***	0.18***
Female - share	0.01	-0.02	0.00	-0.02	-0.06***	-0.01	-0.02	-0.06***	-0.07***	0.00	-0.02	-0.02
Tertiary educ. - share	0.09***	0.19***	0.06**	0.13***	0.09***	0.10***	0.15***	0.21***	0.03	0.05***	0.05***	0.03
Young 16-30 - share	-0.02	0.00	-0.03	-0.10**	0.10***	0.04	-0.16***	-0.02	0.06*	-0.15***	0.01	0.05
Owners	-0.02	-0.02	-0.04	-0.07**	-0.02	-0.02	-0.10***	-0.08***	-0.05	-0.13***	0.03	-0.01
Mortgage	0.07*	0.23***	0.09	0.14***	0.13***	0.16***	0.08***	0.14***	-0.01	0.02	0.18***	0.05*
Dense area	0.10***	0.09***	-0.03	0.15***	0.00	0.01		0.07***	0.15***	0.05***		0.07***
Medium area	0.05***	0.02	0.08**	0.08***				0.06***	0.09***	0.02		0.01
Material deprivation	-0.14***	0.01	0.09***	0.02	-0.03	-0.00	0.01	-0.01	0.00	0.03	0.02	-0.14***
Constant	4.81***	5.25***	5.48***	6.74***	5.11***	5.66***	5.11***	4.37***	5.10***	6.06***	5.65***	5.38***
N	6,527	3,684	4,777	2,613	5,647	3,804	9,635	11,087	7,278	4,356	8,539	5,383
R^2	0.359	0.419	0.328	0.331	0.512	0.402	0.340	0.370	0.320	0.392	0.421	0.401

*Notes: * statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level. Robust standard errors applied.*
Source: EU-SILC 2020 (author's calculations.)

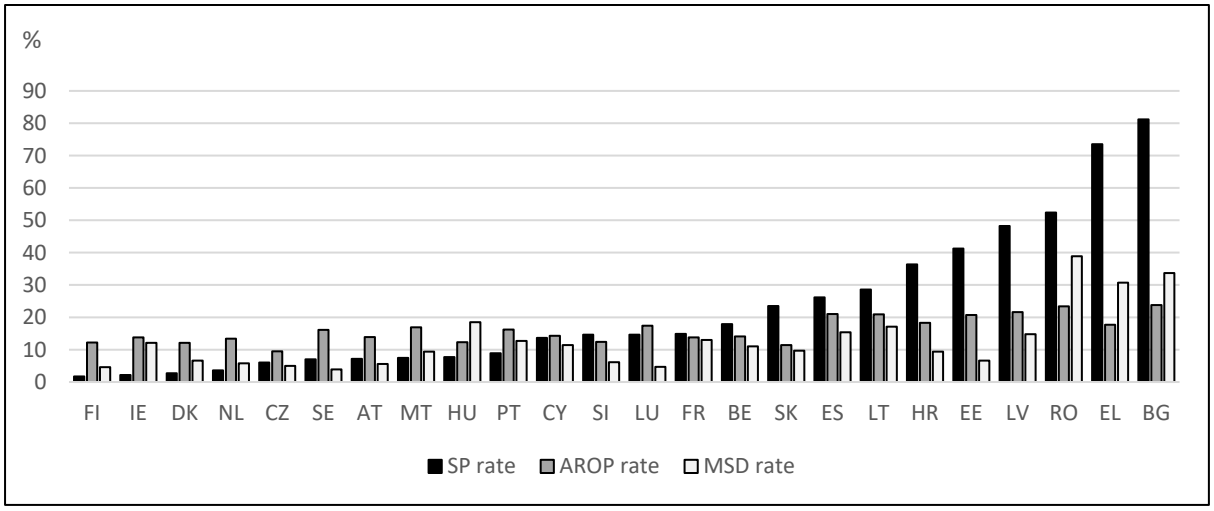
The model estimations were used to derive SPLs, then individuals from households with actual household income below the SPLs were identified as subjectively poor. Figure 3 contrasts SP with AROP and material and social deprivation (MSD) rates.[15] The MSD indicator is conceptually somewhat closer to SP, because some of the items are of a subjective nature.

Figure 3 shows that the SP rate substantially exceeded both the AROP and MSD rates in some Eastern and Southern European countries. The AROP rate was mostly higher than MSD, except in four countries: Bulgaria, Greece, Romania and Hungary. The countries with extremely high SP rates (BG, EL, RO) also exhibited the highest MSD rates. By contrast, the Scandinavian countries fell at the lowest SP rates, which were substantially lower than AROP rates. The SP rates reached almost negligible figures in Finland, Ireland and Denmark. As shown above (Figure 2), a major share of populations would be sufficient with income below AROP lines, thus the estimated SPLs were low enough to be exceeded by actual income in almost all households in these countries. The ranking of countries by SP rates corresponds to an intuitive division into richer and poorer countries within the EU, more so than with the relative AROP rates. This indicator of SP could therefore complement the AROP indicator and provide an additional view on how well or poorly EU populations make ends meet with their incomes.

The SP rate exhibited far higher variability across countries than the AROP rate. This can be explained by the relativity of the AROP index. For instance, by the definition of the AROP line (60% of median income), the AROP rate can never be higher than 50%, while the SP rate is not limited. Similarly, the development of national SP rates over time shows much more substantial changes in some countries than the AROP rates. As shown by Želinský et al. (2021), the AROP rate oscillated within a range of 5 percentage points (p.p.) in Bulgaria, while the SP rate decreased by 13 p.p. between 2007 and 2019. On the other hand, in Finland, both rates fluctuated within 2 p.p. When the economic situation of households changes, the national AROP line adjusts correspondingly and mitigates the volatility of the resulting AROP rate.

[15] MSD is a multidimensional index that measures the enforced lack of five or more items of 13 items on the list (see Eurostat website; Mysíková, 2021, p. 80). Respondents we asked whether they possessed or could afford various goods and services, i.e. MSD captures the lack of these items due to financial reasons.

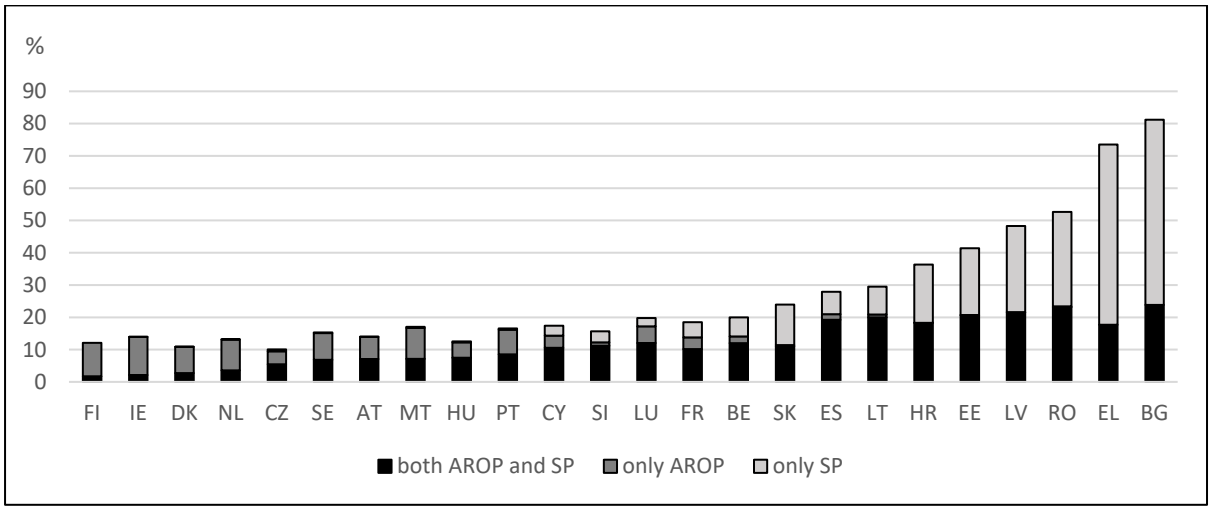
Figure 3 SP, AROP and MSD rates (% of population)



Notes: SPLs were imputed (fitted values computed) to households with missing MIQ.
Source: EU-SILC 2020 (author's calculations of SP rates), Eurostat database for AROP (variable ilc_li02) and MSD (variable ilc_mdsd02) rates.

Figure 4 gives a more detailed view of how AROP and SP rates overlap. On the left side, in countries with low SP rates, the SP rate captures only a share of those identified as poor by the AROP. Therefore the AROP rate seems to overestimate poor populations compared to those who are subjectively poor. In contrast, on the right side, the subjective approach increases the pool of income-poor by additional non-negligible shares of populations. For instance, in Bulgaria and Greece, the subjective approach adds more than half of the population to the pool of income-poor.

Figure 4 AROP and SP rates: the overlaps (% of population)



Notes: Countries ranked by SP rate (both AROP and SP, and only SP).
Source: EU-SILC 2020 (author's calculations).

The findings of this study are not directly comparable to those of earlier studies in several EU countries that used different definitions of AROP, basing poverty lines on mean incomes, or applying 50%

thresholds (see De Vos and Garner, 1991; Garner and De Vos, 1995; Saunders et al., 1994). A recent study by García-Carro and Sánchez-Sellero (2019) found the SP rate to be about 40% in the 2000s/2010s, with the AROP rate at roughly 20% in Spain. These figures correspond to later findings by Želinský at al. (2021), who demonstrated a significantly decreasing trend of SP rate in Spain (from 53% in 2004 to 34% in 2019), while the AROP oscillated around 20% throughout the whole period. The overlaps in the two rates were presented by Mysíková (2021) based on EU-SILC 2018 data: according to both the previous and current studies, the subjective approach added high shares of populations to the pool of income-poor in Bulgaria, Greece, Latvia, Croatia, Estonia, and Romania.

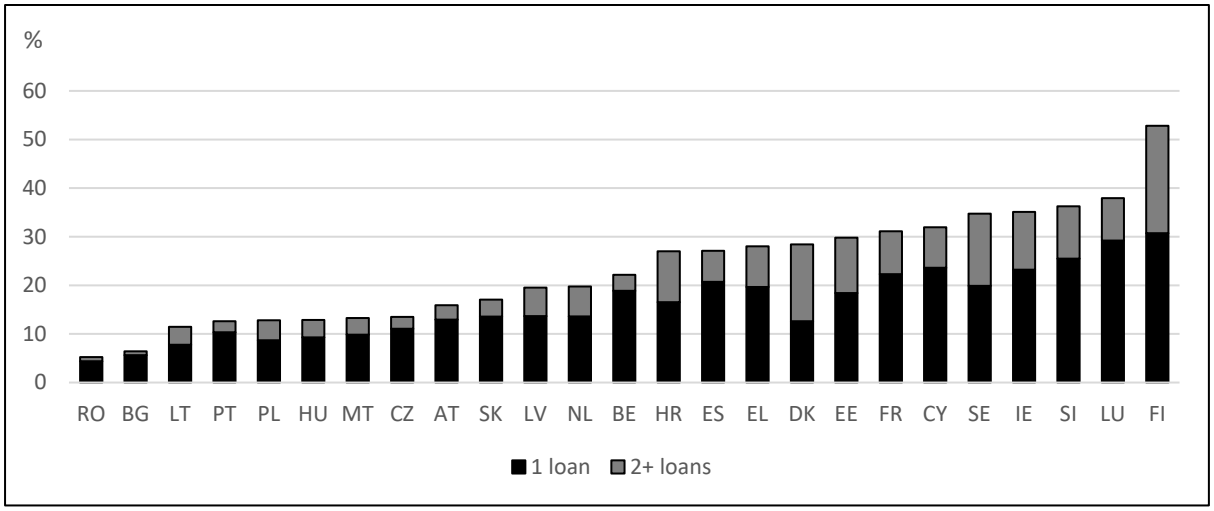
The Appendix presents statistics on AROP and SP rates by household type, i.e. by the number of adult (16+) and child (0–15) household members, and basic demographic characteristics (Tables A.1 and A.3, respectively), and by individual characteristics including age, gender, education, and current economic activity status (Tables A.2 and A.4, respectively).

RESULTS ON (OVER-)INDEBTEDNESS

Indebted households were defined as those having any loan (excluding mortgages used to purchase the primary residence). The share of indebted households varied across the EU, ranging from 5% in Romania to 53% in Finland (Figure 5). Generally, EU countries can be divided into high-borrowing and low-borrowing, with an almost 30% threshold of indebted households. A similar classification was applied to the EU-15 countries based on European Community Household Panel (ECHP) data from the mid-1990s and produced a similar grouping (Betti et al., 2007). The countries they identified as high-borrowing (DK, LU, UK, FR, IE, FI) remain in this group in the present study, although Denmark and Finland swapped positions in the meantime. Spain and Greece, previously classified as medium-borrowing and low-borrowing, respectively, became substantially more indebted. In the current data, Central and Eastern European (CEE) countries mostly fell into the group of low-borrowing countries.

The country ranking indicates that, in general, the higher the share of indebted households in a country, the more frequently households had two or more loans at the same time. Denmark is the only country where households more often had two or more loans (15.8%) than one loan (12.6%). These figures consider the number of households that owed on a loan, but do not reflect the amounts borrowed or the amounts of loan payments.

Figure 5 Household indebtedness rate: by number of loans (% of households)



Notes: Missing values, which includes more than 1% of the unweighted household sample in six countries (from PT with 1.0%, to MT, FR, LU, SE, and LT with 4.9%), are considered to be no loans. Households with zero loan payments included.
Source: EU-SILC 2020 (author's calculations).

The purposes for these loans were manifold, and households with more loans borrowed for very different purposes (Table 2). The most frequent reasons related to household property or a car. In 13 countries, households most frequently took loans for their property, including household furniture, appliances, and interior decoration (ranging from 2.7% of households in Bulgaria to 15.8% in Greece). In 11 countries, the most frequent loan purpose was to buy a car or other means of transport (motorcycle, caravan, van, bicycle, etc.), ranging from 5.9% in Malta to 25.8% in Luxembourg. Finland is the only country where households most frequently took out loans for purposes not specified on the list. Among the other queried purposes for loans, Sweden is exceptional, with a high share of households taking a loan for education (14.4%), while Greece had an exceptionally high share of households taking a loan to cover daily living expenses (13.0%), which suggests household difficulties making ends meet.

Table 2 Purposes of loans other than mortgage (% of households)

	1[a)] Property	2[b)] Car or other	3 Holiday	4 Healthcare	5 Education	6 Daily living expenses	7 Finance own business	8 Re-finance loan	9 Other purpose
AT	4.7	9.2	0.3	0.3	0.4	0.9	1.1	0.9	2.7
BE	4.5	12.1	1.4	0.3	0.2	3.5	0.6	0.6	2.9
BG	2.7	0.6	0.2	0.6	0.2	1.9	0.3	0.8	0.0
CY	13.4	8.2	0.1	1.2	7.9	4.0	2.4	1.4	1.4
CZ	5.8	5.3	0.1	0.1	0.1	0.8	0.2	0.6	2.1
DK	6.3	15.0	1.1	3.3	6.8	4.8	1.3	2.0	7.6
EE	15.1	15.0	0.7	0.5	1.4	3.5	0.2	0.2	0.3
EL	15.8	2.2	2.0	1.0	2.2	13.0	0.4	0.4	1.5
ES	7.6	12.7	0.4	2.1	0.7	2.8	1.7	0.7	4.2
FI	9.0	16.9	3.6	0.9	0.6	7.7	4.0	0.7	23.6
FR	9.0	18.2	0.4	0.3	1.0	2.1	0.9	0.5	4.5
HR	15.3	7.5	0.4	0.7	0.8	7.1	1.0	1.5	3.8
HU	4.6	3.1	0.1	0.3	1.0	2.1	0.3	1.1	4.3
IE	11.1	19.4	2.8	0.7	2.2	6.3	0.7	1.5	3.3
LT	5.5	3.6	0.2	0.4	0.6	1.4	0.3	0.2	1.8
LU	8.2	25.6	0.1	0.2	2.2	0.8	2.5	0.5	4.5
LV	8.7	6.6	0.2	0.6	1.1	3.7	0.3	0.7	1.2
MT	5.0	5.9	0.7	0.2	0.4	1.3	0.5	0.8	2.0
NL	4.9	4.6	1.2	0.5	7.3	2.0	0.7	0.6	3.6
PL	5.3	2.4	0.2	0.5	0.3	1.6	0.6	0.7	4.9
PT	3.0	8.0	0.1	0.6	0.4	1.1	0.5	0.3	1.7
RO	2.9	1.6	0.1	0.2	0.1	0.8	0.1	0.1	0.4
SE	6.5	14.0	0.6	0.6	14.4	2.0	0.7	0.6	5.0
SI	17.0	18.9	0.3	0.5	0.2	1.5	0.4	0.3	4.7
SK	8.2	5.2	0.1	0.2	0.3	1.3	0.6	0.3	3.2

Notes: a) includes household furniture, appliances, and interior decoration. b) Car, motorcycle, caravan, van, bicycle, or other means of transport. Missing values (roughly 0.6% of the European unweighted household sample) considered to be no loan. Multiple replies possible, i.e. a household could have loans for more purposes (the sum of columns does not correspond to the share of households with any loan other than a home mortgage). Source: EU-SILC 2020 (author's calculations).

Table 3 shows the results of probit regression analysis of household characteristics related to the probability of having a loan, with only statistically relevant variables kept for each country. Income level was strongly relevant to taking a loan; the higher the income quantile households reached, the higher the probability of having a loan[16]. As expected, households that typically had balanced monthly budgets or that could save and those that could handle unexpected expenses were less likely to be indebted. In most countries, the propensity to borrow was highest for younger households, or for households with members aged 30–44. This coincides with the life-cycle perspective (Betti et al.,

[16] Piovarči (2021) found that, in Slovakia, it was a higher level of wealth rather than a higher level of income that affected the probability of having a loan, although loans included both mortgage and other loans.

2007), as younger adults earlier in their work or career have often not accumulated sufficient resources for consumption.

Higher work intensity of household members increased the probability of having a loan, which was likely impacted by creditor requirements. The relationship between education level and the probability of taking a loan was less straightforward: households with tertiary educated household members were less likely to borrow in some countries, while they were more likely in others (and this is statistically insignificant in about half of the countries). This indicates that, especially when controlling for other relevant characteristics such as income level, financial situation, or age, education played a lesser role in the need to borrow (or in fulfilling the requirements of creditors). Similarly, the gender composition of households was barely statistically significant. In most countries, more household members, both adult and/or child, increased the probability of having a loan (a similar effect on the probability of having a loan, including mortgages, was found by Piovarči, 2021). Households that pay a mortgage often showed a higher probability of having other loans. This did not hold for households paying rent, as their probability of having a loan increased compared to homeowners in some countries, but decreased in others. Assuming that households' month-to-month financial situations could be similar regardless of whether they pay a mortgage or rent (i.e. both might need to borrow), then this different result indicates that homeowners with a mortgage might either be more eligible for loans from creditors, or may opt for further investment in their homes (renovations, furniture) more often than renters.

Table 3 Propensity to have a loan (excluding mortgage): probit regression model coefficients

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU
Income Q2	0.30***	0.29***		0.37***	0.26***	0.21***	0.05	0.17***	0.21***	0.26***	0.35***	0.50***	0.17*
Income Q3	0.25***	0.45***		0.76***	0.44***	0.38***	0.35***	0.43***	0.32***	0.36***	0.56***	0.67***	0.41***
Income Q4	0.28***	0.64***		1.10***	0.51***	0.47***	0.53***	0.68***	0.39***	0.51***	0.56***	0.83***	0.52***
Income Q5	0.31***	0.55***		1.21***	0.64***	0.46***	0.63***	1.09***	0.38***	0.66***	0.80***	0.91***	0.62***
1 child	0.24***	0.19***	0.21**		0.26***		0.19***	0.17***	0.21***		0.18***	0.18**	
2+ children	0.23**	0.12*	0.37***		0.35***		0.32***	0.22***	0.27***		0.20***	0.23***	
No. of adults	0.10***	0.10***		0.15***		0.15***	0.07***	0.16***	0.04*	0.23***	0.10***	0.06***	0.17***
Age 16-29 - share	0.24**	0.48***	0.32**	1.01***	0.56***	0.82***	0.79***	-0.03	0.46***	1.07***	0.36***	0.54***	0.18
Age 30-44 - share	0.42***	0.49***	0.34**	1.24***	0.47***	1.07***	0.86***	0.31***	0.48***	0.67***	0.30***	0.46***	0.59***
Age 45-64 - share	0.37***	0.41***	0.41***	1.09***	0.34***	0.77***	0.68***	0.47***	0.52***	0.42***	0.34***	0.60***	0.41***
Male - share												-0.17**	-0.16*
Tertiary educ. - share		-0.13**			-0.37***			0.37***	-0.11**	0.14***			
Work intensity	0.41***	0.23***	0.53***		0.32***		0.44***	0.15***	0.42***	0.25***	0.40***	0.37***	
Having mortgage				-0.40***	0.22***	0.31***	0.40***	0.55***	0.15***	0.50***			0.52***
Paying rent	0.33***			-0.33***	0.22***	0.58***		-0.10**		0.15***			
No. of rooms				0.10***	-0.05**	-0.03*		0.13***	0.03*		0.04***		-0.06**
Inability - expenses	0.29***	0.39***		0.47***	0.26***	0.67***	0.21***		0.31***	0.43***	0.43***	0.27***	0.39***
HH balanced budget	0.09	0.04	-0.53***	-0.06	-0.15	-0.12*	0.08	-0.37***	-0.18***	-0.03	-0.22***	-0.32***	-0.62***
HH saves	-0.14	-0.23***	-0.67***	-0.30***	-0.49***	-0.36***	-0.03	-0.58***	-0.39***	-0.23**	-0.33***	-0.53***	-0.77***
Dense area	0.05	0.10*				-0.25***	-0.16***	0.36***			-0.24***	0.07	
Medium area	0.14**	-0.01				-0.11**		0.17***			-0.06	0.10**	
Constant	-2.22***	-1.84***	-1.79***	-2.93***	-1.71***	-1.96***	-2.04***	-2.29***	-1.68***	-1.45***	-1.58***	-1.86***	-1.51***
N	5,974	7,032	7,311	4,189	8,615	6,393	6,389	14,955	14,852	9,354	10,511	7,661	6,527
Pseudo R^2	0.085	0.084	0.092	0.162	0.121	0.156	0.201	0.178	0.090	0.194	0.106	0.126	0.104

Table 3 Propensity to have a loan (excluding mortgage): probit regression model coefficients (cont.)

	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Income Q2	0.12		0.49***	0.36***	0.37**		0.13**	0.29***	-0.18	0.25***	0.49***	0.09
Income Q3	0.20**		0.42***	0.48***	0.54***		0.23***	0.53***	0.16	0.35***	0.60***	0.33***
Income Q4	0.27***		0.40***	0.56***	0.66***		0.35***	0.67***	0.34***	0.56***	0.67***	0.29***
Income Q5	0.41***		0.41***	0.72***	0.72***		0.49***	0.76***	0.43***	0.44***	0.68***	0.39***
1 child	0.18**	0.23**	0.27***	0.12*			0.14**		0.20**		0.34***	0.14*
2+ children	0.32***	0.24*		0.43***			0.30***		0.28**	0.16**	0.37***	
No. of adults	0.15***	0.09**	0.13***	0.14***	0.10***		0.04**		0.12***	0.07**		0.06*
Age 16-29 - share	0.35**	0.74***	0.50***	0.96***	1.35***	1.43***	0.55***	0.62***	0.72***	0.53***	0.87***	0.96***
Age 30-44 - share	0.44***	0.57***	0.68***	0.70***	1.31***	1.01***	0.45***	0.50***	0.80***	0.76***	0.48***	0.82***
Age 45-64 - share	0.46***	0.53***	0.57***	0.52***	0.82***	0.43***	0.29***	0.41***	0.52***	0.45***	0.39***	0.51***
Male - share						0.23***						
Tertiary educ. - share			-0.33***			0.22***				0.40***	-0.13**	-0.19**
Work intensity	0.47***	0.69***	0.43***	0.27***				0.32***		0.43***	0.29***	0.27***
Having mortgage	0.19***	0.55***	0.20**		0.24**	0.21***	0.20***	0.10*	0.51*	0.45***		0.15**
Paying rent				0.15**		0.26***	-0.17*		-0.52**	0.62***	-0.19***	
No. of rooms	0.07**			-0.05**						-0.04*	0.04***	-0.07***
Inability - expenses	0.32***	0.16*		0.21***		0.60***	0.24***	0.25***		0.52***	0.15***	0.20***
HH balanced budget	-0.03	-0.64***	-0.05	-0.46***	-0.33**	-0.19**	-0.19**	-0.08		-0.28**	0.16*	-0.16
HH saves	-0.17*	-0.81***	-0.26	-0.59***	-0.51***	-0.34***	-0.46***	-0.36***		-0.16	-0.14	-0.46***
Dense area				0.18***		-	0.20***	-0.16***		-0.36***	-	
Medium area				-	-	-	0.01	-0.12*		-0.18***	-	
Constant	-2.02***	-1.88***	-1.41***	-2.01***	-2.50***	-1.86***	-1.71***	-2.02***	-2.75***	-1.67***	-1.70***	-1.63***
N	4,005	4,622	2,645	6,061	3,765	11,990	14,399	11,178	7,278	5,286	8,539	5,508
Pseudo R^2	0.128	0.166	0.105	0.142	0.137	0.164	0.069	0.085	0.105	0.167	0.117	0.100

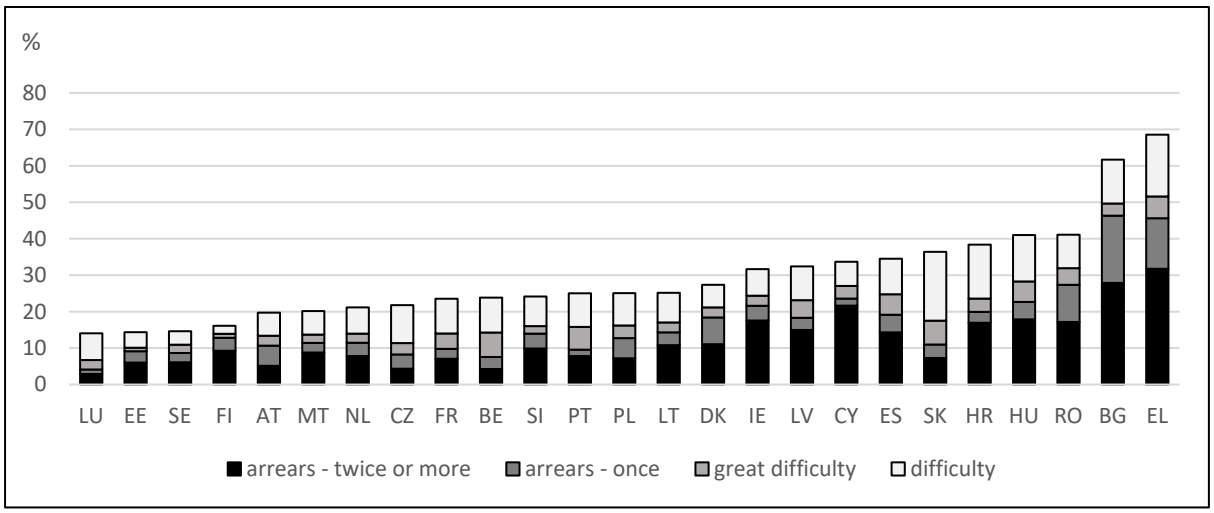
*Notes: Sample of all households. Stepwise backward method. HH – household. * statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level. Robust standard errors applied.*
Source: EU-SILC 2020 (author's calculations).

Subjective approaches to over-indebtedness usually identify indebted households as exhibiting some kind of self-reported problems with loan payments. This study considered over-indebted households to be those with a loan (excluding mortgages) that report either being in arrears on payments and/or having difficulties making ends meet. According to Fondeville et al. (2010), over-indebtedness should be ongoing rather than temporary. In the strictest definition, households that were in arrears on payments twice or more during the previous year (whether on mortgage or rent, utilities, hire purchase instalments, or other loan payments) can be considered over-indebted (Figure 6, black columns). In about half of the countries, fewer than 10% of indebted households were in arrears twice or more often, ranging from 2.9% in Luxembourg to 31.8% in Greece. Adding households that were in arrears once in the previous year found fewer than 15% of households over-indebted in about half of the countries.

However, arrears on payments may not capture all indebted households in financial stress, because some may strive to avoid arrears by lowering their consumption expenditure. By adding indebted households reporting great difficulties or difficulties in making ends meet, the indicator included a wider range of possibly over-indebted households. With the exception of four countries (LU, EE, SE, FI), at least 20% of households were over-indebted. The most severe situations were in Greece and Bulgaria, where almost half of indebted households were in arrears on payments, and more than 60% were over-indebted when households having difficulties making ends meet were included.

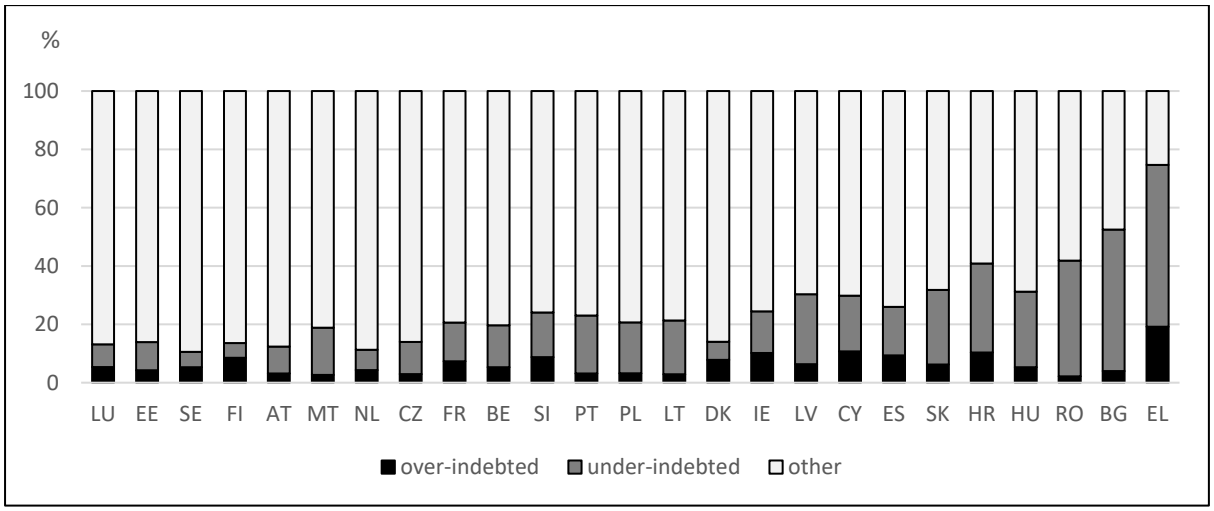
Comparing the country levels of indebted households and 'subjective' over-indebtedness within these households (Figures 5 and 6), a negative relationship appeared (coefficient of correlation -0.33). High-borrowing countries tended to have lower subjective over-indebtedness (e.g. FI, LU, SE), while indebted households in low-borrowing countries were subjectively over-indebted more frequently (e.g. BG, RO, HU). Greece was the exception, with relatively high indebtedness and subjective over-indebtedness. This pattern was previously identified in Western European countries in the mid-1990s (Betti et al., 2007). Although neither that study nor the current study sought to explain the finding, they observed that: 'where the consumer credit market [was] restricted [meaning the low-borrowing countries], only those households who [had] a pressing need for funds [would] borrow. These households [were] more prone to debt difficulties' (p. 147). As a consequence, with the supposed liquidity constraint in low-borrowing countries, there may be a pool of 'under-indebted' households experiencing financial strain that might have opted to take a loan had they been eligible. In other words, the higher share of subjectively over-indebted households may be related to overall higher numbers of households experiencing financial difficulties or in arrears. Indeed, subjectively over-indebted households comprised only a low share of all households in countries like Bulgaria and Romania, while the under-indebted accounted for a much more substantial share of total households (see Figure 7).

Figure 6 Subjectively over-indebted households (% of indebted households)



Notes: Bars represent cumulative values, i.e. households in arrears can also include households experiencing (great) difficulties in making ends meet.
Source: EU-SILC 2020 (author's calculations).

Figure 7 Subjective over-indebtedness and under-indebtedness (% of all households)



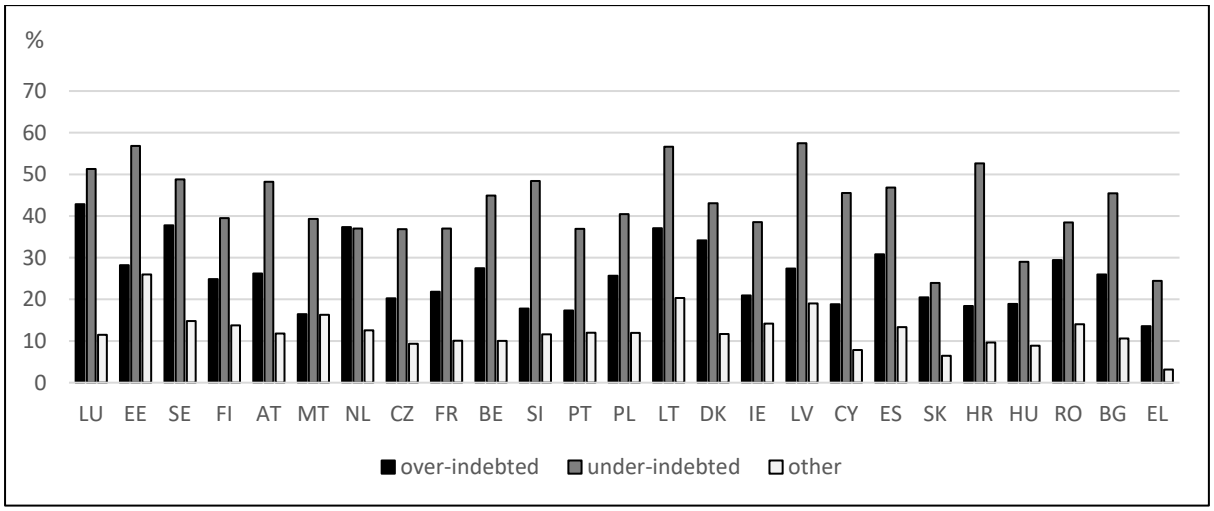
Notes: Countries are ranked in the same order as in Figure 6. Subjectively over-indebted: households with a loan and experiencing arrears on payments or difficulties in making ends meet; subjectively under-indebted: households without a loan, but experiencing arrears or difficulties; other: households not in arrears or having financial difficulties (with a loan or not).
Source: EU-SILC 2020 (author's calculations).

Under-indebted households can be characterised as having no loans but that are nevertheless in arrears on payments (mortgage or rental payments, utility bills) or having (great) difficulties in making ends meet. Although there is a lack of available data to support this reasoning, it may be that these households avoid indebtedness via restrained economic behaviour and/or they may not have access to credit. Figure 7 shows subjectively over-indebted and under-indebted households as shares of all households. Over-indebted and under-indebted households were both defined as experiencing either arrears on payments and/or difficulties in making ends meet, with the difference being that the over-

indebted households took a loan. From the month-to-month perspective of resources available for consumption and well-being, both household types may have been in similar situations. Under-indebtedness was more common than over-indebtedness, except in Scandinavian countries (FI, DK, SE), which fell into the category of high-borrowing countries. In other words, in most countries, a minority of households under financial strain took out a loan. In addition, a negative relationship appeared to prevail: the higher the share of households experiencing financial strain within a country, the fewer households had a loan (correlation coefficient -0.44).

Assuming that, for some under-indebted households at least, the reason for being debtless was a liquidity constraint due to credit requirements set by financial institutions, under-indebted households were more likely to have low levels of income in absolute terms, and thus were more prone to 'objective' income poverty. Figure 8 shows the shares of households at risk of poverty by subjective indebtedness. Indeed, in all countries (except the Netherlands), under-indebted households were more frequently exposed to the risk of poverty than over-indebted households. In all countries (except Malta), the risk of poverty was lowest for the 'other' households, i.e. households not in arrears on payments or experiencing difficulties in making ends meet, regardless of whether or not they had a loan.

Figure 8 Households at risk of poverty by subjective indebtedness (% of households)



Notes: Figures show AROP rates at household level (the official AROP rate expresses the share of individuals, not households). The countries are ranked in the same order as in Figure 6.
Source: EU-SILC 2020 (author's calculations).

Table 4 shows the results of the probit regression analysis of household characteristics related to the probability of being subjectively over-indebted, in which only statistically relevant variables were kept for each country. Low-income households and those that could not deal with unexpected expenses were more likely to be subjectively over-indebted. As expected, having two or more loans increased the probability of a household being subjectively over-indebted. Taking a loan only from a bank mostly decreased that probability, while taking a loan only from non-bank institutions barely yielded significant results, with an ambiguous effect. The higher the share of tertiary educated, working, and male household members, the less likely households were to be subjectively over-indebted. However, these

characteristics were statistically relevant in fewer than half of the countries. This suggests that when the data are controlled for household income and financial situation, other factors played a lesser role and subjective over-indebtedness could be equally distributed across the populations. When they were statistically significant, mortgage and/or rent payers tended to be more subjectively over-indebted than the reference group of homeowners (without a mortgage).

Table 4 Subjective over-indebtedness: probit regression model coefficients

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU
Income Q2		-0.23		-0.47**	-0.51***	-0.45***		-0.25	-0.32**	-0.27**	-0.33***	-0.34**	-0.38*
Income Q3		-0.69***		-0.71***	-0.45**	-0.74***		-0.49**	-0.50***	-0.42***	-0.53***	-0.64***	-0.68***
Income Q4		-0.60***		-1.53***	-0.84***	-0.92***		-0.85***	-0.79***	-0.62***	-0.80***	-0.77***	-0.79***
Income Q5		-0.67***		-1.67***	-0.86***	-0.87***		-1.34***	-0.80***	-0.72***	-0.91***	-0.94***	-1.07***
1 child								-0.24**					
2+ children								-0.41***					
No. of adults													
Age 16-29 - share				-0.38		-0.23		-0.27	0.04	0.59***	0.05		
Age 30-44 - share				-0.29		0.30*		0.28**	0.19	0.75***	0.25*		
Age 45-64 - share				0.19		0.18		0.26***	0.44***	0.74***	0.28**		
Male - share					-0.55***								
Tertiary educ. - share		-0.26**	-0.57**	-0.34*				-0.38***	-0.19*	-0.36***	-0.21**		
Working - share	-0.42***	-0.28**		-0.34*		-0.59***	-0.72***		-0.23*		-0.28***	-0.24*	-0.39**
Having mortgage			-1.03***	0.64***				0.34***	0.42***		0.19**		0.26*
Paying rent	0.44***	0.34***		0.53***			0.30*	0.30***	0.52***		0.27***		
No. of rooms						0.06*				0.05*		-0.10***	
Inability - expenses	1.26***	1.21***	1.35***	1.14***	1.14***	1.25***	1.16***	0.88***	1.30***	1.30***	1.23***	1.11***	1.32***
2+ loans	0.39**			0.20*	0.54***	0.47***	0.25**		0.25***	0.17**	0.23***	0.21**	
Bank only	0.27*		-0.70***	-0.39**	-0.64***	-0.30***	-0.39***			-0.65***			-0.40***
Non-bank only				-	-0.72***			-		0.92*			
Dense area		0.48***	0.53**	-0.33**				-0.17**				-0.48***	
Medium area		0.35**	0.31	0.04			-	-0.26***				0.03	
Constant	-1.59***	-1.06***	0.15	0.77**	0.02	-0.88***	-0.86***	1.29***	-0.97***	-1.39***	-0.98***	0.22	0.22
N	859	1,669	411	1,258	975	1,651	1,955	3,459	3,850	5,542	3,560	1,760	742
Pseudo R^2	0.248	0.334	0.277	0.408	0.294	0.356	0.225	0.245	0.307	0.296	0.308	0.237	0.303

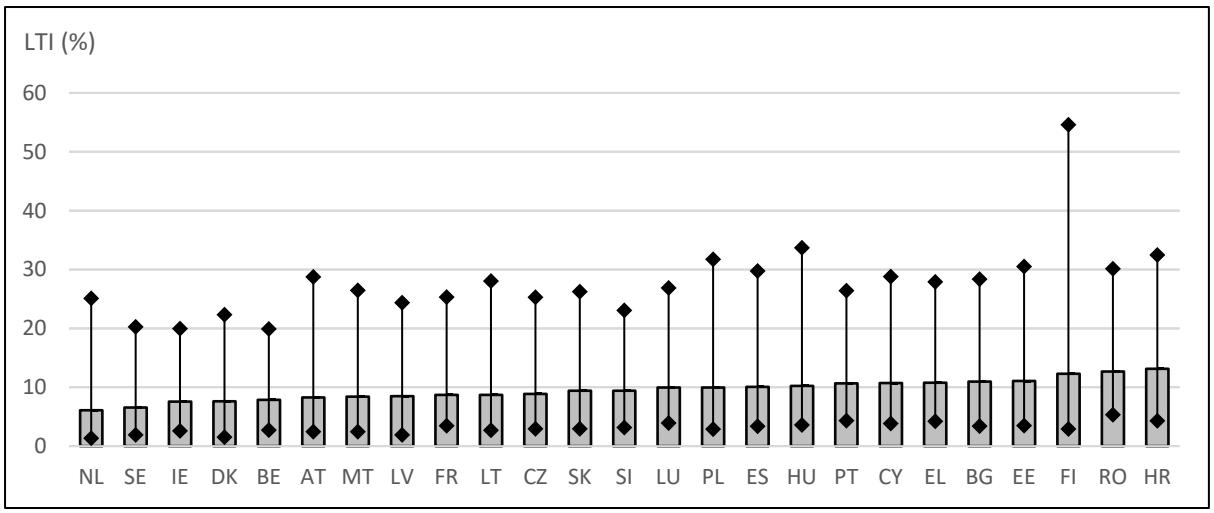
Table 4 Subjective over-indebtedness: probit regression model coefficients (cont.)

	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Income Q2	-0.21	-0.49	-0.49***	-0.38*			-0.12		-1.11**	-0.20	-0.47***	-0.30
Income Q3	-0.12	-0.82**	-1.14***	-0.72***			-0.60***		-1.14**	-0.86***	-0.56***	-0.51***
Income Q4	-0.48***	-1.07***	-1.35***	-1.14***			-0.89***		-1.27***	-0.68***	-0.92***	-0.71***
Income Q5	-1.07***	-0.75*	-1.54***	-1.35***			-0.90***		-1.96***	-0.89***	-0.97***	-0.73***
1 child				-0.25*		0.16						
2+ children				-0.38***		0.40**						
No. of adults	-0.12*				0.29***						0.09***	
Age 16-29 - share	0.48					-0.34*		0.53*			-0.14	
Age 30-44 - share	0.05					0.09		0.40			0.24**	
Age 45-64 - share	0.32*					0.50***		0.68***			0.25**	
Male - share		-0.89***		-0.34*				-0.50**			-0.45***	
Tertiary educ. - share				-0.48***						-0.30**	-0.23**	-0.44**
Working - share						-0.52***		-0.73***	0.66*			
Having mortgage				0.37**		-0.45***		0.28**				
Paying rent	0.54***								-1.31***			
No. of rooms					-0.31**							
Inability - expenses	1.11***	1.49***	1.35***	1.11***	1.77***	1.42***	1.08***	1.59***	1.15***	1.41***	1.21***	1.11***
2+ loans		0.63***		0.63***	0.53***	0.24**					0.12*	
Bank only				-0.37**	-0.50**		-0.35**			-0.37**		-0.46***
Non-bank only	-			-0.32*							1.95***	
Dense area	-0.12										-	
Medium area	-0.31**			-	-						-	
Constant	-0.78***	-0.72**	-0.91***	0.21	-0.10	-1.38***	-0.29*	-1.36***	0.22	-0.82***	-0.71***	0.18
N	1,090	465	1,127	1,035	401	1,971	1,645	1,387	331	1,982	3,162	796
Pseudo R^2	0.304	0.338	0.378	0.315	0.287	0.322	0.243	0.285	0.304	0.351	0.248	0.236

*Notes: Sub-sample of indebted households (households with any loan other than a mortgage). Stepwise backward method. * statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level. Robust standard errors applied.*
Source: EU-SILC 2020 (author's calculations).

The ***objective approach*** to over-indebtedness applied a monthly loan payment-to-income ratio (LTI, expressed in percentages). Figure 9 shows the median LTI ratios, together with the first and ninth decile values. The median LTI ratio ranged from 6% (the Netherlands) to 13% (Croatia), suggesting a rather modest differentiation across countries. However, the dispersion of the loan burden indicated more substantial differences within countries. The burden of loan payment varied most widely in Finland: for the bottom one-tenth of indebted Finnish households, loan payments represented 2.9% or less of their incomes, while households in the top ten percent spent 54.6% or more of their income on loan payments. A relatively large difference between the first and ninth deciles could also be seen in Hungary, Poland and Croatia (roughly 30 p.p. variation). The lowest within-country dispersion between the first and ninth decile values of LTI occurred in Belgium, Ireland and Sweden (roughly 17 p.p. difference).

Figure 9 Loan payment-to-income (LTI) ratio: median values (%)



Notes: Bars represent median values of the ratios. The lower and upper marks represent the 1st and 9th decile values. Sub-sample of indebted households (households with any loan except a mortgage). Observations with zero LTI were excluded.
Source: EU-SILC 2020 (author's calculations).

To identify factors and household characteristics related to over-indebtedness, a threshold of the LTI ratio defining over-indebtedness must be set, which is theoretically and empirically tricky. From a life-cycle perspective, the threshold should vary over the different life stages of household members. From the current-period perspective emphasised in this study, the threshold should represent a point beyond which loan payments harm household well-being. Here, an arbitrary choice was made, inspired by subjective over-indebtedness as defined in this section. Among indebted households, at least one-fifth of households self-reported experiencing problems either with arrears on their payments or making ends meet (in 21 of 25 countries, see Figure 6). Assuming that these problems are strongly associated with high LTI ratios in indebted households, the 8th decile of the LTI ratios was considered decisive.

The 8th decile of LTI value ranged from 13.4% for Sweden to 31.5% for Finland, and was roughly 18.5% for the median countries. Although it remains arbitrary, the 20% LTI ratio was set as a threshold of objective over-indebtedness. In other words, households whose (monthly) loan payments exceed 20% of their (corresponding monthly disposable) income were defined as 'objectively' over-indebted.

Table 5 shows the results of probit regression analysis of household characteristics related to the probability of being objectively over-indebted, with only statistically relevant variables remaining for each country. Similar to subjective over-indebtedness, low-income households were more likely to be objectively over-indebted. However, the capability to deal with unexpected expenses was statistically insignificant in most countries, suggesting that even a relatively high LTI ratio might not be related to household financial strain in most countries. Although larger households were more likely to take out a loan (Table 3), their LTI ratios tended to be relatively low, while household size was rarely related to subjective over-indebtedness. Unsurprisingly, having two or more loans increased the probability of reaching high LTI ratios in all countries. Unlike subjective over-indebtedness, taking a loan from a bank only tended to increase the probability, while taking a loan from non-bank institutions had an ambiguous effect.

The most substantial differences between objective and subjective over-indebtedness (Table 4) related to economic activity, education and gender. These characteristics were statistically significant in fewer than half of the countries in both analyses. Nevertheless, where they were significant, higher shares of working, tertiary educated, and male household members increased the probability of objective over-indebtedness, the opposite result to subjective over-indebtedness. This indicates that while a higher share of working, tertiary educated, and male household members was often related to relatively high LTI ratios, such households were able to cope with loan payments. These characteristics were typically related to higher incomes, suggesting that such households were more likely to be able to afford relatively high loan payments because their absolute amount of monthly income remaining was still sufficient to cover other expenses.

Table 5 Objective over-indebtedness: probit regression model coefficients

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU
Income Q2	-0.78***	-0.19	-0.58*		-0.33		-0.62***	-0.83***	-0.70***	0.07	-0.64***	-0.37**	-0.41*
Income Q3	-0.65***	-0.44***	-1.16***		-0.26		-0.97***	-1.00***	-1.10***	0.09	-0.91***	-0.52***	-0.62***
Income Q4	-1.28***	-0.59***	-1.40***		-0.56**		-0.98***	-1.41***	-1.54***	-0.07	-1.04***	-0.82***	-0.93***
Income Q5	-1.26***	-0.95***	-2.22***		-0.56**		-1.53***	-1.80***	-1.72***	-0.20	-1.07***	-0.79***	-1.34***
1 child		-0.34**	-0.61**				-0.30**	-0.12	-0.21*	-0.09	-0.20*	0.08	-0.37**
2+ children		-0.40***	-0.21				-0.48***	-0.39***	-0.38***	-0.19**	-0.40***	-0.31**	-0.33*
No. of adults		-0.16***	-0.40***	-0.20***	-0.39***	-0.30***	-0.21***	-0.34***	-0.36***	-0.16***	-0.38***	-0.35***	-0.59***
Age 16-29 - share				-0.58*			0.41	-0.49**		-0.42***	0.33**	0.68**	
Age 30-44 - share				-0.42*			0.69**	-0.21		-0.05	0.19	0.83***	
Age 45-64 - share				-0.00			0.70***	-0.02		0.19*	0.44***	0.68***	
Male - share		0.39***			0.57***	0.39**					0.47***		
Tertiary educ. - share	0.32*	0.38***			0.65***						0.31***	0.24*	
Working - share			1.07***									-0.34**	
Having mortgage	-0.51***			-0.86***	-0.42***			0.44***			-0.59***	-0.47***	
Paying rent	-0.48***			-0.60***		-0.21*				-0.14*	-0.54***	-0.60**	
No. of rooms							0.07*				0.06*		
Inability - expenses				0.38***		0.42***			-0.21**	0.47***	-0.30***	0.16*	
2+ loans	0.52***	0.59***	1.18***	0.62***	0.99***	0.68***	0.93***	0.37***	1.07***	0.51***	1.11***	0.82***	0.62***
Bank only		0.54***									0.50***		
Non-bank only				-				-	-0.42*			-0.67**	
Dense area			-0.50**										-0.34**
Medium area			-0.54**				-						-0.32**
Constant	-0.05	-1.35***	0.71**	-0.16	-0.44*	-1.37***	-0.55*	1.06***	0.72***	-0.39**	-0.68***	0.12	1.27***
N	838	1,658	402	1,108	975	1,437	1,470	3,382	3,610	4,218	3,516	1,646	740
Pseudo R^2	0.122	0.094	0.281	0.118	0.163	0.100	0.163	0.186	0.242	0.073	0.222	0.146	0.216

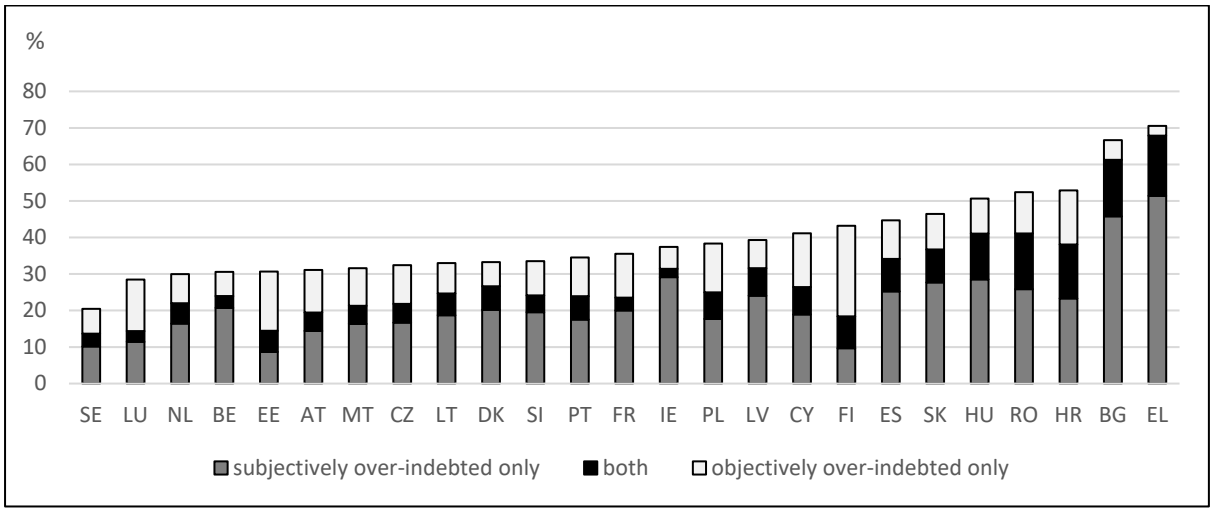
Table 5 Objective over-indebtedness: probit regression model coefficients (cont.)

	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Income Q2	-0.25	-0.78**	-0.60***	-1.23***	-0.74*	-0.30	-0.69***	-0.94***	-0.88*	-0.41**	-0.61***	-0.28
Income Q3	-0.62***	-1.30***	-0.33	-1.39***	-0.83**	-0.56***	-1.10***	-1.33***	-1.88***	-0.69***	-0.81***	-0.50**
Income Q4	-0.51**	-1.64***	-0.66***	-1.71***	-1.20***	-0.63***	-1.62***	-1.55***	-1.66***	-0.92***	-1.04***	-0.96***
Income Q5	-0.53**	-0.95**	-0.49*	-1.89***	-2.22***	-0.80***	-1.31***	-1.91***	-2.12***	-1.08***	-1.42***	-1.11***
1 child							-0.39**		-0.34	-0.47***	-0.39***	
2+ children							-0.23		-1.02***	-0.66***	-0.51***	
No. of adults	-0.37***		-0.23***	-0.35***	-0.53***		-0.20***	-0.38***	-0.63***	-0.24**	-0.44***	-0.31***
Age 16-29 - share	-0.01	-0.52			2.27***		-0.61**		0.90			
Age 30-44 - share	0.20	-0.52			2.27***		-0.27		0.28			
Age 45-64 - share	-0.25	0.43			2.17***		-0.16		-0.57			
Male - share	0.49**					0.51**			0.96*		0.33*	0.62**
Tertiary educ. - share			0.58***			0.29**						0.65***
Working - share							0.39**		0.78*	0.58***	0.46***	
Having mortgage	-0.76***		-0.60***		-0.85***			-0.40***	1.38**			
Paying rent	-0.69***		-0.63***		-0.96***			-0.38**	-1.48*			
No. of rooms	0.31***						0.08*				0.07*	
Inability - expenses							-0.26**			0.43***	-0.23***	
2+ loans	1.11***	1.48***	0.76***	1.01***	0.62**	0.65***	0.73***	1.27***	0.59**	0.78***	1.15***	1.40***
Bank only			-			-	-0.32*	0.61***	0.92**		0.49***	0.58***
Non-bank only	-		-	-0.39**	0.83*	-	-0.98***		1.20**	1.36**		
Dense area						-		0.20		-0.29*	-	
Medium area				-	-	-		0.41**		-0.35**	-	
Constant	-2.02***	-0.71*	-0.07	0.81***	-0.78	-1.39***	0.65**	0.37	0.59	-0.90***	-0.59***	-0.84***
N	1,167	358	1,063	896	344	1,449	1,409	1,337	331	1,613	3,162	763
Pseudo R^2	0.234	0.291	0.126	0.217	0.323	0.094	0.168	0.258	0.263	0.201	0.209	0.226

*Notes: Sub-sample of indebted households (households with any loan, except a mortgage). Observations with zero LTI were excluded. Stepwise backward method. * statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level. Robust standard errors applied.*
Source: EU-SILC 2020 (author's calculations).

The differences in factors related to objective and subjective over-indebtedness indicate that these two perspectives identify different indebted sub-populations. Objective over-indebtedness should be considered an indicator of a potential 'risk of over-indebtedness' rather than a signal that these households are likely to be in financial strain. Indeed, in the majority of EU countries, fewer than half of objectively over-indebted households were also identified as subjectively over-indebted at the same time (Figure 10). Exceptions include Greece, Bulgaria, Croatia, Romania and Hungary (i.e. countries with overall high shares of households experiencing financial difficulties, see Figure 7). Also, in the majority of countries, the share of subjectively over-indebted households was greater than the share of objectively over-indebted households, although this was heavily dependent on the selected threshold of objective over-indebtedness.

Figure 10 Subjectively and objectively over-indebted households: the overlap (% of indebted households)



Notes: Sub-sample of indebted households (households with any loan other than a mortgage).
Source: EU-SILC 2020 (author's calculations).

The research and literature offer no unified definition of over-indebtedness, limiting the comparability of these results to previous studies. For instance, a recent study by McKnight (2019) analysed objective over-indebtedness using Household Finance and Consumption Survey (HFCS) data for a period around 2013–2015 in 19 EU countries (Euro-zone plus Hungary and Poland). That study applied a different indicator and threshold: over-indebted households were defined as those with financial debts amounting to at least three months of household income. This corresponded to a 25% threshold of DTI ratio, which, however, related the outstanding debt to household annual income. Despite the differences between the two studies, some similarities exist. Finland and Cyprus fall among the most objectively over-indebted countries under both approaches, and Portugal, Spain, Luxembourg and Slovakia occupy the middle positions in the country rankings in both studies. On the other hand, the greatest difference is evident for the Netherlands, which was highly over-indebted based on the DTI, but only moderately over-indebted based on the LTI applied here. This difference suggests that Dutch households pay relatively moderate amounts on a monthly basis, although the amounts borrowed and outstanding debts are quite high relative to their incomes.

RESULTS ON EXPENSES OVERBURDEN

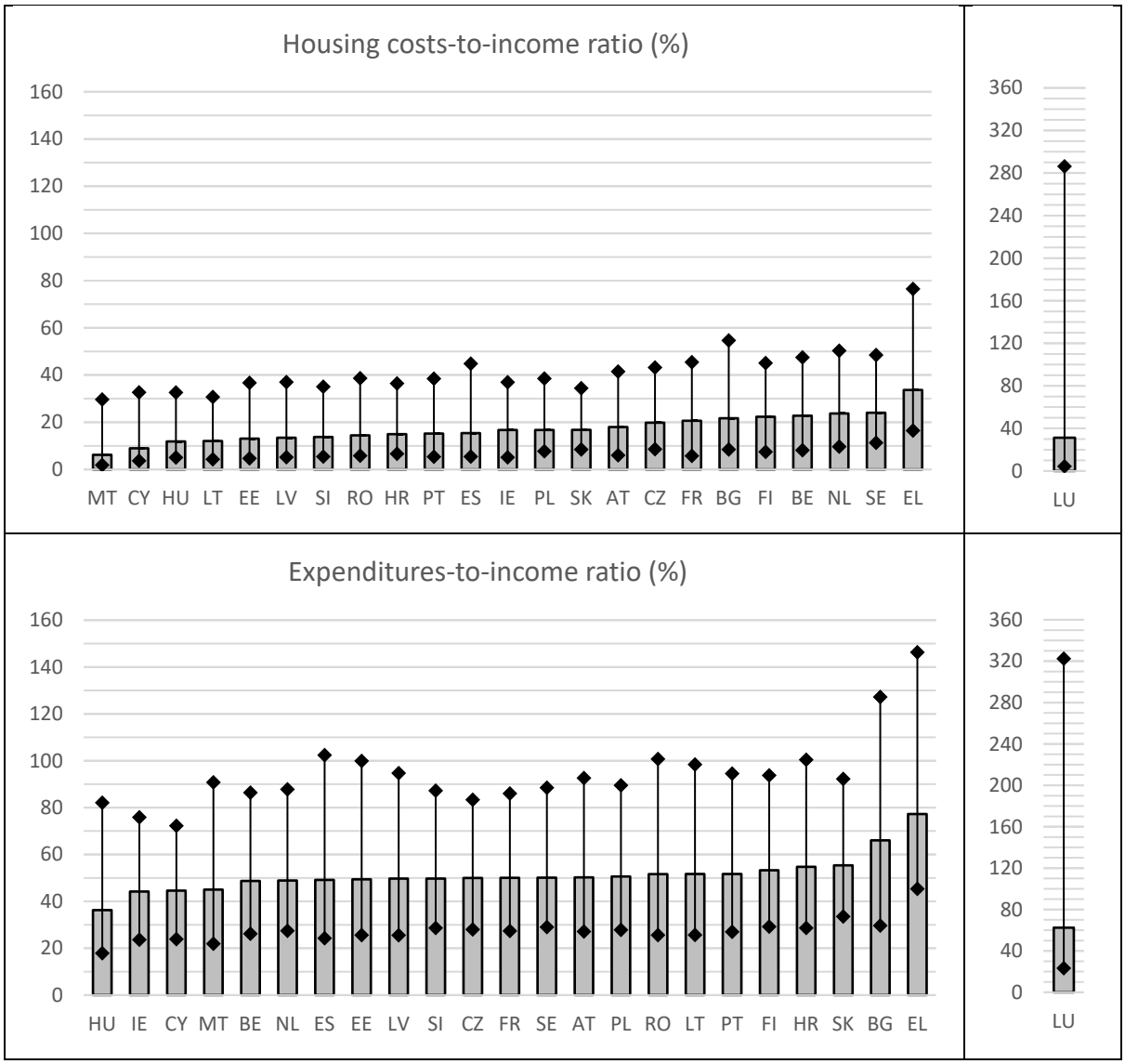
The median values of the housing cost-to-income (HCTI) ratio (including mortgages) ranged from 6.2% in Malta, to 33.7% in Greece (upper panel of Figure 11). Housing costs represented the lowest relative economic burden for households in Malta, Cyprus, and most CEE countries, where half of households spent less than 15% of their income on housing. Along with Greece, the highest relative burden was experienced in Benelux and Scandinavian countries, where half of households spent more than 22% of their income on housing. Generally, at least 10% of households spent more than 30% of their income on housing costs (see the upper marks representing 9th decile value).

Luxembourg had among the highest median HCTI (31.2%), with an enormous dispersion of the ratio (see the right panel of Figure 11 for a specific scale). That very high ratio was caused by mortgage payments: while the 9th percentile of housing costs without mortgage payments represented roughly 42% of monthly household income, adding mortgage payments raised the 9th decile to costs exceeding income (286%). A HCTI ratio higher than 100% signals the inability of households to cover housing costs from their current income (29% of households in LU). As this concerns primarily households with a mortgage, it suggests that these households used accumulated wealth both to be eligible for a mortgage and to cover housing costs, including mortgage payments[17].

The expenses-to-income (EIT) ratio adds loan payments, and food and transport expenditures to the HCTI ratio. In addition to housing costs and mortgage payments paid regularly and typically on a monthly basis, households spend non-negligible amounts on other necessary goods, including food and transport, as well as any other loan payments each month. Thus, the EIT ratio shows the share of their budget that households spend on necessary expenses, and consequently, the resources that remain for consumption of 'non-necessary' goods that may increase household well-being. These additional regular expenditures increased the median ratios by roughly 25 p.p. (HU, NL, BE, SE) to 45 p.p. (BG, EL, see the bottom panel of Figure 11). The ranking of countries changed, with most CEE countries (except CZ and HU) moving rightwards, suggesting that additional regular expenditure burdened the budgets of households in CEE relatively more than in Western Europe. In the majority of countries, half of households spent at least 50% of their incomes on these regular necessary expenses. At least 10% of households spent more than 70% of their incomes on basic necessities (see the upper marks representing the 9th decile value).

[17] Based on aggregated data, Luxembourg has one of the highest gross household debt-to-income ratios (Eurostat database, variable TEC00104), but also one of the highest household saving rates (variable TEC00131).

Figure 11 Housing costs-to-income (HCTI) and expenses-to-income (ETI) ratios: median values (%)

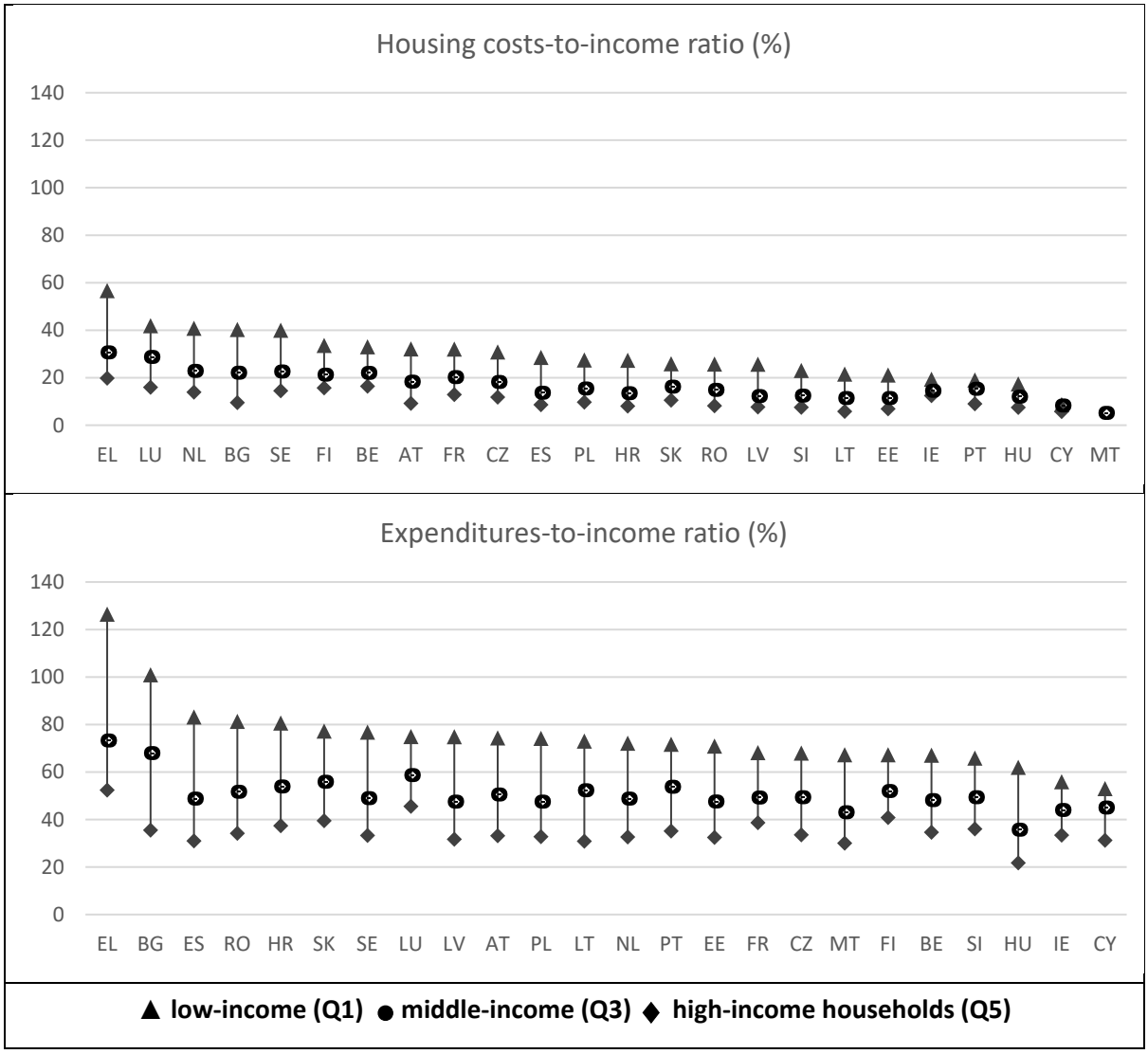


*Notes: Bars represent median values of the ratios. The lower and upper marks represent the 1st and 9th decile values. HCTI ratio = 100 * (monthly housing costs + mortgage payments) / (monthly total household disposable income). ETI ratio = 100 * (monthly housing costs + mortgage payments + loan payments + food expenditures + transport expenditures) / (monthly total household disposable income).*
Source: EU-SILC 2020 (author's calculations).

Necessary regular expenses constituted a higher share of low-income households' monthly budgets than that of middle or high-income households. Figure 12 shows the median values of the HCTI and ETI ratios separately for low, middle and high-income households. For the one-fifth of households with lowest (equivalised) income, the median HCTI ratio reached 60% in Greece, followed by Benelux and the Scandinavian countries, and Bulgaria (upper panel of Figure 12). The dispersion between the median HCTI ratios of the poorest and richest fifths of households was highest in Greece and Bulgaria, indicating that these countries had the greatest inequality in living conditions, as measured by the burden of housing costs relative to household income. Low-income households spent 34-40 p.p. more of their budgets on housing than high-income households in these countries, leaving them with far

less, both relatively and absolutely, for other types of consumption. By contrast, Malta and Cyprus exhibited both the lowest relative burden of housing costs and the smallest gap between the poorest and richest.

Figure 12 HCTI and ETI ratios: median values (%) by low-, middle- and high-income households



Notes: Income quintiles were defined based on equivalised (OECD-modified scale) total household disposable income. Low-income households – income lower than the 1st quintile (Q1); middle-income households – income between 2nd and 3rd quintiles (Q3); high-income households – income higher than 4th quintile (Q5). (Median values of households with incomes between the 1st and 2nd quintiles (Q2) and between the 3rd and 4th quintiles (Q4) are not displayed.) See the notes for Figure 11 for the definition of HCTI and ETI ratios.
Source: EU-SILC 2020 (author's calculations).

When loan payments and food and transport expenditures were considered (bottom panel of Figure 12), the ranking of countries by median values of the poorest 20% changed: the Benelux and Scandinavian countries moved rightwards, while Greece and Bulgaria remained within the group of countries with the highest relative burden, followed by other CEE and Southern European countries. These findings coincide with the data from the Households Budget Survey (HBS) 2015, which found that food

comprised a higher share of total expenditure in CEE and Southern European countries than in the rest of the EU (Mysíková and Želinský, 2019). In Greece and Bulgaria, for at least half of the poorest 20% of households, necessary regular expenses accounted for more than their total income. This implies that the poorest households could not cover their monthly regular expenses from their income. Many households in such situations must either use their savings or borrow to meet their current consumption requirements. Indeed, after borrowing for purposes related to property, the most common reason to take a loan was to cover daily living expenses in both Greece and Bulgaria (see Table 2); this was relatively less frequent in all other EU countries. In most EU countries, the median ETI ratio within the poorest households ranged roughly from 70% to 85%.

As shown in Figure 12, income was a crucial factor in expense-overburden. A negative relationship between the amount of income and the probability of experiencing an expense-overburden situation was confirmed by the results of the probit regression models for all EU countries (Table 6). Larger households were typically less likely to be overburdened by expenses. This may be a benefit of economies of scale from living together, especially on housing costs. Regarding numbers of children, simple statistics showed insignificant or ambiguous differences in expense-overburden rates, but when controlling for other household characteristics, a negative effect prevailed. In most countries, households with members younger than 30 or aged 30–44 were most likely to be overburdened by expenses (with the exception of Luxembourg, where a group of households had extremely high mortgage payments relative to income). A higher share of male, tertiary educated, and working household members typically increased the probability of a household being overburdened by expenses. Unsurprisingly, households paying a mortgage or a rent were both more likely to be overburdened compared to outright owners of their dwellings. Similarly, the larger the dwelling (number of rooms), the higher the probability of expense overburden.

Table 6 Expense-overburden: probit regression model coefficients

	AT	BE	BG	CY	CZ	EE	EL	ES	FI	FR	HR	HU
Income Q2	-1.13***	-0.77***	-0.77***	-0.66***	-0.85***	-0.98***	-1.29***	-1.21***	-0.50***	-0.95***	-0.85***	-1.11***
Income Q3	-1.59***	-1.39***	-1.56***	-1.25***	-1.39***	-1.63***	-2.23***	-1.86***	-0.72***	-1.43***	-1.36***	-1.52***
Income Q4	-1.98***	-1.91***	-2.33***	-1.43***	-1.84***	-2.14***	-2.96***	-2.46***	-0.97***	-1.86***	-1.86***	-1.83***
Income Q5	-2.52***	-2.35***	-3.77***	-2.01***	-2.49***	-2.78***	-4.05***	-3.16***	-1.22***	-2.08***	-2.54***	-2.63***
1 child	-0.14	-0.33***	-0.20**	-0.09	-0.24**	-0.10	-0.20***	-0.20***	-0.21***	-0.22***	-0.10	-0.37**
2+ children	-0.50***	-0.54***	-0.34***	-0.44***	-0.45***	-0.33***	-0.43***	-0.29***	-0.30***	-0.59***	-0.23**	-0.39**
No. of adults	-0.24***	-0.26***	-0.23***	-0.36***	-0.47***	-0.31***	-0.52***	-0.37***	-0.29***	-0.24***	-0.23***	-0.27***
Age 16-29 - share	0.32***		0.26*	0.40**	0.85***	1.27***	1.08***	0.41***	0.40***	0.18	0.60***	0.36*
Age 30-44 - share	0.14		0.47***	0.52***	0.72***	1.17***	1.02***	0.44***	0.34***	0.11	0.60***	0.94***
Age 45-64 - share	0.18**		0.18**	0.67***	0.73***	0.80***	1.01***	0.37***	0.38***	0.26***	0.52***	0.62***
Male - share	0.40***	0.25***	0.34***	0.45***	0.28***	0.28***	0.31***	0.24***	0.34***	0.21***		
Tertiary educ. - share	0.26***	0.34***	0.18***	0.34***	0.15*		0.26***	0.19**		0.30***	0.20**	0.24**
Working - share	0.20**	0.21**	0.39***			0.29**			0.15*	0.25***		-0.30***
Having mortgage	0.45***	0.86***	0.61***	0.62***	0.77***	0.94***	0.93***	0.79***	0.59***	0.66***	0.38***	0.47***
Paying rent	0.30***	0.58***	0.44***	0.46***	0.75***	0.64***	1.36***	0.79***	0.58***	0.43***		0.73***
No. of rooms	0.15***	0.05**	0.10***	0.10**	0.15***	0.09***	0.25***	0.05**	0.14***	0.09***	0.07***	0.06**
Inability - expenses			-0.21***						0.37***			0.19***
Dense area	0.14*		0.34***		0.36***	0.15**	0.55***	0.18***	0.22***	0.13**	0.29***	0.38***
Medium area	0.15**		0.19***		0.10		0.36***	0.16**	0.11*	-0.08	0.28***	-0.00
Constant	-0.81***	-0.66***	0.57***	-1.46***	-0.95***	-0.95***	0.85***	-0.10	-1.52***	-0.79***	-0.06	-0.71***
N	5,917	6,276	7,311	4,188	8,615	5,084	14,955	12,975	9,344	8,769	7,355	5,863
Pseudo R^2	0.288	0.249	0.321	0.229	0.305	0.327	0.468	0.393	0.165	0.247	0.247	0.339

Table 6 Expense-overburden: probit regression model coefficients (cont.)

	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Income Q2	-0.81***	-0.69***	-0.90***	-1.00***	-0.95***	-0.99***	-1.08***	-0.82***	-1.17***	-1.11***	-0.75***	-1.18***
Income Q3	-1.46***	-1.49***	-1.08***	-1.80***	-1.32***	-1.33***	-1.90***	-1.37***	-1.70***	-1.97***	-1.20***	-1.72***
Income Q4	-1.78***	-2.18***	-1.43***	-2.24***	-2.01***	-1.69***	-2.44***	-1.88***	-2.57***	-2.42***	-1.88***	-2.32***
Income Q5	-2.53***	-2.73***	-1.59***	-2.89***	-2.36***	-2.11***	-2.93***	-2.74***	-3.29***	-2.88***	-2.66***	-3.50***
1 child	0.04	-0.50***			-0.35***	-0.19	-0.41***	-0.43***	-0.22**	-0.39***	-0.35***	-0.14
2+ children	-0.50***	-0.51***			-0.81***	-0.42***	-0.39***	-0.50***	-0.78***	-0.67***	-0.53***	-0.68***
No. of adults	-0.31***	-0.16***		-0.37***	-0.33***	-0.42***	-0.33***	-0.29***	-0.20***	-0.37***	-0.31***	-0.31***
Age 16-29 - share	0.45	1.16***	-0.53*	0.76***	0.87***	0.54***	0.63***	0.65***	0.64***	0.53***	0.68***	0.98***
Age 30-44 - share	0.98***	1.15***	-0.72***	0.56***	0.91***	0.05	0.51***	0.59***	0.71***	0.26	0.48***	0.82***
Age 45-64 - share	0.76***	0.88***	-0.03	0.54***	0.51***	0.03	0.30***	0.48***	0.44***	0.35**	0.30***	0.66***
Male - share	0.21*			0.36***	0.31**	0.39***	0.25***	0.45***	0.24***	0.28***	0.39***	0.27**
Tertiary educ. - share		0.25**		0.22***		0.30***	0.17**	0.28***			0.32***	
Working - share			0.50***	0.22**		0.18*	0.36***	0.21**		0.63***	0.36***	0.44***
Having mortgage	0.51***	0.31*	3.29***	0.85***	0.66***		0.93***	0.66***	1.62***	0.24*	0.88***	0.47***
Paying rent	0.32**	0.54**	0.39**	0.26***		0.24***	0.49***	0.41***	0.81***	0.26*	0.39***	0.31***
No. of rooms	0.09*	0.11***		0.14***		0.09***	0.18***	0.08***	0.09***	0.16***	0.11***	0.11***
Inability - expenses	-0.19*				-0.23**			-0.12**	-0.20***	0.22**	-0.14**	
Dense area		0.23**		0.22***			0.27***	0.19***	0.71***	0.26**		0.31***
Medium area		0.25**					0.20***	0.11*	0.40***	-0.03		0.10
Constant	-1.16***	-0.80***	-0.59***	-0.46***	-0.20*	-0.54***	-0.44***	-0.65***	-0.00	-0.86***	-0.73***	-0.39***
N	3,408	3,842	1,891	4,814	3,507	9,411	10,356	10,660	7,277	3,918	8,534	5,107
Pseudo R^2	0.274	0.273	0.582	0.295	0.292	0.320	0.336	0.269	0.310	0.379	0.263	0.346

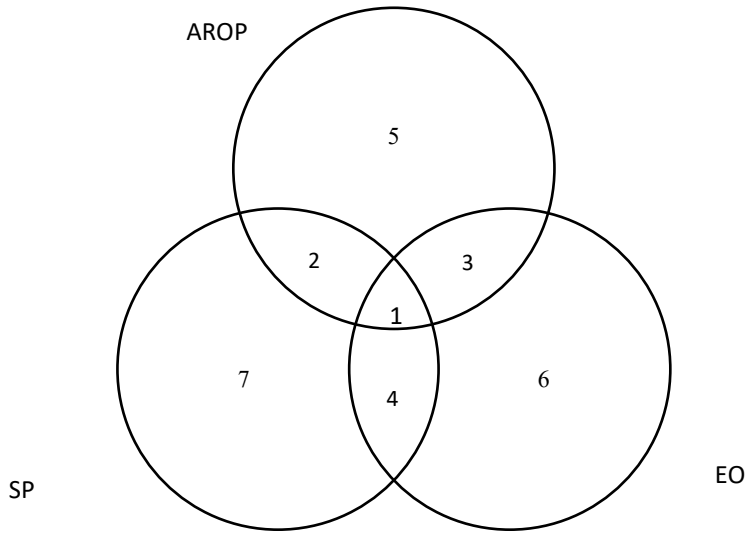
*Notes: Sample of all households. Stepwise backward method. * statistically significant at the 10% level, ** statistically significant at the 5% level, *** statistically significant at the 1% level. Robust standard errors applied.*
Source: EU-SILC 2020 (author's calculations).

EXPENSE-OVERBURDEN AND INCOME POVERTY RATES

This section compares three indicators of poverty. First, at-risk-of poverty (AROP) rate, which was derived based solely on (equivalised) disposable household income. Second, subjective poverty (SP) rate, which we estimate in the section above, based on the subjective minimum income question. Households stated the minimum income needed in their circumstances to make ends meet, i.e. to cover usual necessary expenses. Third, expense-overburden (EO) rate, derived in the previous section, based on households' housing costs, debt payments, and food and transport expenditure relative to their income. Unlike the income-based AROP, both the SP and the EO consider household expenses in some way, the first subjectively, the latter objectively. Expense-overburden was expected to correlate more strongly with SP than with AROP. In contrast to previous sections, the analyses described here relate to individuals rather than to households as a unit of observation, as is common for the AROP rate and other official poverty-related statistics.

The share of populations identified as being at risk of income poverty, subjectively poor, and expense-overburden all at once ranged from 1.4% in Finland to 16.3% in Greece (see area 1 in Figure 13 and Table 7). Obviously, countries with very low SP rates (FI, IE, NL) also exhibited very low shares of their populations identified as 'at risk' in all three dimensions. Given the low SP rates, the most frequent situation was household members threatened either solely by expense-overburden (FI, area 6), or solely by AROP (IE, NL, area 5). Inevitably, in countries with very high SP rates (BG, EL, RO, LV, EE, HR), which far exceeded the rates in the other two dimensions, the most frequent situation was being subjectively income-poor, while not being objectively income-poor or overburdened by expenses (area 7).

Figure 13 Overlaps



Notes: this figure serves as a legend to Table 7.

Table 7 AROP, SP and EO: overlaps (% of population)

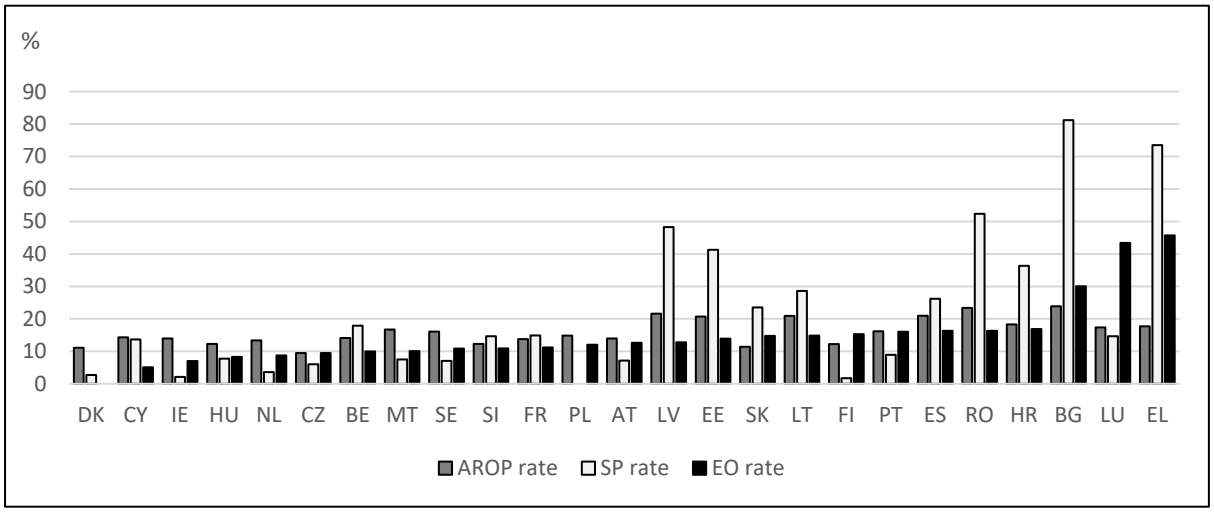
									Correlation coef. of EO and:	
	1	**2**	**3**	**4**	**5**	**6**	**7**	***Sum 1 to 7***	**AROP**	**SP**
AT	5.1	1.9	2.3	0.1	4.7	5.2	0.0	*19.2*	0.487	0.503
BE	5.0	7.2	0.1	1.3	2.0	3.5	4.4	*23.5*	0.351	0.398
BG	15.5	8.3	0.0	14.2	0.0	0.3	43.1	*81.5*	0.429	0.299
CY	2.5	7.9	0.2	0.4	3.6	2.0	2.7	*19.3*	0.262	0.293
CZ	3.3	2.1	1.5	0.3	2.6	4.4	0.3	*14.4*	0.456	0.443
EE	8.8	14.3	0.0	2.8	0.1	2.3	18.7	*47.1*	0.382	0.313
EL	16.3	1.0	0.0	27.4	0.0	2.1	28.7	*75.4*	0.445	0.459
ES	11.1	7.9	0.3	2.2	1.5	2.7	4.9	*30.6*	0.533	0.557
FI	1.4	0.3	3.3	0.0	7.1	10.6	0.0	*22.7*	0.237	0.237
FR	5.0	4.4	0.6	1.1	3.1	4.6	3.5	*22.2*	0.386	0.412
HR	9.6	8.5	0.0	4.3	0.0	3.0	13.8	*39.2*	0.453	0.430
HU	4.4	3.1	0.8	0.1	4.2	3.1	0.2	*15.8*	0.455	0.516
IE	1.5	0.7	2.5	0.0	9.0	3.0	0.0	*16.7*	0.346	0.360
LT	9.2	12.0	0.2	2.0	0.5	3.4	6.4	*33.7*	0.422	0.424
LU	6.4	3.5	1.1	1.7	3.6	34.3	1.0	*51.5*	0.071	0.158
LV	8.5	13.0	0.0	3.0	0.0	1.3	24.6	*50.4*	0.420	0.313
MT	4.4	2.9	1.5	0.2	7.9	4.1	0.2	*21.3*	0.374	0.471
NL	2.9	0.6	2.1	0.0	6.6	3.5	0.0	*15.8*	0.436	0.507
PL									0.506	
PT	5.6	2.7	2.2	0.3	5.2	7.9	0.1	*24.0*	0.397	0.434
RO	10.6	12.0	0.0	4.5	0.2	1.2	25.0	*53.6*	0.444	0.356
SE	5.0	1.5	2.0	0.1	5.2	3.2	0.1	*17.2*	0.535	0.578
SI	4.7	6.5	0.2	1.2	0.8	4.7	2.2	*20.4*	0.355	0.392
SK	7.1	4.2	0.0	4.1	0.4	3.5	8.7	*28.0*	0.475	0.504

Notes: Correlations significant at 0.01 level (2-tailed). Observations missing values for any of the three dimensions excluded. See Appendix for statistics on AROP, SP and EO rates by household type (number of adult (16+) and child (0–15) household members, and basic demographic characteristics (Tables A.1, A.3, and A.5, respectively), and by individual characteristics, including age, gender, education, and (current) economic activity status (Tables A.2, A.4, and A.6, respectively).
Source: EU-SILC 2020. (author's calculations).

Interestingly, countries with relatively low SP rates did not necessarily exhibit low expense-overburden rates (FI, PT, see Figure 14). This suggests that, though substantial shares of their populations had high expenses relative to their income, they would be able to cover their expenses even with less income than they actually have, allowing space to build savings. On the other hand, countries with relatively high SP rates ranked among those with higher EO rates (EL, BG, HR, RO). Basically, all subpopulations with high expenses relative to income were identified as subjectively income-poor at the same time in these countries. However, there were other substantial shares of populations with lower relative expenses, which still considered their incomes insufficient to make ends meet (area 7 in Table 7). In most countries, the expense-overburden designation correlated more strongly with SP than with

AROP. Countries where expense-overburden correlated more strongly with AROP were predominantly those with high SP rates (BG, HR, RO, EE, LV), as there are considerable sub-populations threatened solely by SP, making the overlaps with the other rates relatively small, and the correlations relatively low.

Figure 14 AROP, SP and EO rates (% of population)



Notes: Ranked by EO rate. Rates computed separately, (i.e. missing values in one dimension did not affect construction of the others).
Source: EU-SILC 2020 (author's calculations).

CONCLUSIONS

This research note examined aspects of the financial situations of households and individuals that are not captured by income poverty, an indicator based solely on household income. Although income is a crucial factor for a household's financial situation and economic well-being, the dimensions of costs and liabilities are no less important, and this study may deliver some additional views of the monetary dimension of measuring poverty that can usefully complement official statistics on income poverty. First, it estimated subjective poverty based on households' self-evaluated minimum income needed to cover their usual necessary expenses, and compared it with the at-risk-of-poverty rate (the official 'objective' income poverty indicator). Second, it analysed household indebtedness and assessed possibly over-indebted households. Third, it examined the burden of households' regular necessary expenses relative to their income and suggested a measure of expense-overburden. Finally, it contrasted income poverty, subjective poverty, and expense-overburden rates.

The subjective poverty measure indicated a clearer division between poorer and richer EU countries – roughly represented by Eastern and Western regions – than that given by the relative indicator of income poverty (at-risk-of-poverty rate). Subjective poverty rates were highest in Eastern European countries (Bulgaria, Romania, the Baltics, Croatia) and Greece, comprising more than 30%, and up to 80% of their populations. The lowest rates were recorded in Scandinavian countries, Ireland, and the Netherlands, including less than 7% of their populations. Objective income poverty, as a relative indicator, compares incomes with a poverty line that is intended to represent a certain common standard in a country (60% of the median income). A comparison of objective and subjective income poverty rates indicated that 60% of median income would be insufficient for a large share of the populations of Eastern European countries and Greece, i.e. the subjective approach more than doubled the pool of the poor. By contrast, the income poverty lines exceeded the subjectively perceived minimum income levels in richer countries, where the subjectively poor were fewer than those identified as 'objectively' income-poor. These findings enrich the research and official statistics on the monetary dimensions of poverty as presented by the relative income poverty rate.

Usual necessary and regular expenses include housing costs, food and transport expenditure and loan payment. Regarding the latter (excluding mortgages used to purchase the household's main residence), Central and Eastern European countries typically fell into the category of low-borrowing countries, while households in Western European countries were more often indebted. The substantial differences in indebtedness across EU countries could be related to liquidity constraints and capital requirements in low-borrowing countries. The share of households with one or more loans (irrespective of the amount borrowed or payment size) was lowest in Romania and Bulgaria (less than 7%), although these countries showed extremely high subjective poverty rates. Assuming that low indebtedness was predominantly related to households having restricted access to loans, substantial parts of populations were at a double disadvantage: their income was not sufficient to make ends meet and

they could not borrow to increase their consumption. By contrast, indebtedness was highest in Finland (more than 50% of households had one or more loans). Similar to Ireland and Sweden, Finnish households were often borrowers, but subjective poverty was very low. Generally, the most frequent purpose of loans related to household property, a car, or other means of transport. A higher propensity to take a loan was related to higher income, younger age, higher work intensity, and often to larger households. Households with a mortgage were often more likely to have other loans. Households that were typically able to balance their monthly budgets and those more able to deal with unexpected expenses were less likely to be indebted.

Indebtedness does not necessarily harm households, and many households can cope with loan payments. In fact, indebtedness often enables households to increase their well-being, in particular by allowing for smoothed consumption. Therefore, indebtedness and *over*-indebtedness needed to be distinguished. A subjective approach considers indebted households that experience being in arrears on payments and/or difficulties in making ends meet to be *over*-indebted. This subjective over-indebtedness occurred in at least one-fifth of indebted households (fewer in Luxembourg, Estonia, Sweden and Finland). The highest shares of subjectively over-indebted households were in Greece and Bulgaria (more than 60%). High-borrowing countries tended to have less subjective over-indebtedness (e.g. Finland, Luxembourg, Sweden), while indebted households in low-borrowing countries were subjectively over-indebted more frequently (e.g. Romania, Bulgaria, Hungary). It seems that, in low-borrowing countries, only those households that had an urgent need for resources actually borrowed and those households were then subject to more loan payment difficulties. In addition, there was another, more substantial pool of 'under-indebted' households in these low-borrowing countries, i.e. those in arrears on payments and/or experiencing difficulties in making ends meet despite having no loans. The subjectively under-indebted were more often at risk of income poverty than subjectively over-indebted households, suggesting that their income levels were relatively low and they were perhaps ineligible to take out a loan.

Monthly loan payment-to-income ratio provides another view of possible over-indebtedness. Under this objective approach, a threshold should be set, beyond which the loan payment burden relative to income likely harms a households' well-being. This study used an arbitrary choice, inspired by subjective over-indebtedness, which generally referred to at least one-fifth of indebted households. Assuming that self-declared financial strain was strongly associated with a high relative burden of loan payments, the 8th decile (corresponding to a 20% loan payment-to-income ratio in most countries) was considered decisive.

An analysis of factors related to the probability of being subjectively and/or objectively over-indebted revealed several similarities and differences. Similar to subjective over-indebtedness, low-income households were more likely to be over-indebted through high loan payment-to-income ratios. However, the capacity to deal with unexpected expenses was statistically irrelevant to the probability of objective over-indebtedness in most countries, suggesting that even households with relatively high

loan payment-to-income ratios might not be experiencing financial strain. The most substantial differences related to economic activity, education and gender, which were statistically significant in fewer than half of the countries in both analyses. Nevertheless, where it was significant, higher shares of working, tertiary educated, and male household members increased the probability of a household falling into objective over-indebtedness and decreased the probability of falling into the category of subjective over-indebtedness. This indicates that while higher shares of working, tertiary educated, and male household members were often related to relatively high loan payment-to-income ratios, it did not necessarily follow that such households would struggle to make loan payments. The differences in factors related to objective and subjective over-indebtedness indicated that these two approaches identified different indebted sub-populations. It seems, therefore, that objective over-indebtedness should be considered an indicator of potential 'risk of over-indebtedness' rather than explicitly signalling households experiencing financial strain.

The study also looked at the burden of regular expenses relative to income in all households, not only in indebted sub-populations. Housing costs typically represent the highest shares of total household consumption expenditures. Accordingly, the relative burden of housing costs was examined, including mortgage interest and principal payments. In the perspective of the month-to-month financial situation of a household's ability to make ends meet, paying a rent or a mortgage was equally relevant (although mortgage principal payments are not usually included in statistics on housing costs). Housing costs comprised the lowest relative burden for households in Malta, Cyprus, and most Central and Eastern European countries, where half of households spent less than 15% of their incomes on housing costs (i.e. the median value of housing costs-to-income ratios did not exceed 15%). The most burdened one-tenth of households spent more than 30% of their income on housing in these countries. The highest relative burden of housing costs was evident in Greece, followed by Benelux and the Scandinavian countries, where half of households spend more than 22% of their incomes on housing costs. The most heavily burdened one-tenth spent more than 45% of their income on housing in these countries.

Housing costs were then supplemented with other types of loan payments and expenditure on food and transport. These additional regular expenditures increased the median relative burden by roughly 25 p.p. in the Netherlands, Hungary, Belgium and Sweden, and up to 45 p.p. in Bulgaria and Greece. In the majority of EU countries, half of households spent at least 50% of their income on these regular expenses. In all EU countries, the most heavily burdened one-tenth of households spent more than 70% of their income on these basic items. The relative burden of regular expenses was substantially higher for low-income households than high-income households. The situation is particularly alarming in Greece and Bulgaria, where the regular expenses of low-income households (defined by equivalised total household disposable income below the first quintile) exceeded their income. The gap between low-income and high-income households was also highest in these countries. In most EU countries, the median expenses-to-income ratio among the poorest households ranged roughly between 70% and 85%.

The study set an (arbitrary) 80% of expenses-to-income ratio as the threshold to define expense-overburden, which identified about 10% of expense-overburdened households in Ireland and up to roughly 50% of households in Greece. The analysis of factors related to the probability of a household being expense-overburdened confirmed a strong relationship with lower income. Larger households were less likely to be overburdened by regular expenses, possibly because of economies of scale from living together, especially from housing costs. In most countries, younger households were more likely to be overburdened by expenses. A higher share of male, tertiary educated, and working household members typically increased the probability of being overburdened by expenses. Unsurprisingly, households paying a mortgage or a rent were more likely to be overburdened compared to outright owners of their dwellings.

Finally, the study compared income poverty, subjective poverty and expense-overburden rates. The share of populations identified as at risk of all three indicators simultaneously ranged from 1.4% in Finland to 16.3% in Greece. This was predominantly driven by the very low subjective poverty rates in richer EU countries and very high subjective poverty rates in poorer ones. Countries with very high subjective poverty rates were ranked among the upper half of countries with high rates of expense-overburdened households (Greece, Bulgaria, Croatia, Romania, Estonia, Latvia). Generally, the expense-overburden rate correlated more strongly with the subjective poverty rate than the income poverty rate.

Overall, these results suggest important differences between considering income only and including various household expenses, regardless of whether income and expenditure are evaluated subjectively or objectively. Some countries, such as Greece, Romania, and Bulgaria, often fell into the most problematic situations. On the other hand, the richest countries, such as the Scandinavian and Benelux countries, appeared more indebted, but their populations coped with payments more easily. The structure of household expenses differed across countries and their relative burdens varied substantially even within countries. The current global challenges of rising energy prices and overall inflation may change the picture and intensify the need to go beyond income measurements in statistics. EU-wide indicators that reflect household costs and expenses are needed to alert policymakers to potential problems and to inform evolving national social policies.

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APPENDIX

Table A.1 AROP rates by household type (% of population)

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Total	***13.9***	***14.1***	***23.8***	***14.3***	***9.5***	***12.1***	***20.7***	***17.7***	***21.0***	***12.2***	***13.8***	***18.3***	***12.3***	***13.9***	***20.9***	***17.4***	***21.6***	***16.7***	***13.4***	***14.8***	***16.2***	***23.4***	***16.1***	***12.3***	***11.4***
Adult/Child																									
1/0	23.2	23.2	46.8	21.9	26.8	26.0	51.2	20.6	25.8	27.3	21.4	45.1	19.8	37.7	46.8	18.3	49.2	31.7	24.2	32.5	24.1	34.6	28.0	39.3	23.8
- female	24.8	24.3	53.5	25.7	33.5	24.6	54.1	21.2	27.9	25.9	22.2	50.4	16.3	39.9	52.8	19.8	53.1	35.1	24.1	34.9	26.7	40.8	31.4	41.9	22.6
- male	21.2	22.0	36.8	18.7	17.1	27.6	47.0	19.4	23.5	29.1	20.3	35.6	25.3	35.7	36.4	17.1	41.1	29.3	24.4	27.8	19.0	25.6	24.6	36.0	26.1
- age <35	24.3	26.2	9.5	16.6	6.0	53.7	32.2	16.6	18.9	34.4	29.8	13.2	24.0	19.8	18.3	26.5	17.5	23.2	39.7	14.7	9.9	15.8	36.2	26.3	6.6
- age 35–64	21.1	23.6	27.3	18.4	18.8	17.0	33.0	22.6	25.1	19.9	21.1	37.6	25.5	34.9	35.9	18.6	32.6	35.7	22.6	31.6	19.9	28.3	19.7	35.4	20.7
- age 65+	25.4	21.8	61.8	31.2	37.4	18.2	76.8	20.3	28.4	29.6	18.5	52.1	14.0	42.8	63.3	12.1	71.7	30.3	13.3	36.0	28.0	42.1	28.5	45.3	27.6
1/1+	42.5	32.9	45.6	27.6	31.5	25.5	28.6	27.5	43.0	23.0	34.5	31.2	28.7	30.9	44.5	35.1	28.2	47.8	34.9	24.8	24.2	30.0	25.4	23.5	39.6
2/0	9.2	11.5	17.3	19.0	6.2	8.8	12.6	11.3	15.5	5.7	7.7	24.6	15.3	6.9	14.8	9.2	22.4	17.4	10.0	12.0	16.8	16.6	7.6	10.5	7.0
- age <35[a)]	10.9	10.1	9.3	17.1	9.9	19.9	9.6	10.5	19.3	11.3	11.6	10.6	13.6	9.3	13.1	12.3	17.2	7.6	9.9	7.7	15.6	17.5	13.2	12.1	9.7
- age 35–64[b)]	8.3	4.0	10.7	13.6	6.0	3.9	9.8	15.3	12.6	4.6	7.5	23.3	14.9	9.2	11.2	11.4	15.8	12.7	9.0	13.9	18.7	16.3	5.6	10.6	8.5
- age 65+[c)]	9.4	16.5	23.8	21.1	4.5	4.5	16.5	9.5	15.6	3.2	6.4	28.6	16.2	4.0	19.0	4.6	29.4	27.7	10.5	12.1	16.0	14.7	5.9	9.5	5.2
2/1	13.9	11.7	10.7	12.5	6.3	8.8	9.3	11.3	16.1	3.8	9.7	9.5	8.6	11.7	15.1	10.5	9.9	9.8	10.4	7.3	10.3	10.3	8.4	9.5	9.5
2/2+	18.5	9.5	26.0	17.1	9.4	5.7	12.0	19.4	23.7	8.2	12.9	13.0	5.9	11.5	12.7	17.6	14.2	21.8	11.6	9.0	19.0	32.3	14.1	9.9	15.2
3/0	6.2	11.3	12.2	7.4	2.5	2.1	9.1	16.4	15.6	5.3	8.6	12.2	12.2	9.0	14.2	21.0	15.3	7.5	9.6	13.4	14.1	15.8	10.1	6.7	7.0
3/1+	11.6	18.9	24.6	14.3	8.6	4.0	17.0	23.6	30.0	11.7	18.5	19.9	9.3	12.1	18.5	31.9	13.4	22.1	12.2	13.2	14.2	32.7	19.9	9.0	17.3
4+/0+	10.2	10.5	23.8	6.2	3.8	7.6	14.1	22.6	23.8	13.7	18.7	12.3	7.0	10.7	9.5	20.0	13.9	6.7	7.6	16.5	15.2	22.6	21.1	4.4	10.4

Notes: a) at least one age <35 and no one aged 65+. b) both age 35–64. c) at least one age 65+ and no one aged <35. The three sub-categories of (2/0) households are not exhaustive (i.e. households with one adult younger than 35 and one adult aged 65+ are not included).
Source: EU-SILC 2020 (author's calculations).

Table A.2 AROP rates by individual characteristics (% of total population/population 16+)

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Total	***13.9***	***14.1***	***23.8***	***14.3***	***9.5***	***12.1***	***20.7***	***17.7***	***21.0***	***12.2***	***13.8***	***18.3***	***12.3***	***13.9***	***20.9***	***17.4***	***21.6***	***16.7***	***13.4***	***14.8***	***16.2***	***23.4***	***16.1***	***12.3***	***11.4***
Age																									
0–15	19.3	15.3	28.0	16.6	11.0	10.2	15.2	20.8	27.6	11.6	17.4	16.5	9.5	15.6	19.4	22.7	14.9	20.2	14.8	12.5	18.3	30.2	18.1	10.4	16.7
16–34	15.1	12.6	21.2	12.2	7.9	22.4	14.8	20.5	21.5	17.2	16.4	11.3	11.2	12.5	16.6	20.8	14.5	10.1	16.6	13.7	15.1	24.0	21.6	9.7	10.7
35–64	11.4	12.3	16.3	12.0	7.2	6.8	16.3	17.9	19.4	8.6	12.4	16.5	12.6	12.7	16.5	16.2	18.4	15.5	11.6	14.9	15.3	19.8	11.9	11.2	10.5
65+	14.1	18.7	38.3	21.9	14.7	10.9	41.4	13.2	18.8	13.9	10.3	31.0	15.0	17.0	36.0	7.3	40.9	25.7	11.6	18.2	17.5	24.5	15.3	19.2	9.5
Female	***14.3***	***14.4***	***25.8***	***15.3***	***11.7***	***12.1***	***22.3***	***17.9***	***21.7***	***12.1***	***14.3***	***19.6***	***12.1***	***14.5***	***23.1***	***17.7***	***23.7***	***18.0***	***13.7***	***15.7***	***16.7***	***24.6***	***17.2***	***13.1***	***11.7***
0–15	17.7	14.3	28.7	17.4	11.9	9.2	15.1	19.1	27.7	10.3	16.5	16.1	8.0	15.7	17.3	21.1	14.0	22.3	14.1	13.0	17.2	31.8	18.5	9.5	16.9
16–34	16.1	12.8	21.9	13.3	9.5	22.6	13.0	21.6	23.0	16.4	16.9	11.4	12.0	13.7	18.0	21.8	14.9	10.4	17.1	13.6	15.4	24.0	21.7	9.9	11.8
35–64	11.0	12.7	15.6	12.7	8.5	6.8	14.7	17.8	19.6	7.9	13.7	16.3	12.1	12.6	16.0	17.0	18.7	16.3	12.5	14.5	15.6	19.8	12.2	10.6	10.1
65+	16.9	19.8	44.0	23.2	19.7	12.0	47.2	14.9	20.6	15.9	11.2	34.6	14.7	19.7	42.3	8.0	44.3	27.4	11.8	21.8	19.5	29.1	19.7	23.7	10.9
Male	***13.6***	***13.8***	***21.7***	***13.3***	***7.2***	***12.0***	***18.9***	***17.5***	***20.2***	***12.4***	***13.2***	***17.0***	***12.4***	***13.2***	***18.4***	***17.0***	***19.1***	***15.5***	***13.0***	***13.9***	***15.6***	***22.1***	***15.0***	***11.5***	***11.1***
0–15	20.7	16.2	27.4	15.8	10.2	11.1	15.3	22.4	27.4	12.9	18.3	16.9	10.9	15.6	21.4	24.0	15.7	18.2	15.5	11.9	19.2	28.8	17.7	11.3	16.5
16–34	14.2	12.4	20.5	11.0	6.4	22.3	16.5	19.4	20.0	18.1	16.0	11.1	10.5	11.4	15.4	19.9	14.1	9.9	16.0	13.8	14.8	24.0	21.6	9.5	9.6
35–64	11.8	11.8	17.0	11.2	5.8	6.9	18.1	18.1	19.1	9.3	11.2	16.6	13.0	12.8	17.2	15.3	17.9	14.7	10.8	15.3	14.9	19.9	11.6	11.7	11.0
65+	10.5	17.4	29.7	20.3	8.3	9.6	30.5	11.0	16.4	11.3	9.2	25.8	15.3	13.9	23.9	6.6	34.4	23.7	11.3	12.7	14.8	17.6	10.2	13.5	7.3
Education (16+)																									
Primary	22.2	26.8	49.9	26.9	21.8	16.6	34.2	24.0	27.1	20.4	19.5	38.3	24.7	22.8	37.4	25.4	38.8	24.3	16.9	31.0	21.9	46.7	25.4	27.2	27.3
Secondary	11.8	13.4	17.4	12.8	8.7	12.6	23.9	16.6	19.5	12.8	12.0	15.5	11.5	14.8	25.3	15.2	25.5	10.1	13.3	16.8	11.6	15.0	10.6	11.9	8.7
Tertiary	9.3	5.9	7.1	5.0	2.9	8.5	15.1	7.3	9.9	5.4	7.8	5.1	3.7	7.1	8.1	8.3	10.8	4.3	9.3	5.2	4.7	1.4	9.3	4.8	4.5
Economic activity (16+)																									
Employees	6.3	3.8	10.1	8.5	3.2	4.3	7.8	7.5	9.6	3.0	6.5	4.9	7.4	5.3	8.0	13.1	7.3	6.3	5.8	5.5	7.7	4.5	7.1	4.0	4.1
Self-employed	15.2	11.9	11.0	6.2	6.2	18.9	27.7	18.4	28.1	9.6	18.2	14.2	10.9	10.9	13.5	20.1	24.0	17.9	12.4	29.4	28.4	55.7	15.7	19.8	12.4
Unemployed	35.5	39.3	49.0	24.4	41.5	34.0	37.0	39.7	40.1	38.4	32.7	36.6	34.5	30.8	42.6	38.6	35.0	38.4	35.3	30.8	33.0	58.4	46.1	36.2	45.6
Retired	13.8	16.5	36.6	22.1	14.8	11.2	46.9	10.4	14.7	14.1	9.6	27.3	14.5	16.3	39.4	7.3	45.1	22.2	10.5	18.3	15.7	22.2	15.7	19.2	10.0
Student	18.4	17.4	20.2	9.4	10.1	36.2	19.5	20.7	23.0	28.8	23.3	14.4	12.6	17.3	20.1	29.1	22.2	17.3	24.6	23.0	18.6	23.7	34.3	10.9	13.1
Inactive	29.0	37.7	43.8	27.0	18.9	16.9	34.7	27.3	31.6	22.8	35.4	44.3	26.5	27.5	44.4	23.5	40.1	34.8	30.7	28.7	36.0	49.5	44.0	34.8	24.9

Notes: In MT, age categories correspond to 0-15; 16-33; 34-63; 64+.
Source: EU-SILC 2020. (author's calculations).

Table A.3 SP rates by household type (% of population)

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PT	RO	SE	SI	SK
Total	***7.2***	***17.9***	***81.2***	***13.6***	***6.0***	***3.0***	***41.3***	***73.5***	***26.2***	***1.7***	***14.9***	***36.3***	***7.7***	***2.1***	***28.6***	***14.7***	***48.2***	***7.5***	***3.6***	***8.9***	***52.4***	***7.0***	***14.6***	***23.5***
Adult/Child																								
1/0	13.6	46.5	89.6	24.4	24.6	8.3	67.8	88.6	49.0	6.1	37.2	78.0	19.6	8.9	65.7	24.7	74.4	20.1	13.8	22.9	91.1	18.1	51.9	66.9
- female	13.0	49.8	89.7	24.2	29.1	7.5	68.3	89.2	50.6	5.0	37.4	81.4	16.0	6.5	71.3	25.8	76.2	16.3	13.1	23.3	91.4	16.5	52.3	69.5
- male	14.4	42.9	89.3	24.5	18.1	9.1	67.1	87.5	47.3	7.3	37.0	71.8	25.2	11.1	56.1	23.9	70.9	22.8	14.7	22.1	90.7	19.6	51.5	61.7
- age <35	17.9	35.4	78.9	21.2	14.0	10.9	55.2	93.3	47.2	12.2	39.5	39.0	24.6	16.6	37.3	26.9	50.1	27.7	26.1	14.6	85.3	26.2	48.0	58.6
- age 35–64	13.7	43.9	81.3	25.9	22.3	11.4	54.7	84.4	50.1	6.7	41.6	68.7	27.9	11.7	57.7	30.6	65.9	32.9	11.3	22.5	83.4	17.6	50.1	61.9
- age 65+	10.6	53.0	95.4	25.3	28.6	4.0	85.7	90.2	48.4	1.7	32.5	86.7	11.4	5.0	79.9	12.6	87.6	8.2	6.5	24.1	97.5	11.9	54.3	71.2
1/1+	18.2	34.5	81.0	24.9	17.8	3.4	52.9	85.5	60.9	0.1	25.6	64.7	15.5	7.3	62.3	19.3	48.6	34.9	5.6	16.4	97.5	9.3	19.4	59.8
2/0	4.9	15.8	81.1	10.9	3.6	1.5	38.8	68.9	22.9	0.5	13.1	51.7	7.6	1.6	22.7	10.5	52.8	4.4	2.0	8.3	63.0	4.0	14.3	25.3
- age <35[a)]	5.7	14.4	77.8	14.7	8.2	2.1	27.7	70.6	27.7	0.7	16.8	33.0	9.3	2.3	19.2	13.2	41.8	4.2	2.0	9.4	55.2	7.1	20.4	29.4
- age 35–64[b)]	5.6	8.1	74.6	10.5	3.4	1.9	30.3	63.5	21.3	0.9	13.2	50.1	10.0	2.2	18.1	14.5	41.8	5.5	2.9	11.3	54.6	4.3	15.0	22.1
- age 65+[c)]	3.9	21.0	85.7	7.7	1.6	0.7	52.6	71.0	21.8	0.0	11.7	56.9	5.1	0.9	28.1	4.8	65.0	4.5	1.2	6.2	71.3	2.2	11.8	26.1
2/1	7.2	16.7	78.1	13.7	4.6	3.5	29.2	66.5	25.0	0.1	10.6	33.9	7.0	1.9	21.5	17.0	34.8	7.6	1.2	5.3	41.0	3.8	13.9	27.0
2/2+	7.9	8.6	85.4	18.7	3.2	1.8	29.5	84.2	29.8	0.8	7.6	33.7	5.8	0.8	23.8	12.6	37.0	15.2	1.1	13.7	53.0	3.1	9.3	31.4
3/0	3.4	7.9	74.1	6.2	0.8	0.0	28.2	60.9	17.8	0.6	11.4	22.3	3.9	0.4	10.0	11.3	42.2	2.2	0.8	6.9	40.1	2.9	7.5	14.7
3/1+	6.2	9.5	82.2	21.9	4.0	0.0	41.7	81.7	28.8	0.0	8.0	36.9	6.5	0.7	18.6	16.7	45.2	4.9	0.5	6.2	59.6	3.7	8.6	26.4
4+/0+	4.8	7.5	78.2	8.3	0.9	0.0	30.2	72.8	16.8	0.1	7.5	21.0	2.3	0.8	10.8	9.5	37.9	0.6	0.3	3.9	29.2	2.1	2.9	11.5

Notes: SPLs were imputed (fitted values computed) to households with missing MIQ. a) at least one age <35 and no one aged 65+. b) both age 35–64. c) at least one age 65+ and no one aged <35. The three sub-categories of (2/0) households are not exhaustive (i.e. households with one adult younger than 35 and one adult aged 65+ are not included).
Source: EU-SILC 2020 (author's calculations).

Table A.4 SP rates by individual characteristics (% of total population/population 16+)

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PT	RO	SE	SI	SK
Total	***7.2***	***17.9***	***81.2***	***13.6***	***6.0***	***3.0***	***41.3***	***73.5***	***26.2***	***1.7***	***14.9***	***36.3***	***7.7***	***2.1***	***28.6***	***14.7***	***48.2***	***7.5***	***3.6***	***8.9***	***52.4***	***7.0***	***14.6***	***23.5***
Age																								
0–15	8.1	13.4	84.6	19.2	5.0	2.0	35.2	82.4	31.8	0.5	9.8	35.9	7.2	1.8	28.5	15.8	40.5	11.4	1.6	10.6	53.0	4.4	10.1	28.8
16–34	8.6	12.9	79.6	13.3	4.9	3.6	34.7	73.6	24.1	3.4	14.4	24.9	6.8	1.8	21.8	15.5	40.3	5.2	6.4	7.2	46.8	10.9	12.2	21.2
35–64	6.6	16.6	77.0	12.5	5.1	3.7	36.6	70.8	25.1	1.9	15.9	33.2	8.8	2.5	23.7	15.9	45.2	8.8	3.1	8.9	47.3	6.5	14.0	20.4
65+	5.9	31.5	88.5	10.7	10.1	2.1	63.8	73.2	26.3	0.7	17.9	55.5	6.5	2.2	46.5	7.1	69.0	4.8	2.9	9.3	69.7	6.0	22.8	28.9
Female	***7.1***	***18.9***	***81.7***	***13.9***	***7.6***	***2.9***	***42.6***	***74.4***	***27.5***	***1.6***	***15.6***	***38.1***	***7.5***	***2.1***	***32.0***	***14.7***	***49.9***	***7.5***	***3.5***	***9.2***	***53.9***	***6.9***	***15.4***	***24.6***
0–15	7.9	12.3	83.7	19.9	5.7	1.6	36.0	81.7	33.5	0.4	9.2	34.4	5.9	2.0	27.7	14.9	39.6	12.2	1.2	9.9	55.9	4.2	9.5	28.1
16–34	8.8	13.2	81.9	13.7	6.0	3.5	32.3	76.3	26.2	3.5	14.1	25.7	7.5	2.0	24.6	15.5	40.3	5.3	6.2	7.2	46.7	10.1	12.3	22.9
35–64	6.3	16.9	75.9	12.5	5.9	3.5	35.7	70.9	25.2	1.4	16.5	33.5	8.4	2.3	24.2	16.1	45.7	8.2	3.0	9.0	47.1	5.9	12.9	20.7
65+	6.3	35.2	89.7	11.6	13.8	2.3	66.5	75.4	29.5	1.1	20.3	59.4	6.7	1.9	53.3	7.9	70.4	5.3	3.2	10.8	71.8	7.3	27.7	31.5
Male	***7.3***	***16.9***	***80.6***	***13.3***	***4.4***	***3.1***	***39.8***	***72.6***	***24.8***	***1.9***	***14.1***	***34.5***	***8.0***	***2.2***	***24.7***	***14.6***	***46.3***	***7.5***	***3.7***	***8.6***	***50.8***	***7.2***	***13.9***	***22.4***
0–15	8.2	14.5	85.4	18.6	4.5	2.2	34.4	83.1	30.1	0.7	10.4	37.4	8.4	1.7	29.2	16.5	41.3	10.8	2.0	11.3	50.2	4.5	10.7	29.4
16–34	8.4	12.6	77.4	12.9	3.9	3.7	37.0	70.9	22.0	3.3	14.7	24.0	6.2	1.5	19.3	15.6	40.4	5.1	6.7	7.3	46.9	11.7	12.2	19.5
35–64	6.9	16.4	78.0	12.6	4.3	3.8	37.5	70.7	25.1	2.5	15.3	32.9	9.4	2.7	23.1	15.8	44.6	9.2	3.2	8.8	47.5	7.1	15.1	20.2
65+	5.4	27.1	86.6	9.8	5.3	1.7	58.7	70.5	22.2	0.2	14.8	49.9	6.2	2.6	33.4	6.3	66.3	4.3	2.6	7.2	66.7	4.5	16.4	25.2
Education (16+)																								
Primary	8.0	34.7	93.8	19.7	13.7	3.7	58.6	83.4	32.4	2.1	23.9	55.8	12.9	2.0	43.9	21.1	67.7	9.5	2.4	11.2	73.9	11.5	29.5	40.2
Secondary	6.1	17.6	82.2	13.1	5.9	2.9	46.0	71.3	23.9	2.4	13.7	34.7	7.2	1.7	33.9	13.5	55.5	4.9	3.5	6.4	50.0	6.1	15.2	21.6
Tertiary	7.9	10.3	63.3	6.0	2.6	3.3	32.6	56.0	16.3	1.6	11.4	18.8	3.8	2.7	15.2	9.9	32.6	2.8	5.8	4.2	19.1	6.3	7.4	14.0
Economic activity (16+)																								
Employees	4.2	6.5	75.6	10.0	2.7	1.4	28.8	63.0	16.6	0.4	8.9	19.4	5.0	1.2	15.9	12.3	34.5	3.8	1.9	3.9	31.2	4.4	7.2	12.8
Self-employed	11.9	16.5	74.0	9.5	4.6	13.7	52.7	66.5	33.8	3.2	23.7	31.2	8.2	3.3	22.9	29.7	49.5	15.7	6.0	19.1	74.7	13.2	25.8	29.0
Unemployed	18.4	45.1	88.3	23.9	30.8	9.1	51.2	87.7	43.6	9.6	31.2	51.6	18.9	7.8	46.8	34.9	56.8	27.7	9.3	18.3	75.5	24.6	34.3	51.1
Retired	6.2	28.6	87.1	11.3	9.8	2.1	68.7	67.6	20.7	0.8	17.3	51.7	7.2	2.3	49.6	7.9	74.1	4.2	2.8	8.2	66.7	6.2	22.9	28.5
Student	9.3	14.0	76.1	10.3	4.6	5.3	40.0	75.9	21.6	7.3	18.4	28.4	7.1	1.9	19.1	17.4	53.8	5.6	10.7	9.8	45.3	13.0	11.4	24.1
Inactive	13.2	42.9	89.7	23.7	11.3	4.9	51.7	87.0	36.5	2.2	34.1	59.5	18.9	3.3	47.6	20.7	64.4	12.0	7.0	20.2	73.8	21.8	34.2	37.9

Notes: SPLs were imputed (fitted values computed) to households with missing MIQ. In MT, age categories correspond to 0-15; 16-33; 34-63; 64+.
Source: EU-SILC 2020 (author's calculations).

Table A.5 Expense-overburden rates by household type (% of population)

	AT	BE	BG	CY	CZ	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Total	***12.6***	***9.9***	***30.0***	***5.1***	***9.5***	***13.9***	***45.7***	***16.3***	***15.3***	***11.2***	***16.9***	***8.3***	***7.0***	***14.9***	***43.4***	***12.8***	***10.0***	***8.7***	***12.0***	***16.0***	***16.3***	***10.9***	***10.9***	***14.8***
Adult/Child																								
1/0	21.1	22.9	49.7	13.9	23.1	23.4	61.1	26.4	24.3	18.8	34.3	19.1	13.5	24.2	34.7	25.8	24.2	23.1	27.5	21.9	31.4	21.5	24.5	30.9
- female	18.1	20.9	47.9	9.6	22.5	16.8	57.9	23.8	19.2	16.9	34.8	16.3	9.5	22.9	30.7	23.6	16.6	19.1	26.5	16.8	31.2	18.1	18.1	27.9
- male	24.9	25.1	52.3	17.4	24.0	33.1	67.1	29.4	30.7	21.3	33.5	23.3	17.4	26.5	38.2	30.6	29.4	27.2	29.6	31.5	31.7	24.5	32.6	37.2
- age <35	31.0	26.9	44.1	15.3	30.4	43.8	87.2	38.7	36.7	26.7	27.1	32.9	25.6	25.3	39.4	22.9	46.3	40.4	31.8	37.2	25.8	30.7	34.4	51.1
- age 35–64	20.6	24.7	45.2	18.5	26.9	27.3	74.6	30.9	27.7	23.4	37.7	21.6	18.4	30.0	45.8	27.1	30.2	17.9	34.3	34.2	33.6	19.8	30.6	37.3
- age 65+	15.0	19.4	52.8	6.6	18.7	12.2	46.9	17.5	13.4	11.7	33.3	14.9	8.1	19.8	10.5	25.1	13.7	12.9	23.4	12.4	30.8	14.3	17.2	24.7
1/1+	29.4	16.6	46.9	11.3	30.5	40.4	82.6	53.3	26.1	31.5	42.7	24.4	22.6	35.5	37.7	26.1	36.1	18.9	24.9	33.4	18.3	16.8	25.7	77.8
2/0	10.5	7.6	27.3	5.1	6.8	8.4	37.0	12.6	9.8	8.6	19.4	7.6	4.5	12.2	32.3	12.1	8.7	6.4	11.9	15.7	13.5	5.6	8.6	13.0
- age <35[a)]	11.6	7.0	26.9	6.8	10.7	15.9	54.5	19.5	14.9	15.5	13.4	9.6	5.7	21.3	51.0	14.6	9.8	7.6	13.6	22.4	18.3	10.8	14.1	20.2
- age 35–64[b)]	11.7	7.1	21.7	7.8	7.6	8.5	46.8	13.8	11.9	9.4	24.5	11.0	6.5	13.0	41.7	12.2	8.3	4.6	14.4	23.4	13.5	4.5	11.0	15.3
- age 65+[c)]	8.8	7.9	30.7	3.4	4.7	4.5	29.0	8.7	5.4	5.9	18.4	4.4	2.2	7.6	7.0	11.2	8.9	6.7	9.4	9.5	10.6	3.4	5.4	9.4
2/1	14.0	10.3	29.6	5.6	9.9	12.2	55.5	16.6	12.4	10.5	17.3	4.2	11.5	15.3	58.5	8.3	9.2	4.6	10.4	15.1	13.7	10.0	13.1	21.5
2/2+	13.4	6.0	36.4	6.4	9.4	14.1	63.7	21.1	15.9	8.5	15.5	9.6	6.5	12.9	56.8	13.8	12.2	4.5	13.0	18.1	15.1	7.3	11.6	18.5
3/0	6.7	6.9	21.0	1.8	3.0	4.3	35.2	9.9	9.2	8.8	12.8	5.5	1.8	9.4	28.5	6.4	5.7	2.7	9.1	16.6	12.5	2.4	6.3	8.9
3/1+	12.5	10.2	28.6	3.6	7.4	11.9	50.5	18.1	15.3	10.7	18.8	3.3	3.7	8.1	63.5	5.0	10.0	4.0	8.4	12.9	19.0	9.6	10.3	20.8
4+/0+	7.3	4.2	20.5	1.9	3.6	8.0	38.0	11.5	10.6	8.9	10.7	4.3	4.8	10.3	50.2	6.7	1.9	2.2	9.2	10.4	13.7	2.9	4.8	8.7

Notes: Expense-overburden rate defined as share of population living in households where expenses (housing costs + debt + mortgage payments + food + transport expenditures) represent 80% or more of their total monthly disposable household income. a) at least one age <35 and no one aged 65+. b) both age 35–64. c) at least one age 65+ and no one aged <35. The three sub-categories of (2/0) households are not exhaustive (i.e. households with one adult younger than 35 and one adult aged 65+ are not included).
Source: EU-SILC 2020 (author's calculations).

Table A.6 Expense-overburden rates by individual characteristics (% of total population/population 16+)

	AT	BE	BG	CY	CZ	EE	EL	ES	FI	FR	HR	HU	IE	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK
Total	***12.6***	***9.9***	***30.0***	***5.1***	***9.5***	***13.9***	***45.7***	***16.3***	***15.3***	***11.2***	***16.9***	***8.3***	***7.0***	***14.9***	***43.4***	***12.8***	***10.0***	***8.7***	***12.0***	***16.0***	***16.3***	***10.9***	***10.9***	***14.8***
Age																								
0–15	14.3	8.7	32.3	5.9	11.2	16.3	59.4	22.8	16.6	11.7	17.6	8.9	8.8	15.7	54.5	11.7	11.7	5.9	11.1	18.3	15.7	9.9	12.0	19.1
16–34	14.7	8.8	27.4	4.3	10.1	18.0	49.2	16.5	19.6	12.8	13.0	8.1	6.0	16.4	48.3	10.8	8.7	13.8	11.9	16.7	17.5	16.5	10.8	15.0
35–64	12.1	10.4	26.9	5.9	8.8	14.4	47.7	16.2	16.2	12.2	17.1	8.4	7.7	14.8	46.7	13.3	10.8	6.9	12.3	17.8	16.0	9.6	11.5	14.8
65+	9.9	11.7	37.2	3.3	8.8	7.7	30.9	10.5	8.4	7.5	19.9	8.0	4.1	12.9	9.3	14.3	9.0	8.9	12.1	10.0	16.4	7.5	8.5	10.3
Female	***12.1***	***9.7***	***30.3***	***4.7***	***10.0***	***12.8***	***45.9***	***16.6***	***14.3***	***11.1***	***17.4***	***8.1***	***7.1***	***15.4***	***42.5***	***13.1***	***9.6***	***8.1***	***12.4***	***15.5***	***16.4***	***10.4***	***10.5***	***15.1***
0–15	12.7	8.7	31.6	5.0	10.4	18.4	58.1	23.2	15.8	11.6	16.7	8.4	9.7	15.2	53.0	11.3	13.1	6.5	11.5	17.0	15.9	10.6	12.6	20.8
16–34	14.6	8.5	27.8	4.4	11.4	17.4	52.6	17.9	18.4	12.5	13.7	7.5	5.9	18.1	48.6	10.8	8.5	10.9	11.7	16.8	16.2	14.2	11.0	15.2
35–64	11.6	9.4	25.2	5.4	9.3	12.1	47.3	16.5	15.5	12.3	17.3	8.0	7.6	15.4	45.4	13.6	9.5	6.5	12.2	17.5	15.5	9.3	10.5	14.9
65+	9.5	12.8	40.0	3.2	9.8	7.5	32.4	10.3	7.8	7.5	21.4	8.7	3.9	13.9	9.0	15.0	8.6	9.5	13.9	9.6	18.8	8.0	8.3	10.9
Male	***13.3***	***10.1***	***29.7***	***5.5***	***8.9***	***15.2***	***45.4***	***16.1***	***16.4***	***11.3***	***16.3***	***8.5***	***6.9***	***14.2***	***44.3***	***12.3***	***10.4***	***9.4***	***11.6***	***16.6***	***16.2***	***11.3***	***11.2***	***14.4***
0–15	15.7	8.7	32.9	6.8	11.9	14.4	60.6	22.5	17.4	11.8	18.4	9.3	7.9	16.1	55.7	12.2	10.2	5.4	10.8	19.6	15.6	9.3	11.5	17.5
16–34	14.8	9.1	27.0	4.3	8.8	18.5	46.0	15.1	20.8	13.1	12.4	8.8	6.0	15.0	47.9	10.8	8.8	16.6	12.0	16.6	18.7	18.6	10.6	14.8
35–64	12.6	11.4	28.5	6.4	8.3	16.8	48.1	15.9	16.9	12.0	17.0	8.7	7.8	14.2	48.1	12.9	12.0	7.2	12.5	18.1	16.4	9.9	12.4	14.8
65+	10.3	10.4	33.2	3.5	7.5	8.0	29.1	10.9	9.1	7.5	17.8	6.8	4.3	10.8	9.6	13.1	9.3	8.3	9.6	10.5	12.8	6.9	8.7	9.4
Education (16+)																								
Primary	13.0	14.2	38.8	5.0	14.2	13.5	43.5	16.9	14.8	10.8	23.1	11.5	6.1	14.2	36.3	15.5	11.3	8.0	16.9	16.4	25.7	14.8	11.2	20.5
Secondary	12.3	10.2	29.9	5.3	9.1	15.0	47.6	17.9	17.5	11.8	16.6	7.9	7.7	17.8	42.6	14.1	10.2	9.9	13.0	17.8	14.7	8.7	11.7	13.5
Tertiary	12.0	7.9	19.3	4.4	6.2	11.5	35.6	10.9	11.6	10.4	9.8	5.0	5.8	9.6	41.2	9.3	5.4	9.2	9.0	11.3	5.7	9.5	8.4	11.0
Economic activity (16+)																								
Employees	9.5	5.9	22.8	4.7	6.4	11.4	40.9	10.7	12.9	9.0	9.0	5.4	4.9	10.9	53.3	7.8	6.9	5.8	7.1	13.8	8.2	7.9	8.0	9.3
Self-employed	21.4	20.9	26.7	4.7	10.4	30.6	42.0	31.7	25.2	25.9	22.2	8.4	9.6	16.1	50.8	22.3	20.3	12.1	24.8	33.7	31.7	22.8	27.2	26.4
Unemployed	26.0	23.5	40.4	9.1	33.3	30.0	66.5	26.6	27.8	20.7	29.3	17.0	13.7	30.0	41.9	20.8	30.7	21.6	18.7	21.8	39.0	31.6	18.5	34.3
Retired	10.7	11.3	36.7	3.5	9.4	9.1	28.1	9.6	8.4	7.0	19.5	9.0	4.0	14.5	13.9	15.8	8.6	8.4	12.5	9.7	16.0	7.7	9.6	11.1
Student	14.8	7.5	31.1	3.2	8.0	16.6	51.2	14.6	26.0	14.7	16.4	7.5	6.9	17.8	49.0	13.4	9.0	19.2	16.5	19.8	20.0	19.4	11.7	18.9
Inactive	17.0	18.5	37.6	7.3	16.6	16.9	54.0	17.1	20.5	18.7	29.1	16.5	10.2	24.7	25.1	20.3	12.6	14.4	18.5	22.4	30.1	16.6	16.9	21.2

Notes: Expense-overburden rate defined as share of population living in households where expenses (housing costs + debt + mortgage payments + food + transport expenditures) represent 80% or more of total monthly disposable household income. In MT, age categories correspond to 0-15; 16-33; 34-63; 64+.
Source: EU-SILC 2020 (author's calculations)

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