



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■



Centre for Analysis of Social Exclusion

Research at LSE ■

Intra-household inequality and adult material deprivation in Europe

Eleni Karagiannaki and Tania Burchardt

CASE/218
February 2020

Centre for Analysis of Social Exclusion
London School of Economics
Houghton Street
London WC2A 2AE
CASE enquiries – tel: 020 7955 6679

Contents

1. Introduction.....	1
2. Related literature	4
3. Data	7
3.1 General information about the EU-SILC	7
3.2 Measures of material deprivation in EU-SILC	8
3.3 Household and individual incomes.....	11
3.4 Family and co-residence status classification	12
3.5 Sample and country selection	13
4. Descriptive analysis	13
4.1 A look at the living arrangements of the adult population in Europe	13
4.2 The financial circumstances of people living in one-family and multi-family household.....	15
4.3 Country-level deprivation rates in terms of the household level and individual deprivation indicator	16
4.4 Differences in the characteristics of people identified as deprived in terms of the HD3 and PD2.....	17
5. Multivariate analysis	18
5.1 Baseline results	18
5.2 Sensitivity analyses.....	22
6. An assessment of the magnitude of the impact of the within household deprivation inequality	23
7. An adjusted headcount multi-dimensional deprivation index	26
8. Conclusions	28

Centre for Analysis of Social Exclusion

The Centre for Analysis of Social Exclusion (CASE) is a multi-disciplinary research centre based at the London School of Economics and Political Science (LSE), within the Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD). Our focus is on exploration of different dimensions of social disadvantage, particularly from longitudinal and neighbourhood perspectives, and examination of the impact of public policy.

In addition to our discussion paper series (CASEpapers), we produce occasional summaries of our research in CASEbriefs, and reports from various conferences and activities in CASereports. All these publications are available to download free from our website.

For further information on the work of the Centre, please contact the Centre Manager, Jane Dickson, on:

Telephone: UK+20 7955 6679

Email: j.dickson@lse.ac.uk

Web site: <http://sticerd.lse.ac.uk/case>

© Eleni Karagiannaki
Tania Burchardt

All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Abstract

In most research on living standards, material deprivation is measured using household-level material deprivation indicators. However, if resources are not shared equally within households, conventional material deprivation indicators may mask important variations in individual living standards. In this paper we make use of individual adult-level deprivation data included in the 2014 European Union Statistics on Incomes and Living Conditions (EU-SILC) ad-hoc material deprivation module to examine the implications of intra-household inequality for material deprivation measurement. Results from a series of regression models which examine how adult deprivation indicators vary by various household and individual characteristics suggest that the share of total household income brought in by an individual (our proxy of individuals' bargaining power within households) has a significant negative effect on the individual's deprivation risk in most countries, pointing to the incomplete sharing of household resources. This is especially so in complex households (i.e. households containing adults other than a single person and any partner). Analysis of the distribution of adult deprivation outcomes within households shows that around 14 percent of all adults live in households where there is some inequality in the deprivation outcomes among their adult household members and this percentage is even higher in complex households (around 22 percent). The degree of within household deprivation inequality has a substantial effect on the overall level of deprivation in all countries: eliminating it and assuming that all adults in households where there is inequality in deprivation outcomes among their adult members are not deprived reduces the deprivation risk overall in all countries by 6 percentage points (which represents a more than 25 percent decrease). Using the Alkire-Foster adjusted headcount methodology we construct an index of multi-dimensional deprivation by treating household- and individual- level deprivation indicators as two separate dimensions of one overall measure. Decomposition of the index suggests that in the majority of countries the individual-level deprivation dimension contributes over 50 percent of the overall multi-dimensional deprivation index. This suggests that individual-level deprivation indicators can provide additional information about deprivation risk over and above household-level deprivation indicators and should be used as a separate dimension in the overall assessment of living standards.

Key words: deprivation, intra-household inequality, multi-family households

JEL classification: D13, D31, I31, I32

Corresponding author: Eleni Karagiannaki, CASE, LSE, Houghton Street WC2A 2AE, e.karagiannaki@lse.ac.uk

Acknowledgements

This work was supported by the Economic and Social Research Council grant number ES/P000525/1. It is based on data from Eurostat, EU-SILC 2014. The responsibility for all conclusions drawn from the data lies entirely with the authors and not those of Eurostat, European Commission or any of the national statistical authorities whose data have been used. We are grateful for useful comments to members of the Advisory and User Group of the project "Intra-household allocation of resources: implications for poverty, deprivation and inequality in the European Union" including Fran Bennett, Holly Sutherland, Maria Iacovou, Hans Dubois, Carlotta Balestra and Peter Matejic. We are also grateful for useful comments to participants of DG Employment, Social Affairs and Inclusion Social Situation Monitor Seminar in Brussels, of the International Studies on Social Security 25th anniversary conference, Sigtuna, Sweden, of the 2nd International Conference in Contemporary Social Sciences, Rethymnon, Crete, of the 2018 Social Policy Association annual conference, York, of the International Association for Research on Income and Wealth 35th General conference, Copenhagen, UNECE Expert meeting on measuring poverty and inequality in Vienna, and of the Annual Conference of the European Society for Population Economics, 2019 in Bath.

1. Introduction

A simple household is commonly assumed to consist of a family unit – an adult, any partner s/he may have, and any dependent children. We term this the ‘nuclear family’. But in practice many households contain adults beyond the nuclear family, such as grown-up offspring, elderly (grand) parents, or unrelated others. In this paper we refer to such households as ‘complex’ or ‘multifamily’ households. Household composition varies dramatically across European countries. In 2014, nearly two-thirds of adults in Serbia lived in complex households, compared to around one in six in Sweden (see below Figure 1). The high prevalence of these complex households – more than one-third of adults in the EU+ countries overall – may have important implications for poverty and income inequality measurement and the comparability of living standards estimates which are usually assessed using household-level living standards indicators. For example the standard poverty statistics are computed based on income measured at household level and equivalised on the assumption that all members of the household benefit from its resources equally (Eurostat, 2017). Similarly material deprivation is usually measured at a household level (by indicators such as ability to afford to heat the home) (Eurostat, 2018). The underlying assumption for the use of household-level indicators is that household behaviour is characterised by a unitary model, which assumes that individuals within the household pool and share resources equitably among all household members (Becker, 1974; 1981). However, if household resources are not shared to the equal benefit of all household members (as the overwhelming evidence indicates, as detailed below), then conventional measures of poverty, and of deprivation, may give an inaccurate representation of the risks of low standards of living faced by different genders and generations within households. The equal sharing assumption is especially unlikely to hold in households made up of more than one family unit, because income streams and preferences are more likely to differ across family units, especially among family units from different generations; however evidence on these complex households is largely lacking. One implication is that conventional living standard estimates in countries like Serbia or Greece, with a higher proportion of complex family households, are less valid than in countries like Sweden or the UK.

Though the role of intra-household inequality has long been recognised, most studies rely on household level indicators (e.g. household income, household expenditures) to assess individual living standards. The main reason for the lack of individual-based approaches in the assessment of individual well-being is that there is little information available on consumption of different household members and the intra-household allocation of resources. There are three main factors which hinder such analysis, including the unobservability of individuals’ preferences, the presence of household public goods, and the lack of sufficient data on individual consumption. However, in contrast to income-based approaches to poverty and inequality measurement, outcome-based indicators can be

collected and measured at individual level and therefore can be used to assess intrahousehold inequality. One measure which is part of the group of direct or outcome-based approaches to poverty is material deprivation, based conceptually on the observed satisfaction of needs (Fusco et al. 2010). One of the key advantages of outcome-based approaches is that they “can bring out what it means to be poor” (Nolan and Whelan 2010, p. 307). Recognising the importance of material deprivation indicators for the assessment of well-being, the EU adopted them as one of the key poverty and social exclusion reduction goals of the Europe 2020 strategy. They are used to identify those individuals whose material, cultural and social resources are insufficient to allow them to participate fully in their society (European Commission 2004, p.10). However, until recently the official EU material deprivation indicators used solely household-level deprivation indicators for the assessment of individuals’ deprivation risks.

In this paper we make use of individual-level deprivation data included in the 2014 European Union Statistics on Incomes and Living Conditions (EU-SILC) ad-hoc module on material deprivation, to examine to what extent intra-household inequality contributes to individual-level material deprivation outcomes and, conversely, to examine what we can infer from the analysis of the individual-level deprivation data about the intra-household allocation of resources. Our focus in this paper is on adults; a companion paper investigates child deprivation. We first calculate an index of adult deprivation based on these individual-level deprivation indicators to examine the sensitivity of deprivation estimates to using individual level rather than household level deprivation indicators – both in terms of country rankings and in terms of the characteristics of adults identified as deprived. Using a series of regression models we then examine how individual (adult) deprivation indicators vary by various household and individual characteristics focusing in particular on the association between individual deprivation and the share of total household income brought in by the individual, which we use as a proxy of his/her relative bargaining power. In the intra-household literature many measures have been used as proxies for bargaining power (Woolley 2003) including (1) public provision of resources to a particular member of the household (2) exogenous policy changes which affect the intra-household distribution of resources (Lundberg, et al. 1997); (3) shares of income earned by women (Browning, et al., 1994; Chiappori 1994; Hoddinott and Haddad 1995); (4) unearned income (Thomas 1990; Schultz 1990); (5) inherited assets (Quisumbing 1994); (6) assets at marriage (Thomas, et al. 1997); (7) current assets (Doss 1996) and (8) societal factors such as sex ratio. As mentioned above, in this paper we use the total income that each individual brings into the household as a share of total household income as our the central proxy for measuring his/her relative bargaining power within the household, but we also check the robustness of our results to an alternative proxy based on narrower income share concept. Controlling for household income, the coefficient on relative income shares captures the extent to which income pooling holds within households and the extent to which

unequal distribution of resources is contributing to the observed adult deprivation outcomes.

We then examine the within-household distribution of individual deprivation outcomes overall and in each of the countries and we perform a simple simulation exercise to illustrate a 'back of the envelope' assessment of the impact of the elimination of within-household inequality in deprivation outcomes on national deprivation rates and the differences in deprivation rates across groups. Finally, in the last part of the paper we use the Alkire and Foster (2007; 2011) adjusted headcount approach to construct a deprivation index which treats the household and the adult-level deprivation indicators respectively as two separate dimensions of an overall index. In addition to providing a flexible way of summarising household and individual adult deprivations into a single index, it can also be decomposed by population subgroup and by dimension. Therefore it can reveal difference in the types of deprivations experienced in different countries and by different sub-groups within countries.

We find significant differences in the proportion of adults identified as deprived according to conventional household-level material deprivation indicators and the alternative based on individual-level deprivation items at a range of thresholds. Significant differences are also identified both in countries' rank order as well as in the groups identified at high deprivation risk in terms of the two indicators, with the most pronounced being the case for single people either living alone or in complex households. Regression analysis which controls for a number of observed characteristics including gender and total household income reveals that the individual's income share is inversely related to the risk of experiencing material deprivation (i.e. the individual's deprivation risk decreases with the share of income she/he brings into the household), suggesting that control over household resources matters.

Analysis of the distribution of adult deprivation outcomes within households shows that around 14 percent of all adults live in households where there is some inequality in the deprivation outcomes among their adult household members and this percentage is even higher in complex households (around 22 percent). The degree of within-household inequality in deprivation outcomes has a substantial effect on the overall level of deprivation in all countries: eliminating within household inequality and assuming that all adults in households where there is inequality in deprivation outcomes are not deprived reduces the overall deprivation risk across all countries by 6 percentage points (which represents a more than 25 percent decrease in the overall deprivation risk).

We conclude that both household level and individual level deprivation indicators should be used in the overall assessment of deprivation risks, but without losing the variation within households that is revealed by individual level deprivation indicators. Our proposed multi-dimensional deprivation index which uses the Alkire-Foster adjusted headcount

methodology provides one way to achieve that by treating household and individual deprivation as two separate dimensions of one overall measure. Decomposition of this multidimensional deprivation index suggests that the individual deprivation indicators provide complementary information to household deprivation indicators. We welcome the recent inclusion of individual-level deprivation items in EU-SILC and suggest this should be emulated by other national income and expenditure surveys. Furthermore, social security and other anti-poverty strategies need to be sensitive to the within-household distribution of resources, considering, for example, to whom benefit payments are made and the assumptions about within-household sharing that are embedded in the rules governing rates and entitlements. This is especially important in countries with high rates of co-residence among generations, and for low income households most at risk of overall deprivation.

2. Related literature

Previous research has found that the association between income poverty and deprivation at household level is weaker than one might imagine. One possible explanation is that deprivation reflects the longer-term situation of the household whilst income poverty is in some cases transitory or recent. Whelan et al (2003) find that persistent income poverty over three years is much more strongly correlated with deprivation than cross-sectional poverty, and Kis and Gabos (2016) show that households that are both income poor and materially deprived tend to be larger, less well educated and have a looser connection to the labour market than households who are income-poor only.

The association between income poverty and household deprivation also varies between countries. A number of studies have concluded that economic and institutional factors, including the nature of the welfare state, play an important role in explaining this variation (Visser et al, 2013, using ESS and Figari et al, 2012, using ECHP). Bárcena-Martin et al (2014), using EU-SILC, conclude that country-level effects are more important than individual-level characteristics in explaining the variation in country-level deprivation across the EU, but they also note that the two interact: the socio-demographic characteristics of the population are themselves shaped by institutions such as the labour market and broader economy.

One particular aspect of income that appears to matter for intra-household allocations of resources is the source, and the extent to which family members (usually, a couple) pool their incomes. Nagy et al (2012) find considerable variation in the degree of income pooling among couples across European countries, with higher prevalence of income pooling in Southern European countries than in Finland and Austria, for example. Woolley and Marshall (1994) examined the association between inequality in individual incomes and inequality in control over resources (measured first, as control over the management of household finances and, second,

as influence over household decision-making). They find that both the inequality in the control of household resources and the unequal influence over decision making have substantial effect on measured inequality concluding that the standard approach understates actual inequality in households.

These studies are focussed on inputs to, and processes within, the household. To ascertain the effect of decisions about income pooling and control over resources, we need to be able to analyse some measure of standard of living outcome. De Henau and Himmelweit (2013) use subjective satisfaction with household income and find that it depends on the share of income brought into the household by each individual, as well as on the source of the income. In relation to the latter they find that full-time employment income is valued most and yields greatest benefits, suggesting that domestic contributions tend to be valued less than contributions through employment, which men make more than women. Bonke and Browning (2009) use information on the allocation of different categories of consumption within the household (clothing, recreation, and so on), collected as an addition to the Danish Household Expenditure Survey. Although the shares for men and women vary widely between categories, they find mean shares of total assignable expenditure are similar for the two sexes.

A widely used measure of standard of living outcome is provided by material deprivation, although most indices have been based on household-level information. The construction of these indices has been the subject of some debate (Fusco et al, 2013). Even those that include individual-level information usually aggregate it to household level before incorporating it into a material deprivation measure. Deutsch et al (2015), in their analysis of the order in which households curtail their expenditure when income is short, assign adult deprivation information to all household members if at least half of the adults lack and cannot afford the item in question. Guio, Gordon and Marlier (2012) and Guio and Marlier (2014, 2017a) challenge the robustness of the conventional EU-SILC material deprivation index and propose an alternative, retaining 6 of the existing 9 items in the material deprivation (MD) index which pass their tests of reliability, validity and additivity, adding two further household level deprivation items, and for the first time including five individual deprivation items, making a new 13-item index allowing some variation in the intra-household sharing of deprivation (except in countries that use the 'selected respondent' data collection mode to collect some individual level information – see section 3.1).¹ In separate work Guio and Van den Bosch (2020) exploring differences in individual deprivation within couples, find that for most items they consider, there is gender difference in enforced lack of these items between partners (which although generally small, is significant) and at the disadvantage of women. They also find that the work status of the partners and their relative contribution to the joint income are important determinants of the intra-

¹ A version of this proposal was accepted by the EU in March 2017 (see Guio, A.C. D. Gordon, H. Najera, M. Pomati, 2017b)

couple gender deprivation gap. Focusing on household-level rather than individual-level deprivation Bárcena et al. (2019) found that the levels of deprivation is lower in households where decision-making responsibilities fall mainly on women whereas greater levels of deprivation are more likely in households where decisions are shared and resources are not fully pooled.

Haddad and Kanbur (1990) assessed how serious it is to neglect the intra-household distribution of resources using poverty in calorie intake based on Philippine data. The authors show that 30 to 40 percent of all inequality is accounted for by intra-household inequality which would be overlooked if individual data was ignored. They also find that the ranking between men and women changes when assessments are based on individual data, with poverty rates among women being higher when using some poverty measures. Another important strand of work, initiated by Cantillon and Nolan (2001), attempts to use individual deprivation measures to open up the 'black box' of intra-household allocations. They illustrated the approach using the difference in deprivation scores between spouses in Irish data. Subsequently Cantillon (2013) examined social and leisure activities, and personal spending, of partners, again in Ireland, and found that the gap between partners is wider where the woman's independent income is a lower share of total household income, and especially if there are children in the household. Most recently, Cantillon, Maitre and Watson (2016) analysed pooling behaviour, household financial decision-making and whether differences in income shares and sources affect individual deprivation outcomes among couples in the 2010 Irish SILC special module. They use a linear scale of five individual deprivation items and report that overall, neither women nor men are more deprived, but in 6-7% of couples only the woman is deprived, and in a similar percentage only the man. Somewhat surprisingly, there is no evidence of higher deprivation for the woman where she doesn't have an individual income. The results on income pooling are also counter-intuitive: where income is not fully pooled, the proportion of couples where both are deprived is lower than where there is full pooling (controlling for household income). Shared decision-making is beneficial for both members of a couple however. Having sole responsibility for decision-making was not associated with lower levels of personal deprivation.

To summarise, the conclusions that we draw from this literature are, firstly, that cultural, economic and policy (especially welfare state) contexts matter, so we anticipate variation across countries in the relationship between household and personal deprivation. Secondly, it is clear that household income is an important determinant of deprivation risk, but is far from being the sole factor. Thirdly, family and household types vary in their propensities to pool income and, we might expect, in the extent to which the benefits of household income are equally shared by all. And finally, we note that the share of income brought into the household by each individual may be associated with control over resources, and that women tend to have smaller income shares than men within couples. We

will therefore pay particular attention to country, household income, family and household type, income share and gender in our analysis and modelling.

Our work builds on this literature, especially the work by Cantillon and colleagues and by Guio and colleagues, and extends the existing evidence in a number of ways. Our study is pan-European, includes and separately classifies households containing more than one nuclear family unit, investigates within-household inequality in material deprivation, and probes the role of income shares in explaining individual-level deprivation. Our study does not set out to propose a new measure of deprivation for the EU although we do argue that individual-level information and analysis is a useful complement to household-level analysis. The focus of this paper is on adults; child deprivation raises important but distinct methodological and conceptual issues and is investigated in a companion paper.

3. Data

3.1 General information about the EU-SILC

Data for our analysis come from the 2014 European Union Statistics on Income and Living Conditions (EU-SILC) micro-data. The principal aim of EU-SILC has been to compare deprivation and social exclusion across European countries and it therefore provides micro data on a wide range of social indicators including income, poverty, social exclusion and living conditions. From 2007 onwards, the EU-SILC represents all (27 then 28) Member States, and includes Turkey and Switzerland as non-members alongside Norway and Iceland. The target population in each country in EU-SILC consists of all persons living in private households. Persons living in collective households and in institutions are generally excluded from the target population.

EU-SILC is output-harmonised: that is, rather than data from all countries being collected via a single standard survey instrument, member states are given a list of variables, which must be present in the data, but allowed flexibility as to how these may be collected (Iacovou, 2012). This flexibility has several implications for how the data are collected and recorded in different countries. One crucial difference is that some countries rely solely on survey methods to collect all data while others also use administrative or 'register' data to collect several variables (mainly personal basic variables, income, housing, education and occupation) and obtain other information via interviews with a representative of the household i.e. the

'selected respondent' in EU-SILC terminology (Eurostat, 2008)². Given this sampling design, the register countries collect a set of variables only on the sub-sample of 'selected adult respondents 16+', instead of all adult members; for instance personal health, access to health care, and certain labour status variables. For this reason the analysis of selected respondent variables in EU-SILC need to be made at the level of persons only, using special selected respondent weights, without aggregation to household level (Jäntti et al., 2013). The countries that use register data are the Nordic countries (Denmark, Finland, Norway, Sweden and Iceland), the Netherlands and Slovenia. Another example where there are differences across countries in the way that data are collected is income. In some countries this is recorded as net amounts, while other countries record gross amounts. Differences across countries also exist with respect to the income reference period: while in most countries the income reference period is the calendar year preceding the year of data collection, in Ireland it is the 12 months prior to the interview, and in the United Kingdom it refers to the period around the date of interview, with income totals subsequently converted to annual equivalents (for more discussion see Iacovou et al. 2012).

3.2 Measures of material deprivation in EU-SILC

The EU-SILC includes a range of data on material deprivation. These data indicate the inability of individuals to afford some items considered by most people to be desirable or even necessary to lead an adequate life. The official indicators used by the EU are based on the 'enforced lack' concept and distinguish between individuals who cannot afford a certain good or service, and those who do not have this good or service for another reason, for example because they do not want or do not need it. Until 2017, the official material deprivation measure used by the EU was constructed to define the proportion of people who cannot afford at least three of the following nine basic items: i) to pay their rent, mortgage or utility bills; ii) to keep their home adequately warm; iii) to face unexpected expenses; iv) to eat meat or proteins regularly; v) to go on holiday; vi) to have a television set; vii) to have a washing machine; viii) to have a car; ix) to have a telephone. We refer to this indicator as HD3. A threshold of four or more items (HD4) is deemed 'Severe Material Deprivation' by the EU and is one of the principal indicators that is used for the Europe 2020 social inclusion target. Note that both deprivation and severe deprivation risks are assigned to each household member but the indicators are collected at household level (i.e. only one household member provides information for

² The extent to which register countries use register varies. For example while in all register countries almost all income variables are collected from the national income registers, for housing, labour, education and occupation the use of registers vary. In some cases the variable is based purely on register data, in some cases there is a mix of register and survey data and in other cases register data are used purely for checking information from the interviews.

the household as a whole). Thus, they cannot be used to assess intra-household variation in deprivation outcomes.

The 2014 material deprivation module included a series of questions designed to establish material deprivation at the level of the individual rather than the household.³ With these questions, adults in the household were asked to indicate whether they lacked because they could not afford any of the following seven items: (i) replace worn out clothes by some new; (ii) have two pairs of properly fitting shoes; (iii) get together with friends/family for drink/meal at least once per month; (iv) regularly participate in leisure activities; (v) spend a small amount of money each week on yourself; (vi) have internet connection for personal use at home; (vii) have regular use of public transport.⁴ In survey countries, all adults in the household are asked the adult individual-level deprivation question, whereas in register countries only the household selected respondent was asked. The data from the 2014 module along with the core EU-SILC data from the same year are the data used in our analysis.

We aggregate all individual deprivation items into a single index (ranging from 0 to 7) and we construct an individual-level deprivation indicator by defining an individual as being deprived if s/he cannot afford at least two out of the seven individual level deprivation items (we refer to this indicator as PD2). For comparability purposes, in line with the methodology followed for the official EU material deprivation indicator, we chose not to weight the items included in the index by the proportion of the individual lacking it in each country. As we discuss below, the degree of suitability of most items included in the index (measured by the proportion of the population of having or wanting but cannot afford each item) is fairly high in most countries and therefore there are no serious concerns for cross-country comparability of the results (for discussion of the impact of weighting on the EU material deprivation indicator see Guio, 2009). As there are seven items, our choice of a threshold of two or more items seems appropriate as it provides the closest equivalent to the conventional material deprivation indicator, both in terms of the proportion of items required (2/7

³ Adult deprivation questions (along with questions collecting information on children's deprivation) were first included in the 2009 EU-SILC special deprivation module. These questions were refined in the 2014 material deprivation module. With minor modifications the 2014 deprivation questions have been incorporated in subsequent years of data collection (2017).

⁴ For all items except from the regular use of public transport respondents were given the following two options to indicate the reason why they lack each particular item i) no – cannot afford it and ii) no other reason. For the regular use of public transport respondents were given more options to indicate why they do not have the particular item: i) no ticket too expensive ii) no - station too far away iii) no –access too difficult iv) no private transport v) no other reasons. In our definition, we defined individuals as deprived of public transport if they report as reason for lacking this item “no ticket too expensive”.

approximately equal to 3/9) and the overall percentage of adults identified as deprived under each index (17.3% for the household deprivation indicator and 19.5% for individual level deprivation indicator – see section 4 for details). We also construct a stricter individual deprivation indicator PD3 (analogously to the conventional household level ‘Severe Material Deprivation’ HD4) by setting the deprivation threshold to 3 or more deprivation items.

In line with many deprivation measures in common use, we use an enforced lack concept to define individuals’ deprivation status, incorporating the respondent’s subjective evaluation as to whether they are doing without any particular item or service due to inability to afford it.⁵ Measures based on the ‘enforced lack concept’ aim to capture the impact of financial constraints rather than preferences, although there is some concern that such responses may be influenced by adaptation to economic circumstances, rather than just tastes (McKay, 2004; Dominy and Kempson, 2006; Halleröd, 2006). Given these concerns it is useful to look both at what people report as enforced deprivation and at what they simply lack, for whatever reason. Preferences may play a role in the ‘simple lack’ measure: for example a person may be spending a high proportion of his or her income on ‘unnecessary’ types of goods while lacking those goods deemed necessary for participating in society.

To examine the reliability of the items included in the PD2 index, appendix Figure A2 reports the Cronbach alpha statistic for the pooled sample of countries. At almost 0.80 this suggests that a very high degree reliability of the items included in index overall. Though there is considerable variation in the levels of reliability of the index across countries (with Cronbach alpha ranging from 0.59 in Greece to 0.84 in Bulgaria), for the majority of countries the Cronbach’s alpha is over the 0.70 acceptable threshold (Nunally, 1978). The suitability of the different individual deprivation items comprising the index (as indicated by the proportion of people who either have an item, or do not have it due to financial constraints) is also fairly high in all countries, with the exception of public transport (Appendix Figure A3). In the pooled sample of all countries, all other items were either possessed or wanted by more than 70 per cent of the population (and for some items over 90 percent). The items which display the least cross-country variability are the “replace worn-out clothes” and “two pairs of properly fitting shoes”, which are wanted by more than 90 percent of the populations in all countries, and that with the most variability is the “regular use of public transport” with a range of around 59 percent in Greece to just 20 percent in Slovenia.

⁵ The question wording in the UK questionnaire is, “Do you have [item]?” And possible response categories are: (1) I have this; (2) I would like to have this but cannot afford this at the moment; (3) I do not want/need this at the moment; (4) Does not apply. Only those who give response (2) are counted as experiencing an enforced lack.

3.3 Household and individual incomes

EU-SILC also includes detailed and broadly comparable income data. Some components of income are recorded at the individual-level (i.e. for each adult in the household) while others at the household level. The components that are recorded at the individual-level are: gross employees income; gross cash benefits or losses from self-employment; pensions from individual private plans; unemployment benefits; old-age benefits; survivor's benefits; sickness benefits; disability benefits; and education-related allowances. The components that are recorded at the household level are: rental income; family/children related allowances; social exclusion income not elsewhere classified; housing allowances; regular inter-household cash transfers received; interests, dividends and profits from capital investments in unincorporated business; and income received by people aged under 16. In line with the EU official EU-SILC definition, we derive our household income indicator that we use in the analysis of deprivation risk by summing up all the above components and subtracting taxes on income, social security contributions, regular taxes on wealth and regular inter-household transfers.

As mentioned in the introduction, in addition to total household one of the main variables that we use in the analysis of the determinants of adult deprivation risk is the individual's income as a share of total household income. In order to derive this measure we need a measure of individual income of each adult household member. The derivation of gross individual income is a relatively straightforward exercise as many gross income components are recorded and/or collected at individual level. For those recorded at a household level, we need to make some assumptions to allocate them to each household member, assumptions which are necessarily arbitrary given the unobservability of the recipient of these household income streams. Therefore with the exception of children benefits - which we assign only to household members with children (applying an equal division among adults with children) - all other household income components are divided equally across all adult household members.

The derivation of *net* individual income is a more complex exercise. The reason is that the net equivalents of the various individual income components are available only in the following nine countries: Austria, Estonia, Greece, Spain, Italy, Poland, Portugal, Sweden and Slovenia. In all other countries, either all or some of the individual income components are recorded gross of income taxes and social security contributions with the adjustment of the tax payments undertaken separately to construct total disposable household income. For countries in which the net income equivalents are available we construct the net individual income from the net individual income component and allocating a share of household level income components following the same principles we used for the construction of gross individual incomes. In countries where they are not, we follow the principle of allocating total tax payments (recorded or a derived estimate) in proportion to individuals' gross taxable income. We

proceed in three steps. We first calculate the gross income of each individual household member from available data. Then we sum the derived individual income variable across all household members and we subtract it from total household disposable income. The difference is assumed to be the total tax payments of all taxable income received by all individuals in the household. In the final stage, we allocate this difference to different household members in proportion to their share in total taxable household income.⁶ Household level tax payments (i.e. regular taxes on wealth) are allocated separately, following the equal sharing principle that we used for the allocation of the respective gross income components.

3.4 Family and co-residence status classification

As mentioned above the target population in each country in EU-SILC consists of all persons living in private households. Within EU-SILC's framework, a 'private household' is defined as "a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living".⁷ Under this definition (which with minor modifications is very similar to that used in most household surveys) a household may consist of more than one nuclear family unit. Identifying the different family units within each household plays a central role in the analysis in this paper. In constructing our family and household type variable we define a family unit as an adult, plus his/her partner (if any) and any dependent children. We classify family units into six categories: singles with no children; singles with children (i.e. lone parents); couples with no children; couples with children; elderly singles (aged 65 or over); or elderly couples (at least one aged 65 or over). We further distinguish between family units living alone, i.e. forming their own household, and family units living with others in what we term a 'complex' or 'multi-family household'. Examples include a couple (with or without dependent children) plus a grown-up son or daughter; a couple or a single person (with or without dependent children) plus an elderly parent; a couple or single person plus a lone parent who has moved back in with her parents when her partnership ended; or two unrelated individuals.

A critical decision we had to make to identify family units within each household is how to define a dependent child. For the purposes of consistency and comparability, we classify as a dependent child any not-married person under age 18 unless he/she reports employment or self-employment income. This is our central definition, though we also consider the robustness of our main results to a wider dependent child definition which defines as dependent on their parents any child under age 24. While

⁶ Note that with this methodology we capture any individual tax allowances as reduced overall tax liability. However, in the allocation of the overall tax liability we do not take into account tax allowances of each individual in the household which may lead to an overestimation of tax liability for some individuals whose gross income is below the taxable threshold and vice versa an underestimation for those above the threshold.

⁷ https://ec.europa.eu/eurostat/cache/metadata/en/ilc_esms.htm

we recognise that cultural norms may play a crucial role in the extent to which, and in the situation in which, adult children are considered as dependent on their parents (which may vary both across countries but also within countries across groups e.g. by region and ethnicity), the crucial determinant of the co-residence decision in most countries is income. Indeed much of the evidence today suggests that even in countries with high rates of multigenerational co-residence, independent living is a normal good; individuals with more resources choose to live alone (Kendig et al, 2014), though evidence for parents is more mixed with some research suggesting that *cohabitation* is a normal good for Italian parents (Manacorda and Moretti, 2006).

3.5 Sample and country selection

Recognising the heterogeneity across countries in the processes that underlie family and household formation as well as in the factors behind household and individual behaviours and outcomes, in this paper we retain as many countries as possible for each analysis we conduct. However for the analysis of within-household inequality in material deprivation reported in section 6 we are obliged to omit the register countries, given that for these countries information is recorded for only one household member (the selected respondent). We also omit the UK for parts of the analysis because individual deprivation is recorded at the benefit unit level rather than separately for each member of a couple, and Ireland for data quality reasons. We eliminated observations where there are inconsistencies in the variables used to identify household relations. Then each country we retain all individuals in households with non-missing information on the variables used to construct the household-level and individual-level deprivation indices, and the other variables used the regression analysis.

4. Descriptive analysis

4.1 A look at the living arrangements of the adult population in Europe

Figure 1 shows the proportion of adults who live in multi-family households overall and in each of the countries included in our analysis. Overall, across all countries over a third (37 percent) of all adults live in multi-family households. As one would expect there are large differences across countries: in the Nordic countries it is less than 20 percent, in the continental and Anglo-Saxon countries it ranges from around 20 to 30 percent, in the Southern and Eastern European countries between 40 and 50 percent. In Southern Eastern European countries it is over 50 to 60 percent. Appendix Figure A1 shows the share of the adult population living in multi-family household in terms of the wider dependent child definition. It shows that adopting a wider dependent child definition results in a substantial decrease in the proportion of adults living in multi-family households: overall across countries the proportion of adults who live in multi-family households is around 23 percent. The decrease in the

proportion of adults defined as living in multi-family household is substantial in all countries - reflecting the high co-residence rates of young adults with their parents - but in proportional terms it is especially pronounced for the Nordic, the continental and the Anglo-Saxon countries, suggesting that in these countries co-residence with young adults children is the main form of shared living arrangements.

Figure 2 presents the distribution of adults across different family types for each country separately and for all countries as a whole. Mirroring the results of Figure 1, overall across all countries, over a third of all adults live in multi-family households (red sections of the bars). Overall and in most countries the most prevalent family type is couples with dependent children in one-family households (19 per cent), followed by single adults who live in multi-family households (16 per cent; these are mainly young people aged 18 or over who are living with their parents). The next most prevalent family type is elderly and non-elderly couples who live in one-family households (14 and 12 per cent respectively) and single non-elderly adults living alone (9 per cent). Couples with no dependent children and couples with dependent children who live in multi-family households follow with a prevalence of 8 per cent and 6 per cent respectively. Elderly couples and elderly single people living in multi-family households each represent only around 3 per cent of the adult population while lone parents living in one-family households and multi-family households just 2 and 1 per cent respectively.

Table 1 explores in more detail the composition of multi-family households, by classifying adults in different family types according to their relation to their household members. It shows that the majority of individuals in couples with dependent children who live in multi-family households live with their grown up adult children (66 per cent), 25 per cent with their parents (mainly single elderly parents) and a further 4 per cent live in with both their grown up children and their elderly parents. Co-residence with people other than their grown-up children and elderly parents is not prevalent for this group: less than 5 per cent of individuals in couples with dependent children live only with people other than their adult children or their parents, and only 6.5 per cent live with any 'unrelated' adult.⁸ For individuals in couples with no dependent children the proportion living with their adult children is even higher (88 per cent) whereas the proportion living with their elderly parents is smaller. The majority of single adults in multi-family households live with their parents (around 82 per cent) but a significant proportion (9 per cent) lives with adult children. A similar proportion live in households consisting only of unrelated adults. The majority of elderly people in multi-family households (91 per cent of those in couples and 76 per cent of singles) live with their adult children (usually single children) although it is notable that a high proportion (around a fifth) of single elderly live in households which include only adults other than their grown-up children or parents (these may be unrelated adults of other

⁸ 'Unrelated adult' is a short hand. These may include relatives other than adult child or parent who cannot be identified with EU-SILC data.

relations that we could not identify with available data e.g. grandchildren, siblings etc). Though there is quite large variation across countries in the prevalence of different family types, the differences in the prevalence of multi-family households across countries mainly reflects differences in the co-residence patterns of singles adults and to a lesser extent differences in the co-residence patterns of elderly people.

4.2 The financial circumstances of people living in one-family and multi-family household

Figure 3 compares the average incomes of adults who live in one-family and those who live in multi-family households in terms of two indicators: the equivalised household income (which refers to the income of the whole of the household adjusted by the modified OECD equivalence scale to reflect differences in the size and composition of households), and the equivalised family unit income (which aggregates only the incomes of people belonging to the nuclear family unit and is adjusted again using the OECD equivalence scale to reflect differences in the size and composition of families). In most countries the average income of couples who live in one-family households is higher than for couples in multi-family households. Notable exceptions here are the Nordic countries plus Cyprus, where family incomes are lower on average in multi-family households than in single family households. In general, the difference between single and multi-family household types is more pronounced when assessed by the household income indicator, reflecting the fact that on average the incomes of people with whom couples co-reside are lower. In countries, like Serbia, Slovakia, Croatia, Romania, Poland, and Bulgaria, however, we notice the opposite pattern for couples with children, namely a lower difference according to the equivalised household income indicator than in terms of the family income indicator, which suggests that on average in these countries the incomes of couples is lower than the incomes of the people with whom they co-reside, which in turn implies that the direction of support flows towards couples.

The average (family) incomes of single adults living alone in one-family households is higher than of those who live in multi-family households. However, and unlike the pattern that is observed for couples, in most countries the equivalised *household* disposable income of single adults who live in multi-family households is substantially higher than of adults who live alone, suggesting that on average in these households the direction of the support flows towards single adults. Exceptions here are the Southern European countries as well as Bulgaria, Poland and Serbia. Given that in these countries co-residence between young adults and their parents (which is by far the most people comprising this group) is very widespread, this result probably reflects a stronger selection into the living alone status for those with higher incomes. For lone parents, the results in most countries suggest that those who live in multi-family households have lower own resources than those in one-family households (with the exception of Finland, Denmark, France, Belgium and Cyprus) and that living in multi-family households results in substantial gains.

For single elderly people, the results again suggest that those who live in multi-family households have lower family incomes than those living alone and that shared living arrangements results in substantial potential gains. For elderly couples the pattern is more mixed: although in the majority of countries the independent family incomes of elderly living in multi-family households is lower than of those who live alone, in several countries (including Sweden, Norway, Denmark, Netherlands, Switzerland, Estonia, UK, Iceland, Italy, Greece, Spain, Cyprus and Bulgaria) the reverse is true.

4.3 Country-level deprivation rates in terms of the household level and individual deprivation indicator

Table 2 compares the proportion of adults identified as deprived in terms of the two household level deprivation indicators (HD3 and HD4 in columns (1) and (2) respectively) and in terms of the two individual-level deprivation indicators (PD2 and PD3 in columns (3) and (4)). Focusing on aggregate country level comparisons first, we note that there are some important differences across the household and individual-level indicators. In five countries, the indicator based on enforced lack of two or more personal deprivation items (PD2) is more than 3 percentage points higher than the conventional material deprivation indicator based on the enforced of three or more household level deprivation items (HD3): (BG, DE, MT, RO, UK), while for another eight countries the difference is between 1 and 3 percentage points (BE, ES, FR, LT, AT, IS, CH). But there are also countries where the deprivation rate is higher in terms of HD3 than the PD2 indicator. The HD3 rate is more than 3 percentage points higher than the PD2 rate in nine countries (CZ, EE, EL, HR, CY, LV, SK, FIRS) while it is between 1 and 3 percentage points higher than the PD2 rate in six countries (IE, IT, PL, PT, SI). In a further six countries the difference in terms of the two indicators is less than one percentage point (DK, LU, HU, NL, SE, NO).

Results in Table 3 indicate that the degree of overlap between individuals identified as deprived in terms of the household level and the individual level deprivation indicators is rather limited. In the pooled sample of all countries, it can be observed that 27 percent of all adults have been identified as deprived in terms of the household level deprivation indicator and/or the individual deprivation indicators but only 11 percent are identified as deprived in terms of both indicators. A further 9 percent of all adults are identified only as individually deprived and further 7 percent are identified as being only household-deprived. Country level results further indicate that the degree of overlap between the two indicators varies substantially across counties: 59 percent of adults deprived according to either indicator in Bulgaria are deprived in both, compared to less than 21 percent in Finland (i.e. col (2) as a percentage of cols (2) to (4)). No consistent pattern can be observed across countries as to the extent to which the lack of overlap is correlated with a higher household level of deprivation risk (i.e. the proportion of deprived adults identified as

household-deprived only, or individually-deprived only, varies substantially across countries).

Appendix Figure A4 shows there are some significant differences in the rank order of countries if deprivation evaluations are based on the PD2 indicator as opposed to HD3 indicator. Based on the HD3 indicator, Norway is the least deprived country and Bulgaria the most deprived, whereas under the PD2 indicator the least deprived country is Sweden and the most deprived Romania. Though generally movements are relatively short-distance (the majority of the countries move only 1 or 2 places in the rank order), there are countries where differences in the ranks are quite substantial. The UK and MT fall respectively 8 (from 13 to 21), and 7 (from 18 to 25) places. On the other hand, HR, CY increase their rank by 9 and 7 places respectively while CZ, FI and SK by 5 places each.

4.4 Differences in the characteristics of people identified as deprived in terms of the HD3 and PD2

In this section we compare the characteristics of people identified as deprived in terms of the individual and household level deprivation indicators. The characteristics that we examine include a set of individual and household characteristics that are identified in the relevant literature as being associated with a higher risk of material deprivation either by affecting the needs or the resources of the individual, including their age, sex, family and household type, health status, income and working status.

Figure 4 presents the proportion of adults in the pooled sample of all countries who are identified as deprived in terms of PD2 and the HD3 deprivation indicators by gender, age group and family type. Women face a higher deprivation risk than men in terms of both indicators but the gap between men and women is higher for individual deprivation. In terms of age profile, HD3 risk among age groups below 65 and especially among the 17-24 age group is relatively high (22 percent), and lower for older age groups, with the oldest age group (i.e. people 75+) being those with the lowest deprivation risk (of 15 per cent)⁹. But for PD2, the rate is highest in middle age, and lower for both younger age groups and for older age groups. The fall in PD2 deprivation is less steep than in HD3. Comparing the HD3 and PD2 risks, we see that up to and including the 25-34 age group the deprivation rate is higher in terms of HD3 than PD2, whereas for older age groups the pattern is reversed.

Looking across family types we see there is substantial variation in the deprivation risk in terms of both the HD3 and the PD2 indicators, with stronger variation for HD3 than for PD2. Also as a general pattern we observe that the PD2 rate is lower among people living in one-family households than those living in multi-family households (which most likely reflects differences in needs and available resources). Lone parents are at

⁹ For further discussion about the deprivation risk among older people see McKay (2004) and Dominy and Kempson (2006).

the highest risk of all family types in terms of both household and individual deprivation. This is the case whether they are living alone or in a multi-family household; however those who are living with others have a lower risk of individual deprivation than those who are not. Elderly singles also have relatively high risks of household and individual deprivation. Living in a multi-family household is not associated with a lower risk of individual deprivation for this group, suggesting that living in a multi-family household does not fully insure against deprivation risk. Single adults with no children are more likely to experience household deprivation than individual deprivation, and their risk of individual deprivation is 2 percentage points lower if they are living in multi-family households. Couples, with or without children, generally have lower rates of household deprivation and of individual deprivation, than singles. This holds for both those in one-family households and multi-family households, although those in multi-family households have higher rates of deprivation (both household and individual) than those in one-family households.

Appendix Table A1-A3 break down the HD3 and PD2 risks by family type, age and gender, for each of the countries in our analysis. Despite the substantial cross-country differences in the overall deprivation rates, the relative differences in the deprivation risks across groups exhibit very similar patterns across countries, whether examined through HD3 or PD2.

5. Multivariate analysis

5.1 Baseline results

In this section, we estimate a series of probit models to explore which characteristics are associated with identifying an adult to be i) HD3 deprived and ii) PD2 deprived. In each regression, the deprivation indicator is the binary dependent variable which is regressed on a set of explanatory variables. The general formulation of our models is similar to that specified below:

$$Prob(D_i = 1) = X_i\beta_i + \varepsilon_i \quad (1)$$

where D_i is the relevant deprivation status indicator of person i , X_i is a vector of individual and household characteristics which affect the probability of being deprived, β_i is a vector of parameters to be estimated and ε_i is an error term which we assume to follow a standard normal distribution. In all equations, the vector X includes the individual's gender, age, quadratic in age, the logarithm of equivalised household income, household's homeownership status, and a set of dummies indicating individual's family type broken down by co-residence status.

In the PD2 equation the vector X_i also includes a variable indicating individual 'income share'. As discussed in the data section 3.3 above, income share is defined as the proportion of total household disposable income brought in by the individual. Note that 'income share' in this sense does not imply anything about pooling behaviour or allocation of resources

within the household; it simply refers to the contribution of each household member to total household income. It is used as a proxy of the potential distribution of bargaining power within the household i.e. variables that influence 'who gets what' in the household through their impact on the relative power within the household.

In the PD2 equation we also include dummies indicating whether the respondent is the owner or the person responsible for renting the accommodation as well as a dummy indicating whether the data derives from a proxy respondent: i.e. where the target individual was unavailable to be interviewed, and responses were provided on his or her behalf by another person (usually the partner). We use the proxy response dummy in order to control for the effect of the potential bias that may arise because of the difference in the responses of proxy and survey respondents. As discussed in Guio and Van den Bosch (2020) proxy respondents might not want to say that the reason their partner lacks an item is that he or she cannot afford it (especially when they give a different answer for this question for themselves). The adjustment of household size in the specifications in this section is made by adjusting total household income for variation in household size and composition using the modified OECD equivalence scales. As part of the various sensitivity tests in section 5.2, we present results based on specifications which include controls for the number of children and adults in the households. The results from these models suggest that our conclusions are not sensitive to these variables.

At baseline we estimate each equation for each type of deprivation risk for the pooled sample of all countries and family types, including country and family type controls. The results from this model are shown in Table 4. To facilitate interpretation, we report average marginal effects instead of probit coefficients. A graphical representation of the effects of the main variables included in the models is given by Figure 5, which plots the average predicted probabilities as a function of each of the main variables included in the models, with all other characteristics held constant at their observed values.¹⁰

Looking first at the effects of age, we see both the HD3 and the PD2 indicators exhibit a hump-shaped age profile – first increasing with age and decreasing thereafter. However, as can be seen more clearly in Figure 5,

¹⁰ More specifically, to calculate these predicted probabilities we take our sample and predict each person's probability of being deprived based on regression coefficients from the models presented in Table 4 keeping all characteristics at their observed values except from the characteristic the effect of which we want to evaluate (e.g. family type). Then, for each family type, we compute the average probability of being deprived. The second panel in the Figure A4 starting from the left, for example, represents the average predicted probability of being deprived in terms of HD3 indicator for different family types while keeping all other characteristics at the observed values.

the deprivation age profile for PD2 is much steeper and peaks at later age (at around late 50s early 60s) than for HD3.

Large and statistically significant differences in HD3 and in PD2 are estimated by family type even after controlling for differences in age, income, gender, and homeownership status, and for the PD2 indicator also controlling for the individual's contribution to total household income and for being the owner of the accommodation. Lone parents face the highest risk of all family types of both household and individual deprivation. This is the case whether they are living alone or within multi-family households; however those who are living alone have a lower risk of individual deprivation than those who live in multi-family household. Elderly singles, irrespective of whether they live in one-family or multi-family households, also have relatively high risks of household and individual deprivation. On the other hand, single adults with no dependent children are more likely to experience household deprivation than individual deprivation, but their risk of individual deprivation is higher if they are living in a multi-family household. Couples, with or without children, generally have lower rates of household deprivation and of individual deprivation, than singles. This holds for both those in one-family households and in multi-family households, although those in multi-family households have higher deprivation risks than those in one-family households (especially in terms of the household level deprivation indicator). Given that we control for total household income (see below) this means that there are other unobserved factors that translate a certain level of income to different level of deprivations across families.

As one would expect, household income and homeownership status have large negative effects on both HD3 and PD2 deprivation risk. Also, in line with the concern that proxy respondents may under-report the level of deprivation relative to survey respondents, in the PD2 equation, a significant negative effect is estimated on the variable indicating proxy respondent status. The marginal effect of the variable that indicates whether the individual is the owner of the accommodation is also negative, suggesting that the individuals in the household who are the owner of the accommodation have significantly lower risk of being deprived than other adults in the households.

A statistically negative effect is also found for the individual's income share in the PD2 model. This indicates that holding household income and other observed characteristics constant, an increased individual income share decreases the individual's deprivation risk by around 0.05 percentage points (which represents around 25 percent of the average deprivation risk). This seems to provide evidence against the unitary model of households and suggests that individual deprivation outcomes depends on bargaining power (which we proxy by the individual's income share variable).

Table 5 shows results from models predicting the probability of being PD2 deprived estimated for each family type separately (for the pooled sample of all countries, with country dummies). As one would expect the estimated effects of most variables vary substantially across the models. Large differences are estimated for the effect of gender, proxy respondent status, and for household homeownership status. The effect of the variable indicating whether the individual is the owner of the accommodation also displays substantial variation across family types. Its effect is negative and statistically significant for lone parents in multi-family households and for couples with no children in one-family and multi-family households, while surprisingly a statistically positive effect is estimated for all single people in multi-family households.

More importantly for the focus of this paper, the results show very large differences in the effect of the individual income share variable (for a graphical representation of the effects see Figure 6). In line with the hypothesis that the degree of sharing of resources may be less complete in multi-family households, the results suggest that the individual's income share is a stronger predictor of the individual deprivation risk for people who live in multi-family households than for those who live in one-family households. For single (non-elderly) adults and lone parents in multi-family households, the marginal effect of the individual income share variable on PD2 risk is -0.14, which implies that someone who is the sole contributor of household income has a 14 percentage point lower deprivation risk than someone with no individual income holding all else constant, which equates to around 33 percent lower than the average deprivation risk for lone parents and 70 percent lower for single adults. These are large effects. The marginal effect of the individual income share for couples in multi-family household is around -0.11 or three times higher than the effect that is estimated for couples in one-family households.

Country level models (Table 6) also reveal substantial variation across countries in the strength of the association between different characteristics and the individual deprivation risk. Especially strong are the differences that are estimated for the effect of equivalised household income, household homeownership status and family type. But, more notably, the estimates suggest substantial country differences in the effect of individual income shares (for a graphical representation see Figure 7). The marginal effect of the individual income share variable ranges from around -0.19 in Latvia (which implies that an individual who is the sole contributor of the household's income enjoys a 19 percentage point lower risk of individual deprivation than an individual who brings no income into the household – or around 60 percent higher than the country specific average deprivation risk) to non-significance in many countries including Denmark, Ireland, Finland, Iceland and Norway.

Country level estimates for the effect of the individual income share variable for each family type are reported in Table 7. As was the case for the pooled model estimated of all countries, the effect of the individual

income share variable varies substantially by family type in most countries. A general pattern that can be observed however is that although in a number of countries a statistically significant effect is estimated for the effect of the individual income share for one-family couples, its effect is larger for people who live in multi-family households. The strongest effects are estimated for single adults who live in multi-family households: the marginal effects range from -0.32 in Bulgaria to almost zero in the Netherlands. Strong effects for the individual income share variables are also estimated for lone parents in multi-family households but the small sample size raises concerns about the reliability of the estimates. Differences between countries can potentially be explained by national differences in the labour markets, demographics, welfare states (including the tax system, provision of public goods and social protection policy). It is beyond the scope of the paper to further investigate the factors driving the relationships, but it is an issue that requires further investigation.

5.2 Sensitivity analyses

We perform several sensitivity analyses including analyses to explore the possibility of differential effects of the income share variable by gender, the sensitivity of the effects to the definition of individual income share variable, as well as sensitivity to including the number of adults and number of children in the set of independent variables.

Gender differences in the effect of individual income share: First we want to see whether the individual income share has a differential effect by gender. We estimate a series of models similar to that specified by equation (1) with the addition of an interaction term between gender and the income share variable. We first estimate a model for the pooled sample of countries and family types (including family type and country dummies), and then we run separate models by family type (with country dummies). Table 8 reports the marginal effects on selected variables included in the models. Looking across the table (i.e. the models estimated for each family type separately) we see that the magnitude of interaction term in most family type models is very small and statistically insignificant. The only exceptions are the models estimated for couples with no dependent children and for single people living in multifamily households in which a positive and statistically significant effect is estimated for the interaction between gender (female) and income share. This suggests that on the whole, men and women's individual-level deprivation risks are similarly affected by their income shares in total household income. That said, in practice, women are much more likely than men to have lower income shares, so the association between low income share and increased individual deprivation risk affects more women than men.

Adopting a narrower individual income share definition based on purely assignable individual incomes: Table 9 reports results from family types models (similar to those in Table 5), estimated using a narrower definition of the individual income share variable based on purely assignable individual income components (i.e. excluding income

components recorded at the household level). To derive this alternative individual income share variable we divide the sum of purely individual incomes of each individual in the household (i.e. his/her total income that arises from purely individual components) by the sum of the individual income components of all household members. With the exception of couples with dependent children in one-family households where the effect of the individual share variable loses its statistical significance, for all other family types the effect of the individual income share remains highly significant, albeit slightly lower than when we use our central definition of income share.

Other tests: We also examine the sensitivity of our results to including controls for the number of adults and children in the household. As shown in Table 10, adopting this specification does not result in any noticeable change in the effect estimated for the income share variable. Table A6 provides three further robustness checks. The first column provides results from a model predicting the probability of being deprived of three or more deprivation items (i.e. adopting a “3 or more” rather than the “2 or more” deprivation threshold). The second and third columns report results from models estimated using deprivation indicators defined based on a simple lack concept (rather than the enforced lack concept, which we used for the definition in the results in this paper). The deprivation indicator in the model in column (2) defines individuals as being PD deprived if they lack two or more of items included in the deprivation index (either because they cannot afford them or for other reasons) while the model in column (3) is if they lack three or more items. Despite differences in the magnitude of the estimated effects, the main conclusions remain qualitatively unchanged.

6. An assessment of the magnitude of the impact of the within household deprivation inequality

In the section above we saw that holding everything else constant adult deprivation is associated with the individual’s income share, especially for some family/household types. The fact that the relative income share variable has a significant effect on adult deprivation outcomes implies that there is unequal distribution of individual deprivation outcomes across household members within households. In this section we will look closer at the degree of inequality in the individual deprivation outcomes between adults within households and its variation by family type and co-residence status, to determine the degree of the bias in the assessment of individuals’ living standards from household level indicators. We then perform a simple simulation exercise to illustrate a ‘back of the envelope’ assessment of the impact that the elimination of within-household deprivation status inequality would have on national deprivation rates and the differences in deprivation rates across groups. Because this analysis requires information from all adult household members, we omit register countries which as we discussed above include information on individual level variables only for a selected respondent in each household. We also omit Ireland (because of high rates of missing data for other household members) and the UK

(because the relevant questions are not asked of both members of a couple).

In order to examine the extent of inequality in individual deprivation (PD2) outcomes across individuals within households we classify individuals into the following four groups:

- (i) deprived individual (D) who lives in a household where no other household member or only some other household members are deprived;
- (ii) deprived individual (D) who lives in a household where all other household members are deprived;
- (iii) non-deprived individual (ND) who lives in a household where at least someone else is deprived;
- (iv) non-deprived individual (ND) who lives in household where everyone else is also non-deprived;

Figure 8 shows the percentage of adults falling in each of these four groups. The statistics are presented by family and household type and overall for all adults (excluding singles in one-family households given that there can be no variation in deprivation outcomes in these households). Overall across all family types, 13 per cent of adults live in households where there is some degree of inequality in the distribution of deprivation status across their adult members. This proportion is much higher among the deprived than non-deprived adults: a third of deprived adults live in households where there are both deprived and non-deprived adults compared to around 10 per cent of non-deprived adults. This proportion is much higher among couples than among singles as well as among adults who live in multi-family households than those in one-family households. Overall, looking at both deprived and non-deprived individuals, household inequality in deprivation outcomes affects a quarter of adults in multi-family households compared to less than 5 per cent of adults in one-family households (note that this group includes single-adult households, where by definition there can be no inequality in adult deprivation). Though it is expected that the level of within household deprivation will be higher among multi-family households it is also indicative of the degree of inequality which one would not expect to be observed under assumption of the equal sharing of resources within households.

The extent of inequality in individual deprivation outcomes (measured by the proportion of adults who live in households where household members do not share the same deprivation status) varies substantially across countries (Figure 9), ranging from over 20 per cent in Serbia, Bulgaria, Romania and Greece, to around 9-10 per cent in a number of countries including Austria, Estonia, France, Germany and to less than 7 per cent in Belgium (6.5 percent) and Luxemburg (4 per cent). This variation only partly reflects cross-country differences in living arrangements, as can be seen by the variation in the level of inequality across countries with similar proportion of multi-family households (note that the countries in this figure are sorted by the proportion of adults in multi-family households). It also

reflects differences across counties in deprivation inequality within multi-family households.

Although the analysis above provides insights about the proportion of individuals who live in households where there is some degree of inequality in the distribution of adult deprivation outcomes among their adult household members, the findings also give rise to another question: what effect would the elimination of within-household inequality have on country-level adult deprivation rates? To answer this question, we undertake a simple simulation which illustrates the impact that the elimination of within-household deprivation status inequality would have on national deprivation rates, and the differences in deprivation rates across groups. The simulation is undertaken under two scenarios. The first scenario (*s1*) assigns non-deprivation status to all deprived adults in households in which there are both deprived and non-deprived adults (i.e. it assumes perfect equality in non-deprivation within households where there is currently some inequality in deprivation status across members). The second scenario (*s2*) assigns the status of being deprived to all non-deprived adults in households in which there are deprived and non-deprived adults (i.e. it imposes perfect equality in deprivation across all household members).

In Figure 10 we report the results of this simulation exercise by presenting the deprivation rates under each of these two scenarios along with the observed deprivation rate overall for all countries and for each country separately. The lower point in each line shows the deprivation rate estimate under *s1* (i.e. the deprivation rate that would have prevailed if all adults who live in households with unequal deprivation outcomes were assigned a non-deprived status) while the upper point shows the deprivation rate estimate under *s2* (i.e. the deprivation rate that would have prevailed if all adults who live in households with unequal deprivation outcomes were assigned a deprived status). The *s1* and *s2* estimates can be thought as providing lower and upper bound deprivation estimates respectively under the perfect within-household equality in deprivation assumption. Looking across countries we see under *s1* the deprivation rates decrease between 1 and 12 percentage points, with an average decrease across all countries of around 6 percentage points. As one would expect the countries for which *s1* has the largest impact are those characterised by higher within-household deprivation status inequality (Romania, Bulgaria, Serbia, Greece and Hungary). Scenario *s2* produces an increase in the deprivation rate of between 2 and 13 percentage points, with an average increase in all countries of around 6 percentage points. A pattern that can be observed on average and in some countries is that the effects of *s1* and *s2* are symmetric (the increase and decrease that they suggest is of the same magnitude) which suggests that within households where there is inequality in adult deprivation outcomes, the proportion of deprived and non-deprived is very similar. However, in a number of countries the change in deprivation rates implied by *s1* and *s2* are not symmetric. There are countries where the increase in deprivation implied by *s2* is higher than the decrease implied by

s1 suggesting that the within household distribution of deprivation outcomes in these countries is closer to the perfect equality in deprivation scenario (i.e. most adults are deprived). And vice versa: there are countries where the observed deprivation outcomes are closer to the equality in non-deprivation scenario (i.e. most adults are not-deprived).

Overall, the picture implies that a considerable proportion of the adults in Europe live in households with unequal deprivation outcomes across their adult household members. The degree of within household inequality in deprivation outcomes has a substantial effect on the overall level of deprivation in all countries: eliminating within household inequality and assuming that all adults in households where there is inequality in deprivation outcomes are not deprived reduces the overall deprivation risk across all countries by 6 percentage points (which represents a more than 25 percent decrease in the overall deprivation risk).

7. An adjusted headcount multi-dimensional deprivation index

The evidence above highlighted how our assessments about the deprivation risks in a given population depend on whether we base our assessment on household level or individual level deprivation indicators, and provided evidence about the effect of within-household inequality on the distribution of individual deprivation outcomes and how this differs across individuals in single-family and multi-family household both overall across all countries included in this analysis and in each country separately. From this we conclude that deprivation indicators that include information on individual deprivation items can better approximate individual well-being. In this section we propose combining the conventional household-level EU material deprivation indicator with the individual-level deprivation indicator to construct a multi-dimensional deprivation index using the approach developed by Alkire and Foster (2007, 2011). As highlighted by Whelan et al. (2014), this approach "...allows one to examine in a structured way the implications of key measurement choices for levels of multi-dimensional poverty, the dimensional profile and the socio-economic processes involved" (Whelan et al. 2014, p. 184).

The Alkire and Foster method consists of two main stages. The first stage counts the (weighted) number of indicators in which individuals experience deprivation; this requires the selection of dimensions, indicators for each dimension, and binary cut-offs for what constitutes deprivation on each indicator. The second stage involves defining a threshold for the number of indicators on which someone must be deprived in order to count as multi-dimensionally deprived. Individuals above this cut-off are identified as multi-dimensionally deprived while those below the cut-off are removed from consideration ('censored' in Alkire and Foster terminology). Three relevant statistics are defined by this approach. The first is the multi-dimensional deprivation headcount H which indicates the proportion of all

individuals who are multi-dimensionally deprived (also known as multidimensional deprivation incidence or censored headcount ratio); the second is the multi-dimensional deprivation intensity I which measures the average number of deprivations experienced by those who are multi-dimensionally deprived; and the third and the central statistic is the adjusted headcount ratio which is the product of the headcount rate and the average intensity of multi-dimensional deprivation. The main advantage of the Alkire and Foster approach, and very useful for our analysis, is the dimensional and sub-group decomposability of the index.

In what follows we use the household-level and individual-level deprivation indicators as two separate dimensions for the implementation of the Alkire and Foster adjusted headcount approach.¹¹ The individual-level deprivation dimension and the household level deprivation dimensions comprise of the seven individual level deprivation items and the nine household level deprivation items respectively discussed in section 2.

We used the same threshold to define who is deprived in each dimension as in earlier parts in the paper i.e. an individual is defined as household-deprived if he/she lives in a household lacking 3 or more of the household-level deprivation items, and being individually-deprived if the individual lacks more than 2 individual-level deprivation items. As we saw in section 3.2, this approach broadly identifies a similar proportion of adults as 'deprived' in each dimension: HD3 and PD2. We weight the two dimensions equally and we defined as 'multidimensionally' deprived those individuals who are deprived in 6 or more out of the 18 weighted deprivation items.

In Table 9 we show breakdowns by country for the adjusted headcount index, the headcount index and the mean intensity. Both register and non-register countries can be and are included in this analysis but we exclude the UK given that individual level deprivation is measured at the benefit unit level and Ireland due to concerns about data quality. Statistics for the pooled sample of all countries are also included in the table for comparison. The headcount statistics in column (1) indicate a large variation across countries in the proportion of individuals above the multi-dimensional deprivation threshold, with a range of less than 2 per cent for Sweden, Norway, Finland and Iceland to 40-41 per cent for Bulgaria and Romania. By contrast, the deprivation intensity statistics among those identified as multi-dimensionally deprived in column (2) exhibit considerably smaller variation (from 41 percent in Finland to 56 percent in Bulgaria). Variation in the adjusted headcount index in column (3) is generally comparable with the unadjusted headcount index, ranging from less than 0.01 in Sweden to more than 0.20 in Bulgaria and Romania. Columns (10) and (11) show the contribution of each of the two dimensions in the overall adjusted

¹¹ This distinguishes our approach from Klasen and Lahoti (2016), who implement a Multidimensional Poverty Index using the Alkire-Foster method on individual-level data for India with a mixture of household and personal deprivation indicators, but do not treat household and individual deprivation as separate dimensions.

headcount index. Again, we see some important variation in the relative importance of the two dimensions across countries. With the exception of Finland and Greece where the contribution of the individual-level deprivation dimension is just over 40 percent, in all other countries its contribution is over 50 percent (and in a number of countries including Switzerland, Romania, Luxemburg, Malta, Spain, Italy and France over 60 percent) which suggest that including this indicator better captures levels of deprivation in these countries.

8. Conclusions

Material deprivation is usually assessed using household-level deprivation indicators. In this paper we used individual-level deprivation data from the 2014 EU-SILC ad-hoc material deprivation module to illustrate the sensitivity of deprivation estimates to using individual-level rather than household-level deprivation indicators and to examine the implications of intra-household inequality on material deprivation outcomes, focusing on, but not limited to, effects for multi-family households.

Analysis of the determinants of deprivation risk based on a pooled probit model predicting the probability of being deprived in terms of the individual-level deprivation indicator confirms that household income, gender, age, family type and co-residence status (i.e. whether living in a one-family or multi-family household) are all independent predictors of the individual's deprivation risk. A statistically significant negative effect is also estimated on the share of total household income brought in by the individual (we refer to this variable as the individual's income share), suggesting that individuals who bring in a higher share of total household income are statistically significantly less likely to be individually deprived than those who bring in a lower share of total household income. Separate models by country reveal substantial variation across countries in the effect of individuals' income shares, which indicates that control over resources have a differential effect on deprivation outcomes in different countries. Separate models by family type and co-residence status show that individual's income share is a stronger predictor of the individual deprivation risk of (non-elderly) adults living in multi-family household than for adults in single-family households, consistent with the interpretation that sharing of resources is less complete in multi-family households. This result is robust to an alternative definition of the individual income share variable, as well as to specifications which include full controls for the number of children and adults in the households.

Analysis of the distribution of adult deprivation outcomes within households shows that around 13 percent of all adults live in households where there is some inequality in the deprivation outcomes among their adult household members and this percentage is even higher in complex households (around 22 percent). The degree of within household inequality in deprivation outcomes has a substantial effect on the overall level of

deprivation in all countries: eliminating within household inequality and assuming that all adults in households where there is inequality in deprivation outcomes are not deprived reduces the overall deprivation risk across all countries by 6 percentage points (which represents a more than 25 percent decrease in the overall deprivation risk).

In the last part of the paper we presented a combined deprivation index which was constructed by treating the conventional household level and the individual level deprivation indicators as two separate dimensions of an overall index, following the Alkire and Foster adjusted headcount approach (Alkire and Foster, 2007, 2011). Decomposition by dimension shows that the individual-level deprivation indicator contributes more than the household-level deprivation indicator to the overall index in almost all countries, though there are some substantial differences in the relative contribution of the two dimensions across countries.

Overall, the analysis in this paper confirms once again that the distribution of resources within households is not always to the equal benefit of all members. This is especially the case for complex households which consist of more than one family unit, where we find both higher levels of within-household inequality in individual deprivation outcomes and stronger associations between individual deprivation outcomes and individual's share in total household income. Taken together the implication of these results is that co-residence does not always protect against individual deprivation, even when others in the household are non-deprived (especially for lone parents; for singles with no children; and for couples with no children). We conclude that individual deprivation indicators provide complementary information to household deprivation indicators. Both should be used in the overall assessment of deprivation risks, but without losing the variation within households that is revealed by individual deprivation indicators.

References

- Alderman, H. Chiappori, P.-A. Haddad, L. Hoddinott, J. Kanbur, R. (1995) 'Unitary versus collective models of the household: is it time to shift the burden of proof?', *The World Bank Research Observer*, 10: 1, pp. 1-19.
- Alkire, S., Foster, J. (2007), "Counting and Multidimensional Poverty Measurement" Oxford Poverty and Human Development Initiative OPHI Working Paper 7. Oxford: Oxford Department of International Development, University of Oxford
- Alkire, S., Foster, J. (2011a), 'Understandings and Misunderstandings of Multidimensional Poverty Measurement', *Journal of Economic Inequality*, 9:2, pp. 289-314.
- Alkire, S., Foster, J. (2011b), 'Counting and Multidimensional Poverty', *Journal of Public Economics*, 95:7-8, pp. 476-87.
- Becker, G.S. (1974), 'A theory of Social Interactions', *Journal of Political Economy*, 82:6, pp. 1063-1094.
- Becker, G.S. (1981), *A Treatise on the Family*, Cambridge, Mass: Harvard University Press.
- Bárcena-Martín, E., Lacomba, B., Moro-Egido, A. I. and Pérez-Moreno, S. (2014), "Country Differences in Material Deprivation in Europe", *Review of Income and Wealth*, 60:4, pp. 802-820, doi:10.1111/roiw.12030
- Bárcena-Martín, E. M. Blázquez, A. I. Moro-Egido (2019), "The role of income pooling and decision-making responsibilities in material deprivation", *Economic Modelling*, doi.org/10.1016/j.econmod.2019.08.019.
- Bonke, J. and Browning, M. (2009), "The Allocation of Expenditures within the Household: A New Survey", *Fiscal Studies*, 30:3-4, pp. 461-481. doi:10.1111/j.1475-5890.2009.00104.x
- Browning, M. and Bonke, J. (2009), 'Allocation within the household: direct survey evidence', University of Oxford, Department of Economics, Discussion Paper no. 429.
- Browning, M., F. Bourgignon, P.A. Chiappori and V. Lechene (1994), 'Income and Outcomes: Structural Model of Intra-household Allocation' *Journal of Political Economy*, University of Chicago Press, 102:6, pp. 1067-1096.
- Cantillon, S. and Brian Nolan, (2001), "Poverty Within Households: Measuring Gender Differences Using Nonmonetary Indicators" *Feminist Economics*, vol. 7:1, pp. 5-23.
- Cantillon, S. & Maitre, Bertrand & Watson, D. (2015), "Family Financial Management and Individual Deprivation" *Journal of Family and*

- Economic Issues*, 37:3, pp. 461-473, doi: 10.1007/s10834-015-9466-z.
- Cantillon, S. (2013), "Measuring Differences in Living Standards Within Households" *Family Relations*, 75:3 pp. 598-610. doi:10.1111/jomf.12023
- de Henau, Jerome and Himmelweit, Susan (2013), "Comparing welfare regimes by their effects on intra-household inequalities", In: Ferri, Mireia and Monsonis-Paya, Irene eds. *Sustainability and transformation in European Social Policy*. Peter Lang, pp. 117-146.
- Deutsch J., Guio A.C., Pomati M., Silber J. (2015), "Material Deprivation in Europe: Which Expenditures Are Curtailed First?" *Social Indicators Research*, 120:3, pp. 723-740.
- Dominy, N. and Kempson, E. (2006), "Understanding Older People's Experiences of Poverty and Material Deprivation", Department for Work and Pensions Research Report No. 363. Leeds: Corporate Document Services
- Cheryl R. Doss, (1996), "Testing among models of intrahousehold resource allocation" *World Development*, 24:10, pp. 1597-1609, [https://doi.org/10.1016/0305-750X\(96\)00063-0](https://doi.org/10.1016/0305-750X(96)00063-0).
- European Commission (2004), "Joint Report on social inclusion 2004" Luxembourg, Office for Official Publications of the European Communities. Accessed on 07.02.2020 via http://ec.europa.eu/employment_social/spsi/docs/social_inclusion/financial_joint_inclusion_report_2003_en.pdf
- Eurostat (2008), *Comparative Final EU Quality Report 2005 (Version 2 – September 2008)*. Luxembourg: Eurostat.
- Eurostat (2017), "Income and living conditions (ilc) Reference Metadata in Euro SDMX. Eurostat, Luxembourg. https://ec.europa.eu/eurostat/cache/metadata/en/ilc_esms.htm (accessed 24 June 2019).
- Eurostat (2018) Glossary: Material deprivation https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Material_deprivation (accessed 24 June 2019)
- Figari, F. (2012) "Cross-national differences in determinants of multiple deprivation in Europe" *The Journal of Economic Inequality*, vol. 10:3, pp.397-418.
- Fusco A., Guio A.C., Marlier E. (2010), "Income poverty and material deprivation in European countries" Eurostat Methodologies and Working Papers,

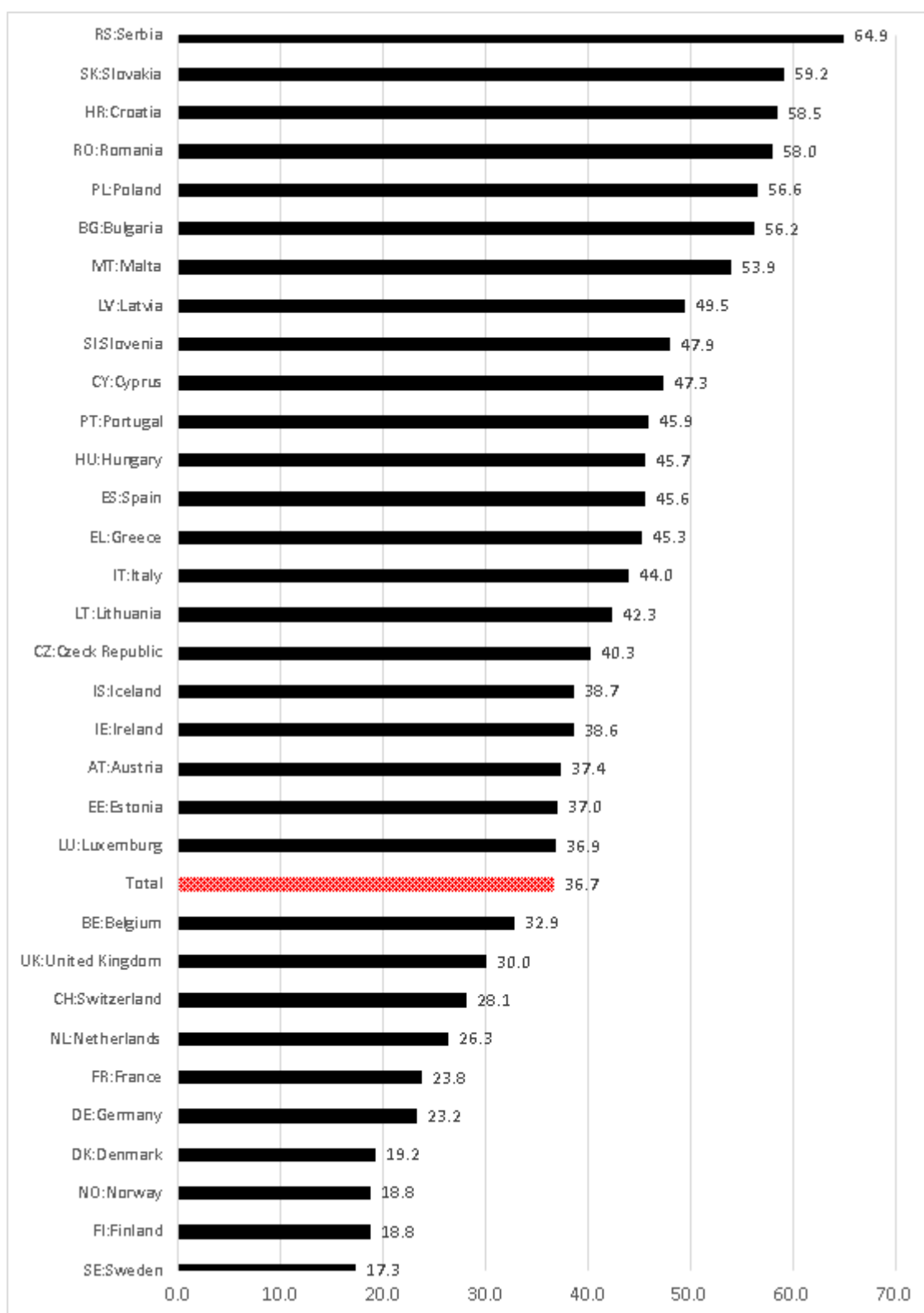
http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-RA-10-030

- Fusco A., Guio A.-C., Marlier E. (2013), "Building a material deprivation index in a multinational context: lessons from the EU experience", in Bérenger, V. & Bresson F. (eds), *Poverty and Social Exclusion around the Mediterranean Sea*, Springer.
- Halleröd, B. D. Larsson, D. Gordon and Veli-Matti Ritakallio, (2006), "Relative deprivation: a comparative analysis of Britain, Finland and Sweden", *Journal of European Social Policy*, 16:4, pp. 328-345.
- Haddad, L., & Kanbur, R. (1990). 'How serious is the neglect of intra-household inequality?', *Economic Journal*, 100:402, pp. 866–881
- Hoddinott, J. and Haddad, L. (1995), "Women's Income and Boy - Girl Anthropometric Status in Cote d'Ivoire", *World Development*. 22:4, pp. 543-553.
- Guio, A.-C., (2009), "What can be learned from deprivation indicators in Europe?" Eurostat Methodologies and working papers, Publications Office of the European Union, Luxembourg.
- Guio, A.-C., Gordon, D., Marlier, E. (2012), 'Measuring Material Deprivation in the EU: Indicators for the Whole Population and Child-Specific Indicators', Eurostat Methodologies and Working Papers, Luxembourg: Office for Official Publications of the European Communities (OPOCE).
- Guio H., Guio A.-C., Marlier E., Vanhercke B., Ward T. (2014), "Putting the fight against poverty and social exclusion at the heart of the EU agenda: A contribution to the Mid-Term Review of the Europe 2020 Strategy." OSE Paper Series, Research Paper No.15.
- Guio A.-C. and E. Marlier (2017a), "Amending the EU material deprivation indicator: impact on size and composition of deprived population" in Atkinson A.B., A.C. Guio and E. Marlier (eds.) *Monitoring inclusion in Europe*, Statistical Books, Eurostat, 2017
- Guio, A.C., D. Gordon, H. Najera, M. Pomati (2017b), "Revising the EU material deprivation variables", Eurostat Statistical Working papers, 2017 edition, Eurostat
- Guio, A. and Van den Bosch, K. (2020), "Deprivation of Women and Men Living in a Couple: Sharing or Unequal Division?" *Review of Income and Wealth*. doi:10.1111/roiw.12449
- Jäntti, M. V.-M. Törmälehto and E. Marlier eds. (2013) "The use of registers in the context of EU-SILC: Challenges and opportunities" Eurostat, European Commission, Statistical Working papers, doi: 10.2785/4549

- Iacovou, M. O. Kaminska, H. Levy (2012), "Using EU-SILC data for cross-national analysis: strengths, problems and recommendations" ISER Working paper no. 2012-03
- Kendig, S. M., Mattingly, M. J. and Bianchi, S. M. (2014), "Childhood Poverty and the Transition to Adulthood" *Family Relations*, 63, pp. 271-286. doi:10.1111/fare.12061
- Kis, A. & A. Gabos (2016), "Consistent poverty across the EU." *Corvinus Journal of Sociology and Social Policy*, 7, pp. 1-27, doi:10.14267/cjssp.v7i2.159.
- Klasen, S. and Lahoti, R. (2016), "How Serious is the Neglect of Intra-Household Inequality in Multi-dimensional Poverty Indices?", Courant Research Centre Discussion Paper 200, Georg-August-Universität, Göttingen
- McKay, S. (2004), "Poverty or preference: what do 'consensual deprivation indicators' really mean?" *Fiscal Studies*, 25, pp. 201-223. doi:10.1111/j.1475-5890.2004.tb00102.x
- Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales (1997), "Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit" *Journal of Human Resources*, 32: 3, pp. 463-48.
- Manacorda, M. and Moretti, E. (2006), "Why do most Italian youths live with their parents? Intergenerational transfers and household structure." *Journal of the European Economic Association*, 4, [[. 800-829. doi:10.1162/JEEA.2006.4.4.800.
- Nagy, I., Medgyesi, M., & Lelkes, O. (2012). "The 2010 ad hoc EU SILC module on the intra-household sharing of resources" *Research note 3/2012 Brussels, Belgium: Social Situation Observatory*, European Commission
- Nolan, B. and C. Whelan (2010), "Using Non-Monetary Deprivation Indicators to Analyze Poverty and Social Exclusion: Lessons from Europe?" *Journal of Policy Analysis and Management*, 29:2, pp. 305-325.
- Nunally, J.C. (1978) *Psychometric Theory*, 2nd edn. New York: McGraw-Hill.
- Quisumbing, A.R. (1994), Intergenerational transfers in Philippine rice villages: Gender differences in traditional inheritance customs. *Journal*
- Schultz T.P. (1990), "Testing the Neoclassical Model of Family Labor Supply and Fertility." *Journal of Human Resources*, 25:4, pp. 599-634.
- Thomas, D. (1990), "Intra-household Resource Allocation: An Inferential Approach" *Journal of Human Resources*, 25:4, pp. 635-664.

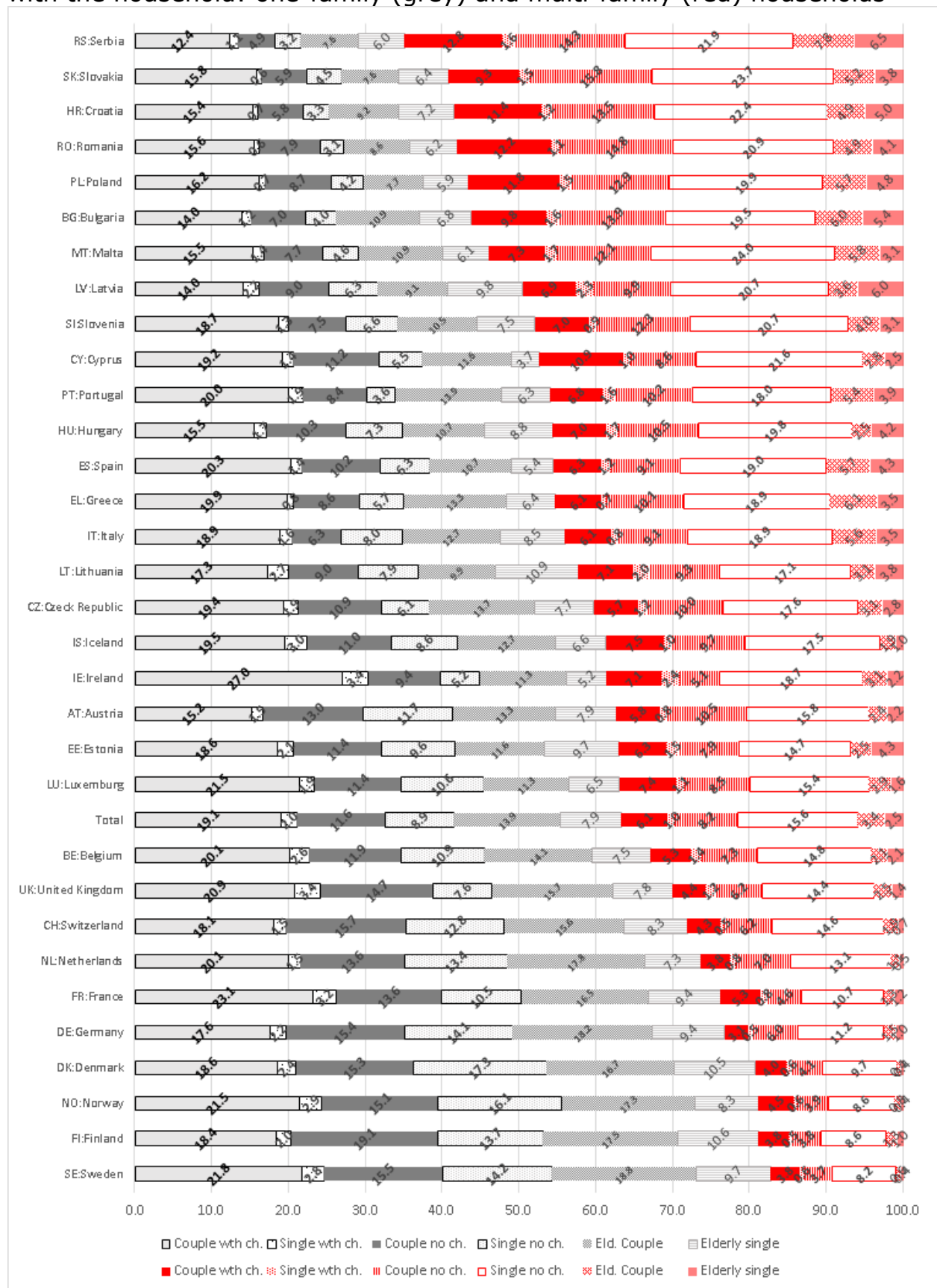
- Thomas, D., D. Contreras, and E. Frankenberg (1997), *Child Health and the Distribution of Household Resources at Marriage*. RAND mimeo.
- Visser, M., Gesthuizen, M., & Scheepers, P. (2014) "The impact of macro-economic circumstances and social protection expenditure on economic deprivation in 25 European countries, 2007–2011", *Social Indicators Research*, 115:3, pp.1179–1203.
- Whelan, C. T., Layte, R., Maitre, B. and Nolan, B. (2003), "Persistent Income Poverty and Deprivation in the European Union: An Analysis of the First Three Waves of the European Community Household Panel", *Journal of Social Policy*, 32, pp. 1-32.
- Whelan, C. T. B. Nolan, B. Maître (2014) "Multidimensional poverty measurement in Europe: An application of the adjusted headcount approach" *Journal of European Social Policy*, Volume: 24 issue: 2, page(s): 183-197 <https://doi.org/10.1177/0958928713517914>
- Woolley, F.R. and Marshall, J. (1994), "Measuring Inequality Within the Household" *Review of Income and Wealth*, 40, pp. 415-431. doi:10.1111/j.1475-4991.1994.tb00084.x
- Woolley, F. (2003), "Control over money in marriage". In Grosbard-Shechtman, S. (ed) *Marriage and the Economy*. Cambridge University Press.

Figure 1: Proportion of individuals aged 16+ who live in a multi-family households



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

Figure 2: The distribution of adults in different family types classified by marital status, presence of dependent children and number of families with the household: one-family (grey) and multi-family (red) households



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

Table 1: Percent of adults of different family types who live in multi-family households by their relation with the co-resident individuals (countries sorted by the proportion of adults who live in MFH households - from lowest to highest)

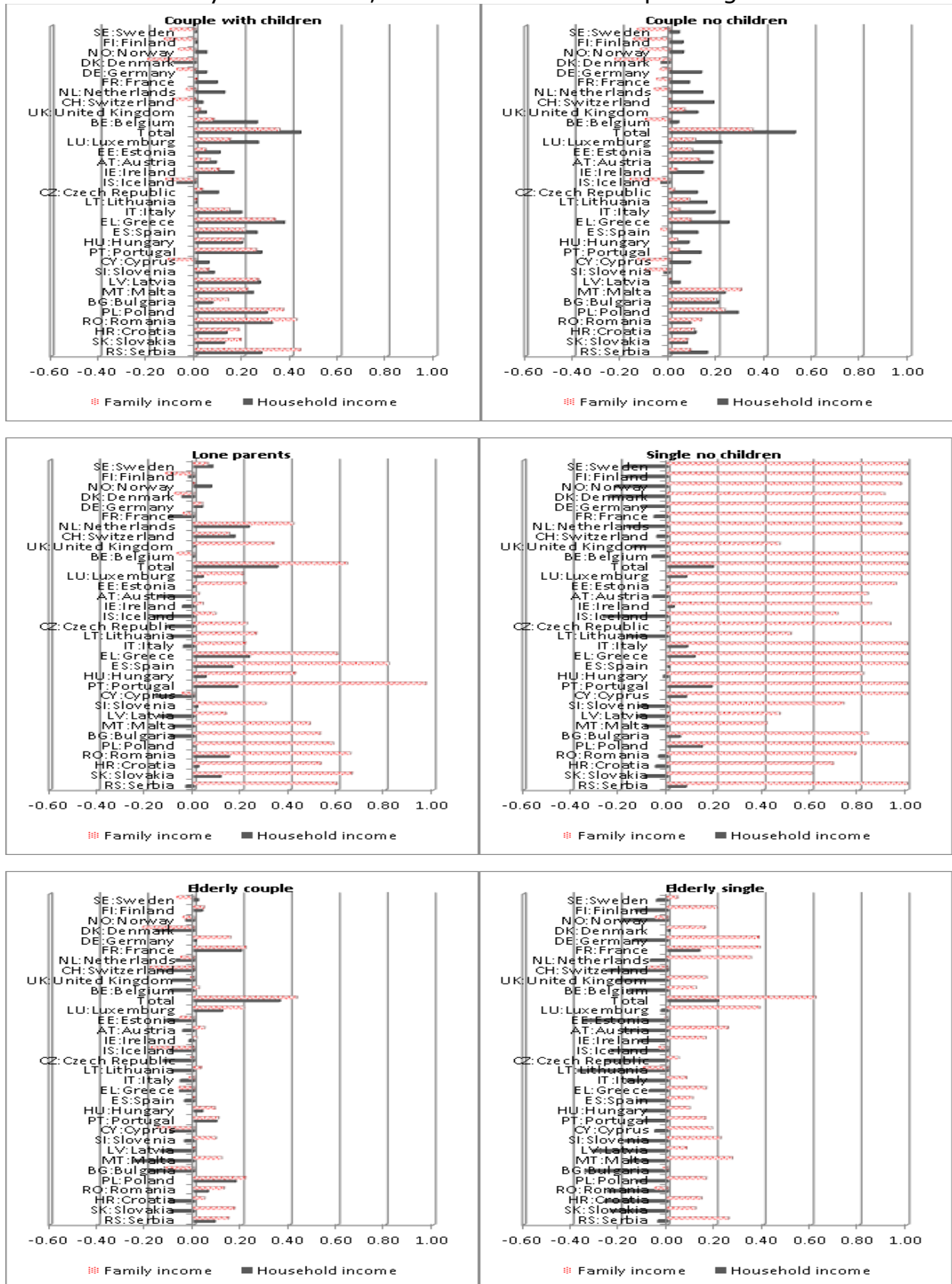
	Couples with dependent children						Couples with no dependent children					
	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.
SE :Sweden	1.67	0.00	97.25	1.08	2.57	612	2.70	0.00	95.45	1.85	4.46	656
FI: Finland	1.11	0.00	95.43	3.47	1.71	1246	1.74	0.48	95.57	2.21	2.04	1396
NO: Norway	2.37	0.00	96.84	0.79	2.82	1026	1.06	0.00	98.04	0.90	1.87	982
DK: Denmark	5.42	0.54	93.36	0.69	7.31	752	4.98	0.00	94.38	0.64	8.63	896
DE: Germany	3.68	0.74	92.63	2.95	4.21	566	1.92	1.27	93.15	3.66	2.76	1310
FR: France	3.54	1.44	92.62	2.40	3.80	962	1.28	0.49	94.46	3.77	1.44	1106
NL: Netherlands	1.66	0.00	96.98	1.36	1.66	916	0.67	0.00	98.68	0.65	1.23	1492
CH: Switzerland	1.95	0.00	87.09	10.96	2.13	540	3.45	1.41	91.64	3.50	3.80	910
UK: United Kin.	6.09	4.68	76.89	12.34	7.56	528	5.23	0.76	90.65	3.36	6.38	752
BE: Belgium	3.47	0.41	90.22	5.90	5.52	500	2.63	0.70	92.22	4.45	5.41	734
Total	4.93	4.46	65.62	24.99	6.50	32600	2.39	4.47	87.58	5.55	3.90	46692
LU :Luxemburg	1.98	1.40	80.33	16.29	3.09	508	0.93	2.01	92.98	4.08	1.95	674
EE: Estonia	3.53	4.83	68.67	22.97	4.30	924	2.71	5.17	80.97	11.15	3.48	1070
AT: Austria	3.33	3.05	73.95	19.67	5.94	498	1.40	4.32	88.25	6.03	2.90	790
IE: Ireland	8.17	0.57	83.34	7.92	12.25	544	10.04	0.78	86.14	3.04	20.00	454
IS: Iceland	5.52	0.00	89.25	5.23	6.87	768	4.34	0.14	92.68	2.84	6.48	908
CZ: Czech Rep.	4.64	2.79	79.08	13.49	5.71	690	1.54	2.84	92.98	2.65	2.41	1294
LT: Lithuania	1.98	7.48	57.67	32.87	3.70	598	1.35	5.67	88.24	4.74	2.30	998
IT: Italy	6.84	2.22	73.21	17.72	8.52	2112	2.33	2.43	91.79	3.45	4.13	3634
EL: Greece	2.83	4.45	65.00	27.72	3.20	866	1.27	6.86	85.59	6.28	1.73	1706
ES: Spain	8.02	4.26	70.96	16.76	9.49	1644	3.15	5.18	86.14	5.54	5.16	2610
HU: Hungary	5.05	4.49	56.99	33.47	6.79	1302	1.81	4.40	88.43	5.36	2.28	1942
PT: Portugal	5.58	6.82	63.54	24.06	8.71	852	1.95	4.63	86.55	6.87	3.26	1376
CY: Cyprus	4.90	0.34	84.88	9.89	8.00	900	2.62	1.32	89.22	6.84	4.04	922
SI: Slovenia	2.97	3.83	70.20	23.01	4.07	2172	1.26	4.07	89.93	4.74	2.17	3726
LV: Latvia	8.27	10.18	48.82	32.73	11.31	688	4.18	7.24	77.25	11.32	7.19	1000
MT: Malta	2.46	1.86	86.59	9.09	3.03	564	0.60	0.73	97.04	1.63	1.31	1318
BG: Bulgaria	3.89	9.01	26.84	60.26	5.49	884	2.91	9.58	80.70	6.82	4.76	1266
PL: Poland	4.44	8.90	34.63	52.03	6.99	2902	1.19	11.26	78.91	8.65	3.18	3052
RO: Romania	5.47	6.90	39.52	48.11	7.42	1010	3.58	8.27	74.37	13.78	5.93	1814
HR: Croatia	6.06	6.99	44.62	42.34	7.62	1090	1.26	7.39	85.82	5.53	3.10	1566
SK: Slovakia	3.09	6.23	50.24	40.44	5.46	1136	1.05	6.92	84.54	7.49	3.51	1936
RS: Serbia	3.16	9.48	25.28	62.09	5.56	2300	1.72	15.94	72.51	9.83	3.91	2402
	Lone parents						Singles adults					
	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.
SE :Sweden	5.72	1.03	90.73	2.51	11.72	57	11.98	0.00	10.53	77.50	13.86	1332
FI: Finland	4.28	0.00	91.59	4.13	4.28	74	7.84	0.11	10.50	81.56	8.84	2616
NO: Norway	7.93	0.00	87.69	4.39	7.93	81	7.57	0.06	11.06	81.31	8.32	1944
DK: Denmark	12.60	0.83	76.51	10.06	16.29	67	18.08	0.09	13.29	68.54	22.17	1659
DE: Germany	4.89	0.00	91.78	3.34	4.89	75	5.04	0.10	7.20	87.65	5.89	2026
FR: France	2.17	0.15	82.70	14.98	2.64	131	7.43	0.14	10.65	81.79	7.63	2364
NL: Netherlands	15.87	0.00	71.64	12.50	17.21	92	11.53	0.03	8.90	79.54	12.25	2555
CH: Switzerland	6.01	3.71	83.57	6.70	6.01	55	11.10	0.03	8.01	80.86	11.69	1878
UK: United King.	8.29	2.72	59.63	29.36	9.79	143	21.20	0.35	9.60	68.85	22.48	1927
BE: Belgium	15.45	1.57	63.96	19.02	15.97	129	11.13	0.43	10.66	77.78	13.76	1680
Total	8.78	2.69	48.42	40.11	11.47	4847	9.32	0.60	8.59	81.49	11.09	86940
LU :Luxemburg	4.27	0.00	54.85	40.88	5.53	71	3.92	0.10	9.60	86.38	5.04	1327
EE: Estonia	4.09	2.44	35.12	58.35	5.38	204	5.14	1.46	11.01	82.39	6.42	2150
AT: Austria	4.53	7.60	54.35	33.52	9.72	73	7.96	0.20	8.25	83.59	9.87	1395
IE: Ireland	15.56	0.40	56.87	27.17	24.43	169	26.56	0.08	7.04	66.32	32.79	1786
IS: Iceland	7.85	0.00	56.96	35.19	9.86	80	12.83	0.06	8.13	78.98	14.82	1637
CZ: Czech	4.63	0.87	48.55	45.94	5.24	126	4.82	0.80	10.70	83.68	6.13	2385
LT: Lithuania	8.60	6.03	31.92	53.44	11.44	161	5.59	1.82	13.16	79.43	6.70	1641
IT: Italy	11.32	3.58	45.45	39.65	17.55	259	7.40	0.40	7.18	85.03	9.01	7588
EL: Greece	10.50	1.79	45.47	42.24	10.98	90	7.00	0.60	5.44	86.96	7.56	3282
ES: Spain	18.55	2.62	31.85	46.99	20.13	309	10.65	0.60	6.87	81.88	13.40	5366
HU: Hungary	4.77	4.24	32.05	58.94	6.93	308	7.23	0.80	13.02	78.95	8.89	3714

PT: Portugal	3.09	4.42	31.70	60.80	8.22	200	7.58	0.59	9.32	82.51	9.54	2476
CY: Cyprus	4.35	1.08	78.30	16.27	8.41	58	13.70	0.15	6.99	79.16	15.64	2120
SI: Slovenia	4.51	3.12	40.45	51.91	5.50	232	5.99	0.69	9.16	84.16	7.37	6005
LV: Latvia	12.80	2.27	28.58	56.35	16.23	265	9.91	2.07	12.99	75.03	13.73	2196
MT: Malta	1.61	3.38	33.40	61.61	3.10	142	4.83	0.21	7.10	87.86	5.86	2425
BG: Bulgaria	12.66	4.12	19.05	64.17	15.13	130	7.90	2.09	11.71	78.30	10.30	1886
PL: Poland	2.39	4.93	23.79	68.90	6.54	442	5.01	1.49	7.83	85.67	7.62	5413
RO: Romania	6.77	1.45	33.89	57.89	10.98	101	9.72	1.41	9.09	79.79	13.18	2677
HR: Croatia	10.64	2.57	26.32	60.47	13.45	98	3.76	1.01	8.28	86.96	6.22	2569
SK: Slovakia	22.60	1.85	16.32	59.23	24.70	217	7.72	0.57	6.87	84.84	10.17	3526
RS: Serbia	7.82	6.40	22.93	62.85	11.06	208	5.71	1.76	11.16	81.37	8.33	3395
	Elderly couples						Single elderly					
	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.	with unrelat ed only	with parents & adult children	with adult children	with parents	at least one unrelated adult	Obs.
SE :Sweden	3.35	0.00	96.65	0.00	4.64	112	17.93	0.00	77.37	4.71	17.93	45
FI: Finland	3.19	0.61	93.68	2.52	5.45	440	30.05	0.00	64.76	5.19	31.79	215
NO: Norway	3.90	0.00	95.10	1.00	3.90	190	19.02	0.00	79.29	1.69	21.72	54
DK: Denmark	16.31	0.00	83.42	0.27	16.75	132	36.59	0.00	61.52	1.89	38.94	47
DE: Germany	4.72	0.94	89.83	4.51	5.70	400	16.40	0.53	79.11	3.96	19.56	155
FR: France	2.06	0.43	92.05	5.45	2.06	372	30.49	0.00	64.56	4.95	31.35	295
NL: Netherlands	1.27	0.00	95.65	3.08	1.27	210	34.98	0.00	61.79	3.23	37.52	88
CH: Switzerland	2.54	0.00	97.46	0.00	4.39	278	25.60	0.00	72.18	2.22	25.60	103
UK: United Kingdom	7.84	0.00	90.31	1.85	9.36	384	15.12	0.54	82.07	2.28	16.16	243
BE: Belgium	11.23	0.00	82.29	6.48	12.96	250	43.71	0.38	52.51	3.39	44.16	212
Total	4.94	1.46	90.78	2.82	6.51	21000	19.88	0.57	76.34	3.21	21.66	13898
LU :Luxemburg	5.24	0.07	93.19	1.50	8.13	282	14.36	0.00	80.79	4.85	15.15	114
EE: Estonia	10.37	1.81	75.71	12.11	13.03	470	13.24	0.50	82.18	4.08	14.06	541
AT: Austria	8.31	0.00	87.98	3.71	10.65	182	24.11	0.70	69.20	6.00	25.21	185
IE: Ireland	13.13	0.58	85.58	0.71	20.91	324	28.23	0.00	71.10	0.67	32.45	282
IS: Iceland	6.44	0.00	93.56	0.00	10.22	186	44.58	0.00	52.07	3.34	44.58	63
CZ: Czech Republic	6.28	0.30	89.59	3.83	7.51	494	18.30	0.64	76.69	4.38	19.56	432
LT: Lithuania	4.42	0.32	92.83	2.43	5.90	482	12.91	0.37	84.23	2.49	14.02	443
IT: Italy	4.53	0.96	92.50	2.02	5.32	2444	21.84	0.29	73.96	3.90	23.49	1420
EL: Greece	1.74	2.02	94.78	1.46	1.94	1112	13.13	0.75	83.96	2.16	14.47	580
ES: Spain	6.75	3.01	87.59	2.65	8.91	1674	24.91	0.57	71.38	3.13	27.90	1091
HU: Hungary	8.35	2.00	83.70	5.95	12.65	500	13.37	1.62	81.77	3.23	14.46	691
PT: Portugal	5.90	1.15	87.43	5.53	8.36	858	21.02	1.25	75.82	1.91	23.16	544
CY: Cyprus	20.35	0.00	78.80	0.86	21.89	492	56.59	0.21	41.46	1.74	59.17	250
SI: Slovenia	3.27	1.69	93.60	1.45	4.37	1642	15.82	0.71	81.70	1.78	17.65	713
LV: Latvia	10.81	1.80	86.50	0.89	12.31	520	18.44	0.41	78.37	2.79	20.71	753
MT: Malta	3.22	0.00	96.59	0.19	3.65	652	42.97	0.00	55.32	1.71	45.64	345
BG: Bulgaria	4.70	2.80	89.65	2.84	5.87	668	16.86	0.78	79.58	2.78	18.63	488
PL: Poland	2.97	2.19	92.18	2.66	6.00	1584	12.54	0.71	83.85	2.89	14.10	1197
RO: Romania	3.91	1.57	92.70	1.82	5.59	766	12.19	1.17	84.04	2.60	13.49	558
HR: Croatia	3.00	2.23	92.70	2.06	3.79	690	12.22	0.47	86.32	0.99	13.63	530
SK: Slovakia	1.63	1.53	95.96	0.89	2.59	674	21.84	0.16	75.70	2.30	21.95	462
RS: Serbia	3.12	2.44	89.94	4.50	3.92	1536	16.25	0.74	81.12	1.90	18.33	759

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

'Unrelated adults' may include unrelated individuals or relations who cannot be identified in EU-SILC.

Figure 3: % difference in average income between those living in one-family and those living in multi-family households, in terms of family income (red) and household income (grey), by family type (countries sorted by the proportion of adults in multi-family households, from lowest at the top to highest at the bottom)



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

Table 2: Percentage of adults deprived using the conventional material deprivation indicators and alternative individual deprivation indicators according to different deprivation thresholds

	Conventional household level material deprivation indicators according to different thresholds		Individual level material deprivation indicators according to different thresholds	
	HD3: 3 items or more	HD4: 4 items or more	PD2: 2 items or more	PD3: 3 items or more
	<i>col.(1)</i>	<i>col.(2)</i>	<i>col.(3)</i>	<i>col.(4)</i>
BE: Belgium	0.107	0.057	0.137	0.092
BG: Bulgaria	0.462	0.321	0.534	0.423
CZ: Czech Republic	0.154	0.061	0.084	0.047
DK: Denmark	0.072	0.029	0.078	0.041
DE: Germany	0.111	0.047	0.154	0.101
EE: Estonia	0.158	0.062	0.117	0.062
IE: Ireland	0.202	0.077	0.184	0.092
EL: Greece	0.380	0.205	0.331	0.152
ES: Spain	0.164	0.062	0.185	0.121
FR: France	0.111	0.045	0.138	0.086
HR: Croatia	0.336	0.140	0.170	0.099
IT: Italy	0.217	0.107	0.204	0.143
CY: Cyprus	0.322	0.127	0.171	0.087
LV: Latvia	0.341	0.188	0.311	0.191
LT: Lithuania	0.285	0.135	0.295	0.184
LU: Luxembourg	0.044	0.012	0.052	0.032
HU: Hungary	0.384	0.224	0.383	0.284
MT: Malta	0.192	0.094	0.278	0.190
NL: Netherlands	0.082	0.028	0.081	0.041
AT: Austria	0.082	0.034	0.098	0.050
PL: Poland	0.210	0.095	0.193	0.114
PT: Portugal	0.249	0.100	0.232	0.149
RO: Romania	0.408	0.230	0.572	0.442
SI: Slovenia	0.175	0.069	0.147	0.076
SK: Slovakia	0.211	0.089	0.154	0.095
FI: Finland	0.077	0.028	0.027	0.012
SE: Sweden	0.025	0.006	0.030	0.013
UK: United Kingdom*	0.125	0.056	0.187	0.098
IS: Iceland	0.042	0.012	0.068	0.027
NO: Norway	0.030	0.011	0.026	0.013
CH: Switzerland	0.041	0.011	0.062	0.033
RS: Serbia	0.442	0.263	0.377	0.277
Total	0.176	0.083	0.194	0.126

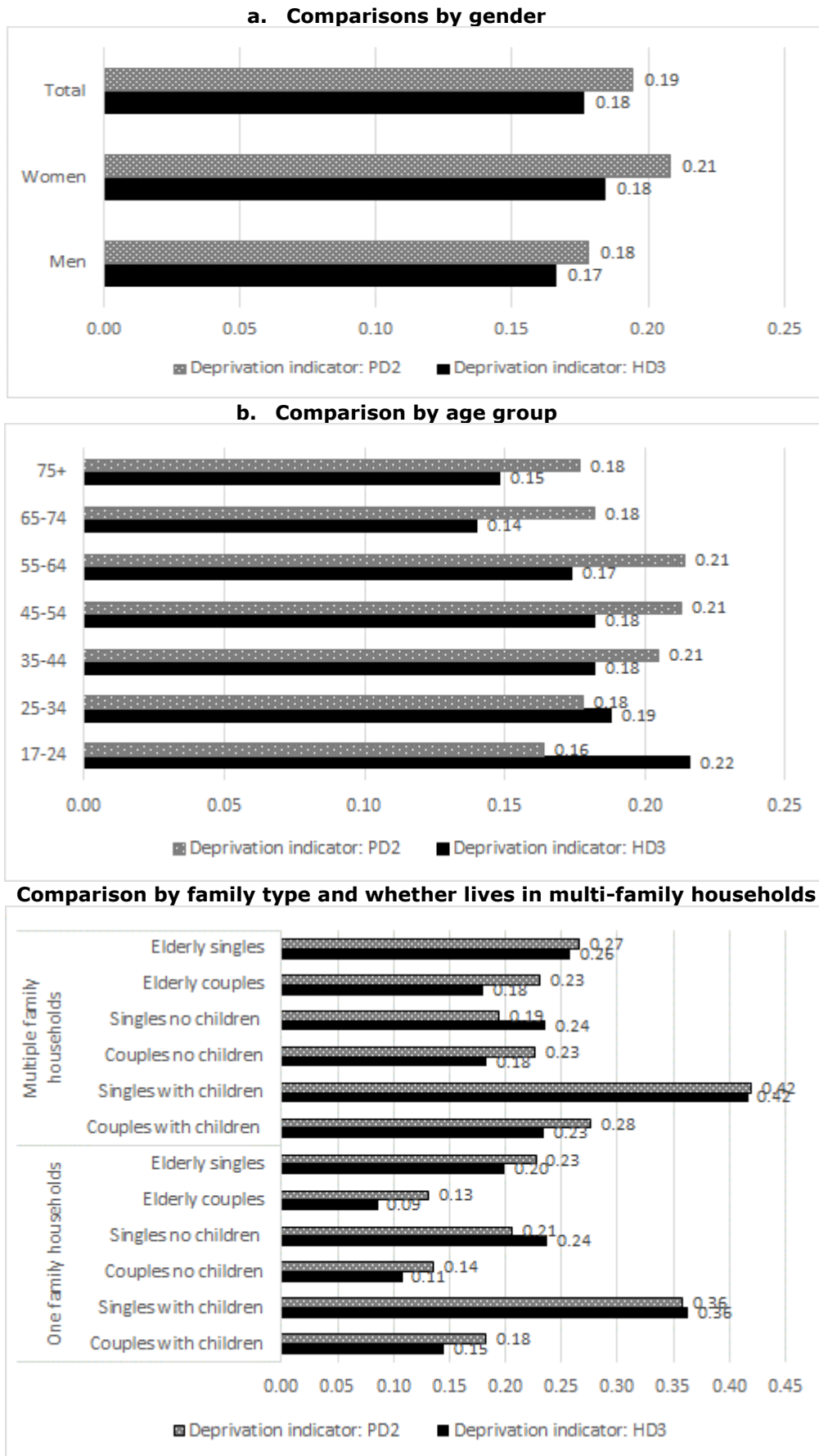
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The sample used for the calculation of the statistics in this table excludes observations with zero or negative household disposable income, observations with obvious inconsistencies in the variables identifying household relations as well as individuals in households where information HD3 and PD2 is non-missing. Results are not sensitive to these restrictions and are available upon request. *For the UK individual deprivation questions are asked at the family unit level. The estimate therefore does not capture any variation in deprivation outcomes within family units.

Table 3: Percentage of adults deprived in neither, both or strictly one of the household level and individual level deprivation indicators

	HD3=0 & PD2=0 <i>(not deprived in either of the deprivation indicators)</i>	HD3=1 & PD2=1 <i>(deprived in terms of both of the deprivation indicators)</i>	HD3=0 & PD2=1 <i>(deprived in terms of the individual level deprivation indicator only)</i>	HD3=1 & PD2=0 <i>(deprived in terms of the household level deprivation indicator only)</i>
	col. (1)	col. (2)	col. (3)	col. (4)
BE: Belgium	82.95	7.62	6.02	3.41
BG: Bulgaria	37.48	37.06	16.22	9.24
CZ: Czech Republic	81.93	5.75	2.54	9.79
DK: Denmark	87.12	4.68	4.1	4.1
DE: Germany	81.08	6.98	8.07	3.86
EE: Estonia	79.85	7.13	4.37	8.65
IE: Ireland	72.72	12.52	6.37	8.4
EL: Greece	51.25	22.53	10.64	15.58
ES: Spain	74.46	9.89	8.77	6.88
FR: France	81.99	7.26	6.72	4.03
HR: Croatia	61.89	12.56	4.32	21.22
IT: Italy	69.81	12.56	8.04	9.59
CY: Cyprus	63.09	12.47	4.41	20.04
LV: Latvia	55.21	21.04	10.37	13.38
LT: Lithuania	60.14	18.35	11.39	10.13
LU: Luxemburg	92.45	2.07	3.19	2.29
HU: Hungary	50.92	27.73	10.48	10.87
MT: Malta	65.97	13.17	14.75	6.11
NL: Netherlands	85.93	5.11	4.15	4.81
AT: Austria	86.53	4.71	5.12	3.64
PL: Poland	69.87	11.24	8.45	10.44
PT: Portugal	66.34	14.49	8.63	10.54
RO: Romania	34.83	33.82	23.92	7.43
SI: Slovenia	76.94	9.05	5.6	8.41
SK: Slovakia	72.64	9.42	6.06	11.88
FI: Finland	89.5	2.16	0.83	7.51
SE: Sweden	94.91	1.62	1.91	1.55
UK: United Kingdom*	76.33	8.72	10.37	4.58
IS: Iceland	89.74	2.84	4.8	2.62
NO: Norway	94.43	1.86	1.48	2.24
CH: Switzerland	91.88	2.18	4.22	1.73
RS: Serbia	45.23	27.12	10.3	17.34
Total	73.09	11.35	8.62	6.94

Notes: As for Table 2.

Figure 4: Differences in the characteristics of those deprived according to the HD3 and PD2 indicator



Notes: As for Table 2.

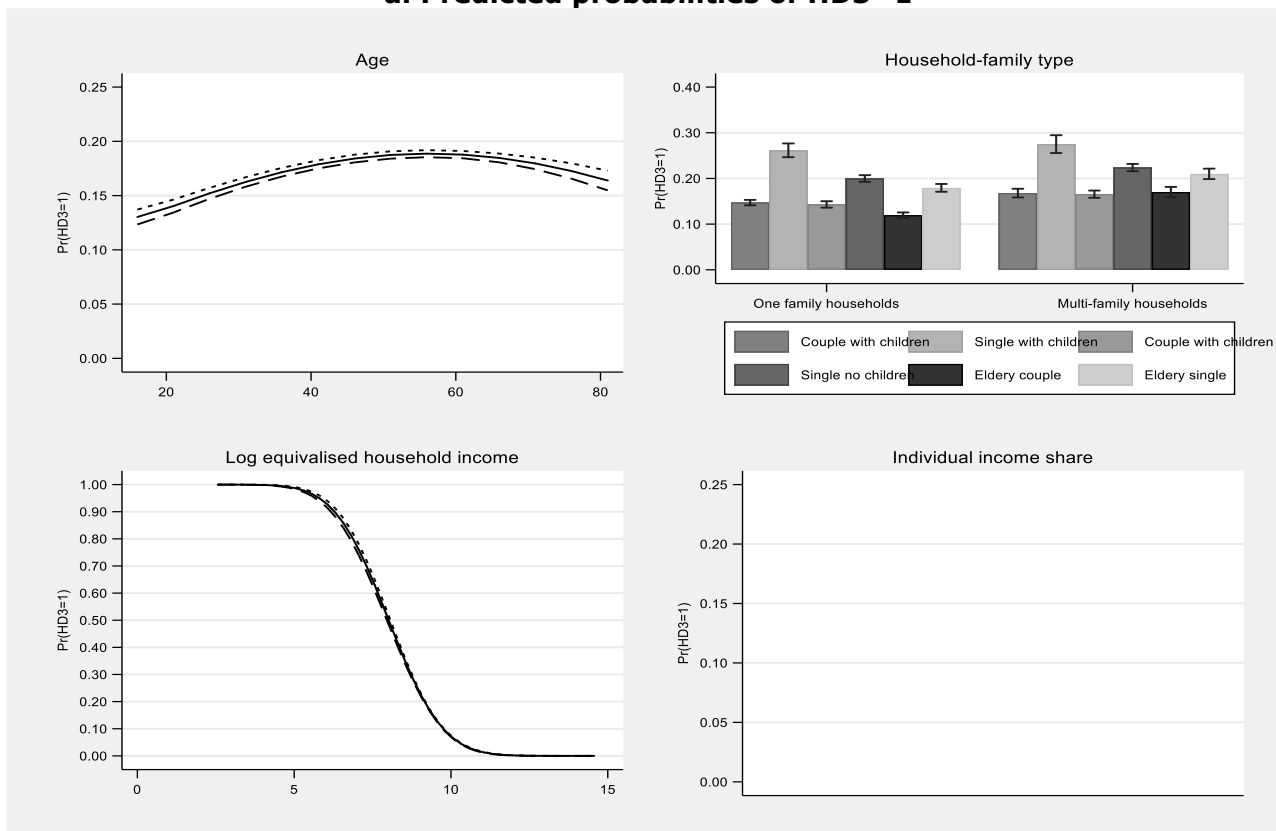
Table 4: Marginal effects from probit models predicting the probability of being HD3 and PD2: pooled regression of all countries

	Prob(HD3=1)		Prob(PD2=1)	
	ME	z-statistic	ME	z-statistic
Age	0.004***	(11.94)	0.010***	(23.00)
Age squared	-0.000***	(-10.22)	-0.000***	(-18.44)
Woman	0.005***	(3.98)	0.006***	(3.92)
Family type (ref: OFH: Couple with children)				
OFH: Lone parents	0.114***	(14.18)	0.097***	(11.06)
OFH: Couple no children	-0.004	(-0.88)	-0.021***	(-4.40)
OFH: Single no children	0.053***	(11.27)	0.003	(0.65)
OFH: Couple elderly people	-0.028***	(-5.75)	-0.045***	(-8.19)
OFH: Single elderly people	0.032***	(5.36)	0.014**	(1.98)
MFH: Couple with children	0.021***	(3.78)	0.009	(1.50)
MFH: Lone parents	0.128***	(12.51)	0.110***	(10.07)
MFH: Couple no children	0.018***	(3.75)	-0.004	(-0.75)
MFH: Single no children	0.077***	(16.33)	0.016***	(3.34)
MFH: Couple elderly people	0.023***	(3.36)	-0.000	(-0.05)
MFH: Single elderly people	0.063***	(8.79)	0.014*	(1.82)
Log equivalised household income	-0.158***	(-56.48)	-0.166***	(-56.99)
Proxy respondent	0.003	(1.42)	-0.016***	(-6.40)
Lives in owner occupied accommodation	-0.127***	(-37.17)	-0.105***	(-24.98)
Individual is the owner the accommodation			-0.007**	(-2.54)
Individual's share in total household income			-0.050***	(-16.56)
Country: (ref. BE: Belgium)				
BG: Bulgaria	-0.013	(-1.41)	-0.015	(-1.58)
CZ: Czech Republic	-0.072***	(-9.43)	-0.163***	(-25.71)
DK: Denmark	-0.022**	(-1.97)	-0.036***	(-3.20)
DE: Germany	-0.031***	(-4.18)	-0.013**	(-1.96)
EE: Estonia	-0.088***	(-11.13)	-0.154***	(-23.19)
IE: Ireland	0.102***	(9.82)	0.045***	(4.45)
EL: Greece	0.064***	(7.11)	-0.020***	(-2.64)
ES: Spain	-0.012	(-1.50)	-0.034***	(-4.73)
FR: France	0.007	(0.91)	0.009	(1.29)
HR: Croatia	-0.014	(-1.51)	-0.149***	(-21.76)
IT: Italy	0.068***	(8.89)	0.013*	(1.91)
CY: Cyprus	0.166***	(15.55)	-0.021**	(-2.47)
LV: Latvia	-0.016*	(-1.81)	-0.074***	(-9.82)
LT: Lithuania	-0.046***	(-5.02)	-0.082***	(-10.14)
LU: Luxemburg	-0.024**	(-2.14)	-0.045***	(-4.66)
HU: Hungary	0.000	(0.04)	-0.044***	(-5.55)
MT: Malta	0.025***	(2.80)	0.062***	(7.10)
NL: Netherlands	-0.037***	(-3.99)	-0.076***	(-9.33)
AT: Austria	-0.035***	(-3.84)	-0.046***	(-5.46)
PL: Poland	-0.083***	(-10.90)	-0.134***	(-20.22)
PT: Portugal	-0.017**	(-1.97)	-0.070***	(-9.66)
RO: Romania	-0.084***	(-9.53)	-0.051***	(-5.44)
SI: Slovenia	-0.007	(-0.93)	-0.075***	(-11.28)
SK: Slovakia	-0.040***	(-4.79)	-0.125***	(-18.09)
FI: Finland	-0.016**	(-2.04)	-0.138***	(-19.20)
SE: Sweden	-0.107***	(-12.83)	-0.129***	(-16.69)
UK: United Kingdom	0.021**	(2.55)	0.056***	(7.32)
IS: Iceland	-0.060***	(-5.99)	-0.050***	(-5.10)
NO: Norway	-0.024**	(-2.51)	-0.065***	(-7.08)
CH: Switzerland	-0.032***	(-2.61)	-0.025**	(-2.41)
RS: Serbia	-0.075***	(-8.68)	-0.144***	(-19.92)
Observations	474883		434691	
Pseudo R-squared	0.236		0.209	

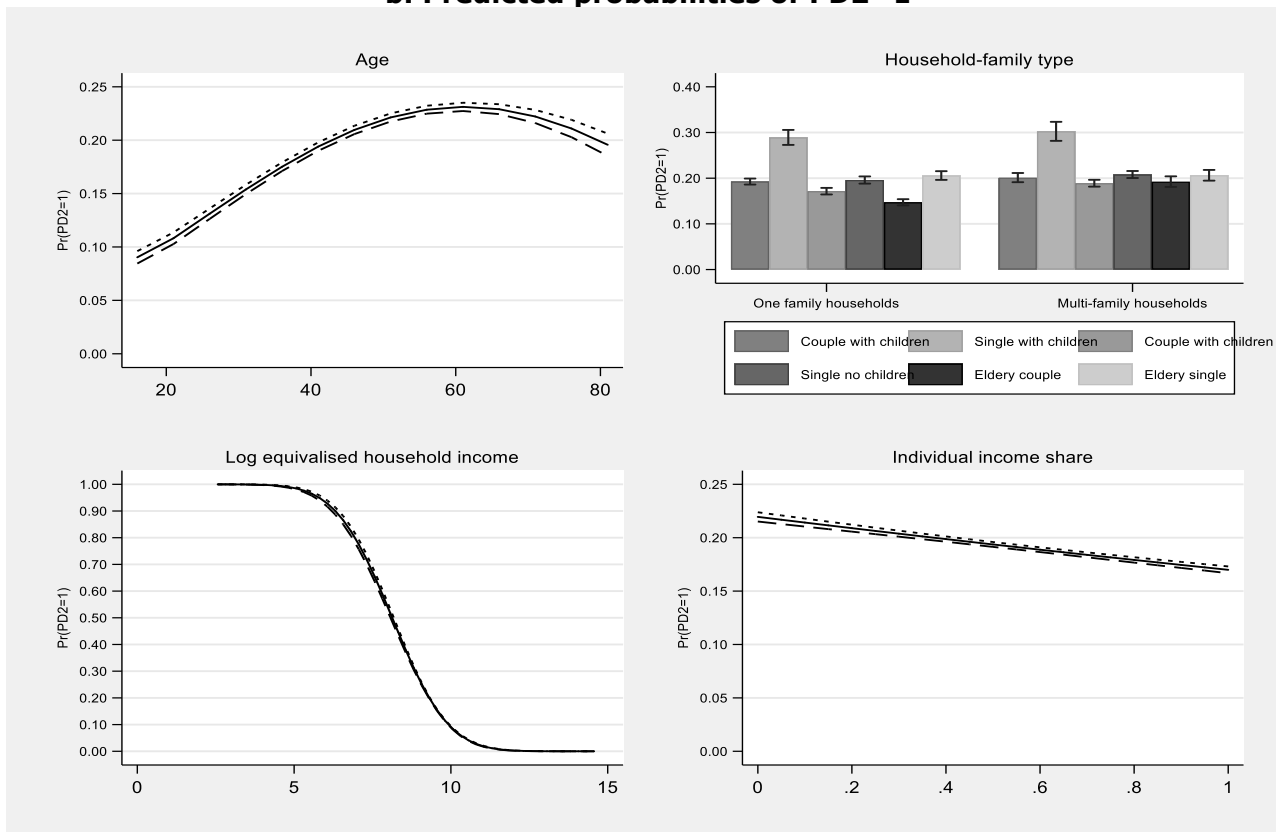
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The sample excludes observations with zero or negative household disposable income as well as those with obvious inconsistencies in the variables identifying household relations. It also excludes individuals with missing information on HD3 and PD2 and in any of the independent variables included in the models. Standard errors are clustered at household level. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Figure 5: Predicted probabilities of PD2 and HD3 by family type, age, equivalised household income and individual income share

a. Predicted probabilities of HD3=1



b. Predicted probabilities of PD2=1



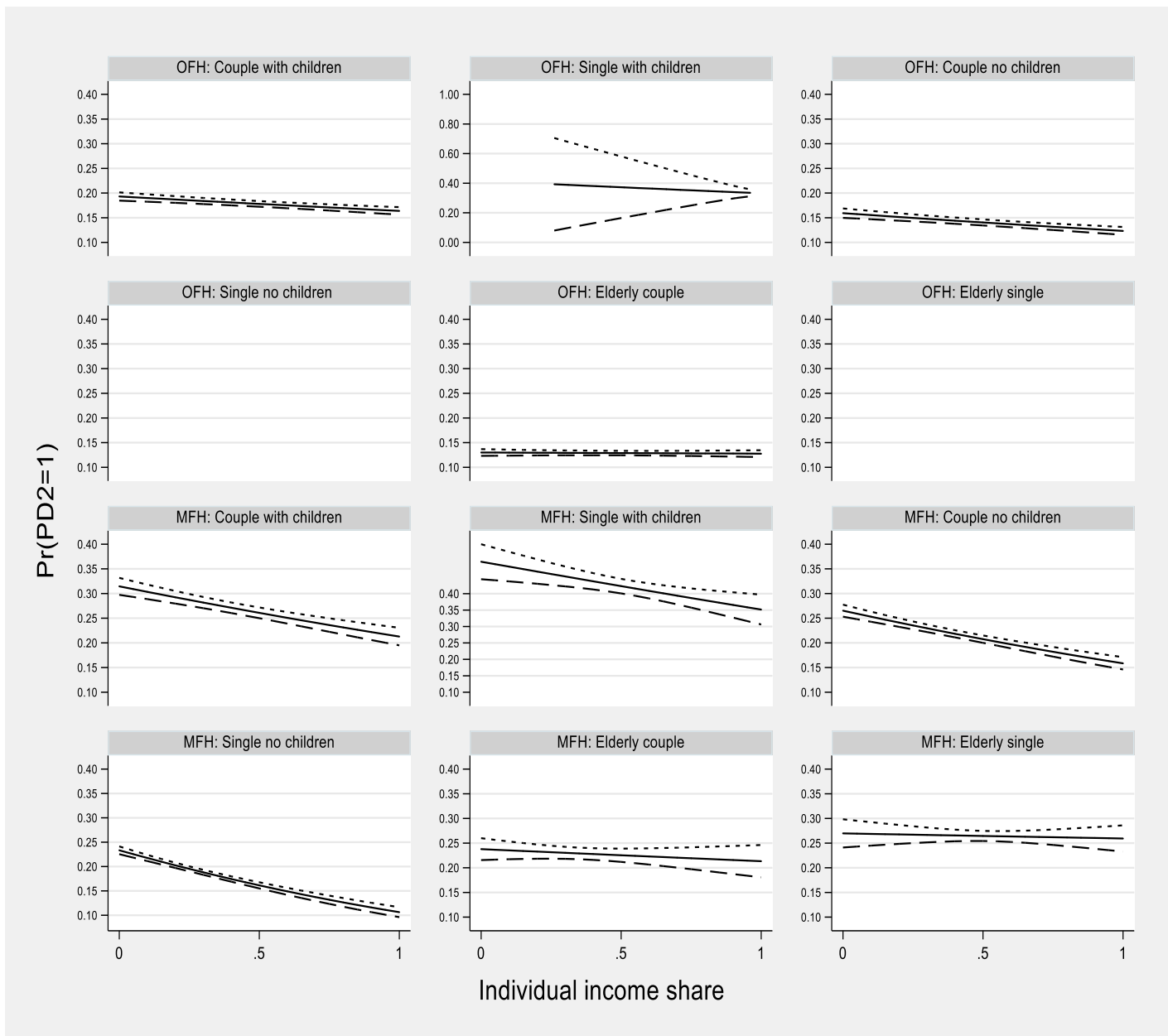
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The predicted probabilities in these graphs are calculated using the estimates in Table 4.

Table 5: Family type models: Marginal effects from probit models predicting the probability of being PD2 by family type

	Female	Log equivalised household income	Proxy resp.	Lives in owner occupied accom.	Individual is the owner of the accom.	Individual's income share	Obs.	Pseudo R-squared
One-family households								
Couple with children	0.003 (0.98)	-0.177*** (-23.90)	-0.011** (-1.98)	-0.082*** (-8.40)	-0.013* (-1.85)	-0.029*** (-5.05)	67492	0.221
Lone parents	0.155*** (6.21)	-0.198*** (-10.12)	-0.302*** (-11.57)	-0.124 (-0.55)	-0.005 (-0.02)	-0.050 (-0.24)	5951	0.150
Couple no children	0.001 (0.35)	-0.149*** (-23.68)	-0.007 (-1.04)	-0.063*** (-6.09)	-0.016** (-2.07)	-0.036*** (-5.67)	43103	0.248
Single no children	0.031*** (4.16)	-0.153*** (-22.94)	-0.084 (-0.88)	na na	na na	na na	26776	0.184
Elderly couple	0.000 (0.16)	-0.138*** (-15.47)	-0.021*** (-4.33)	-0.089*** (-9.06)	0.002 (0.45)	-0.003 (-0.51)	66095	0.220
Single elderly	0.045*** (5.95)	-0.159*** (-16.14)	-0.115*** (-2.95)	na na	na na	na na	32885	0.176
Multi-family households								
Couple with children	-0.010 (-1.64)	-0.190*** (-14.98)	-0.030*** (-3.04)	-0.109*** (-5.70)	-0.004 (-0.30)	-0.105*** (-7.10)	27011	0.218
Lone parents	0.013 (0.38)	-0.225*** (-10.28)	-0.076** (-2.56)	-0.139*** (-4.07)	-0.070** (-2.14)	-0.155*** (-3.52)	4322	0.183
Couple no children	-0.009** (-2.00)	-0.196*** (-25.78)	-0.010 (-1.39)	-0.105*** (-7.05)	-0.025*** (-2.72)	-0.110*** (-9.93)	41214	0.246
Single no children	-0.005 (-1.18)	-0.161*** (-25.07)	-0.005 (-0.97)	-0.113*** (-14.21)	0.028*** (3.73)	-0.142*** (-14.32)	72844	0.229
Elderly couple	-0.002 (-0.25)	-0.196*** (-8.19)	-0.039*** (-3.20)	-0.133*** (-4.56)	0.007 (0.61)	-0.024 (-0.92)	18789	0.190
Elderly singles	0.062*** (4.90)	-0.181*** (-10.90)	-0.095*** (-7.33)	-0.155*** (-7.61)	0.038*** (3.03)	-0.002 (-0.06)	15281	0.194

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at the household level. All models include controls for age and age square and country dummies. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively. n.a. indicates that variable not relevant for the particular type of family.

Figure 6: Predicted probabilities of the effect of income share on the probability of PD2 by family type



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The predicted probabilities in these graphs are calculated using the estimates in Table 5. OFH: one-family households. MFH: multi-family households. Solid line represent predicted probability estimates, dashed lines represent 95% confidence intervals. Income share is always 1.0 for households containing only one adult.

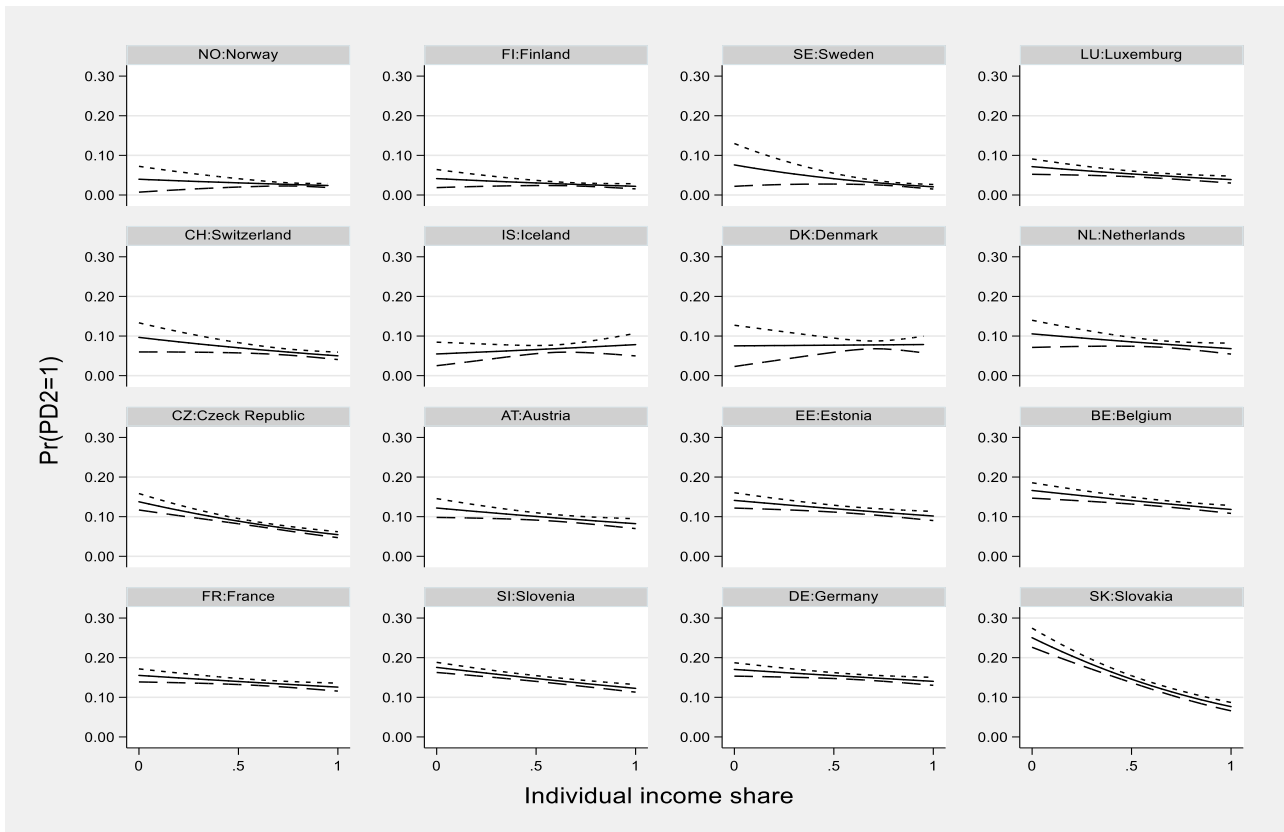
Table 6: Country-level models: Marginal effects from probit models predicting the probability of being PD2 deprived, by country

	Women		Log equivalised household income	Proxy		Live in owner occupied accommod ation		Respondent is owner of the accom.		Individual income share		Obs.	Pseudo R- square d	
BE: Belgium	-0.005	(-0.81)	-0.180***	(-12.55)	-0.024**	(-2.18)	-0.134***	(-5.90)	-0.007	(-0.45)	-0.042***	(-3.46)	10697	0.285
BG: Bulgaria	0.022***	(2.60)	-0.316***	(-29.01)	0.005	(0.33)	-0.025	(-1.18)	0.018*	(1.90)	-0.186***	(-8.37)	10348	0.153
CZ: Czech Rep.	0.004	(0.98)	-0.171***	(-14.53)	-0.010	(-1.62)	-0.057***	(-4.43)	-0.009	(-1.07)	-0.082***	(-6.80)	15154	0.219
DK: Denmark	-0.018*	(-1.81)	-0.055***	(-3.16)	-0.068***	(-5.85)	-0.046**	(-2.36)	-0.023	(-1.24)	-0.002	(-0.05)	5514	0.133
DE: Germany	0.005	(0.91)	-0.162***	(-15.83)	0.003	(0.40)	-0.073***	(-4.69)	-0.007	(-0.44)	-0.033***	(-2.87)	19505	0.155
EE: Estonia	0.005	(0.74)	-0.097***	(-12.52)	-0.053***	(-6.89)	-0.000	(-0.03)	-0.021**	(-2.50)	-0.040***	(-3.15)	11784	0.126
IE: Ireland	0.002	(0.27)	-0.145***	(-11.80)	0.027**	(2.17)	-0.078***	(-2.90)	-0.015	(-0.73)	-0.011	(-1.01)	9403	0.119
EL: Greece	-0.004	(-0.53)	-0.280***	(-30.97)	0.039*	(1.72)	-0.053***	(-3.34)	-0.010	(-0.97)	-0.061***	(-5.33)	17441	0.211
ES: Spain	0.011**	(2.02)	-0.157***	(-18.31)	-0.019***	(-2.72)	-0.095***	(-5.83)	0.015	(1.59)	-0.017**	(-2.01)	24926	0.148
FR: France	0.022***	(3.93)	-0.174***	(-14.64)	-0.017**	(-2.56)	-0.084***	(-3.91)	-0.026	(-1.34)	-0.038***	(-3.42)	19702	0.179
HR: Croatia	0.006	(0.76)	-0.200***	(-20.76)	-0.022***	(-2.60)	-0.066***	(-2.84)	0.005	(0.58)	-0.075***	(-5.26)	11285	0.174
IT: Italy	-0.017***	(-3.50)	-0.169***	(-21.73)	-0.033***	(-6.01)	-0.142***	(-11.71)	0.016**	(2.12)	-0.068***	(-8.83)	38642	0.142
CY: Cyprus	0.003	(0.30)	-0.224***	(-15.92)	0.005	(0.26)	-0.055***	(-3.42)	0.035***	(2.73)	-0.064***	(-4.31)	9588	0.166
LV: Latvia	0.023***	(2.95)	-0.273***	(-27.68)	-0.009	(-0.74)	-0.077***	(-4.57)	0.006	(0.81)	-0.191***	(-10.39)	11035	0.166
LT: Lithuania	-0.009	(-0.89)	-0.285***	(-19.83)	-0.036**	(-2.13)	-0.034	(-0.94)	0.036**	(2.05)	-0.166***	(-7.15)	9991	0.156
LU: Luxemburg	-0.005	(-1.02)	-0.077***	(-7.25)	-0.006	(-1.07)	-0.066***	(-4.98)	-0.001	(-0.06)	-0.031***	(-2.85)	7647	0.250
HU: Hungary	0.012*	(1.79)	-0.412***	(-33.41)	-0.031**	(-2.06)	-0.116***	(-5.44)	-0.012	(-0.99)	-0.105***	(-5.56)	18138	0.188
MT: Malta	-0.006	(-0.62)	-0.321***	(-22.23)	-0.006	(-0.50)	-0.118***	(-4.45)	0.018	(0.92)	-0.064***	(-4.39)	9781	0.141
NL: Netherlands	0.028***	(2.89)	-0.091***	(-7.01)	0.013	(0.30)	-0.249***	(-4.04)	0.093**	(2.34)	-0.035*	(-1.76)	9905	0.225
AT: Austria	0.010	(1.52)	-0.079***	(-9.89)	-0.018	(-1.13)	-0.072***	(-3.85)	-0.008	(-0.53)	-0.049***	(-3.24)	10558	0.132
PL: Poland	-0.003	(-0.54)	-0.194***	(-21.37)	-0.016**	(-1.98)	-0.131***	(-7.71)	0.005	(0.54)	-0.084***	(-8.44)	24270	0.138
PT: Portugal	0.026***	(4.50)	-0.190***	(-17.02)	-0.025***	(-3.28)	-0.122***	(-6.15)	0.009	(0.63)	-0.075***	(-6.55)	13972	0.152
RO: Romania	-0.016*	(-1.81)	-0.260***	(-20.31)	na	na	-0.097**	(-2.40)	-0.010	(-0.65)	-0.144***	(-6.94)	15052	0.121
SI: Slovenia	0.003	(0.69)	-0.200***	(-23.46)	-0.009	(-0.95)	-0.047***	(-4.19)	-0.005	(-0.79)	-0.053***	(-5.97)	23073	0.120
SK: Slovakia	-0.003	(-0.47)	-0.209***	(-13.38)	-0.023	(-1.25)	-0.094***	(-3.83)	0.019	(1.44)	-0.185***	(-10.59)	12732	0.152
FI: Finland	0.013***	(3.05)	-0.027***	(-5.08)	-0.004	(-0.55)	-0.034***	(-3.19)	-0.007	(-0.87)	-0.017	(-1.45)	10751	0.143
SE: Sweden	0.017***	(3.78)	-0.030***	(-6.50)	0.008	(0.49)	na	na	na	na	-0.042**	(-2.37)	5378	0.207
UK: UK	0.014***	(2.58)	-0.141***	(-15.21)	na	na	-0.142***	(-8.00)	-0.020	(-1.13)	-0.013	(-1.43)	15065	0.171
IS: Iceland	0.027***	(2.63)	-0.078***	(-5.85)	na	na	-0.055**	(-2.20)	0.014	(0.50)	0.029	(1.00)	2711	0.091
NO: Norway	0.003	(0.82)	-0.022***	(-6.17)	na	na	-0.028***	(-2.58)	-0.007	(-0.63)	-0.015	(-1.00)	6979	0.158
CH: Switzerland	0.003	(0.32)	-0.087***	(-10.26)	na	na	-0.061***	(-3.58)	-0.021	(-1.28)	-0.046**	(-2.49)	9209	0.193
RS: Serbia	0.007	(0.89)	-0.221***	(-19.01)	-0.057***	(-4.62)	-0.018	(-0.98)	-0.009	(-0.96)	-0.122***	(-9.86)	14307	0.129

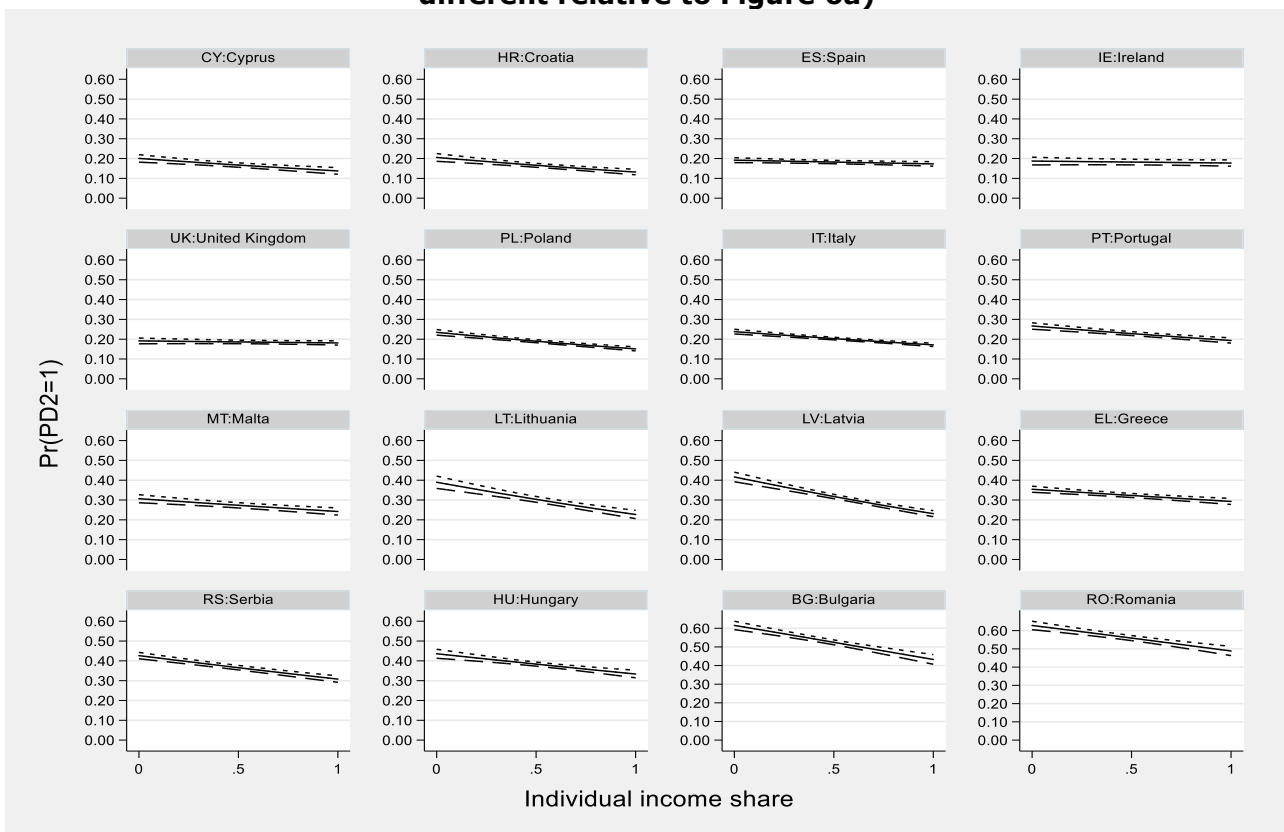
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at household level. All models include additional controls for family types. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level. * For the UK individual-level deprivation questions are recorded at the family unit level. This means that the estimates for the UK are identified from variation across family units. n.a. indicates that variable not relevant for the country.

Figure 7: Predicted probabilities of the effect of income share by country

a. Countries sorted from lowest to highest average deprivation risk



b. Countries sorted from lowest to highest average deprivation risk (y-scale is different relative to Figure 6a)



Notes: The predicted probabilities in these graphs are calculated using the estimates in **Table 6**. Source: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

Table 7: Country and family level models: Marginal effects of individual income share on the probability of being PD2 deprived

	One-family households											
	Couple with dep. children				Couple no dep. children				Elderly couple			
	ME	z-stat	Obs.	Ps. R-sq.	ME	z-stat	Obs.	Ps. R-sq.	ME	z-stat	Obs.	Ps. R-sq.
BE: Belgium	-0.043**	(-2.37)	2248	0.333	-0.005	(-0.33)	1318	0.352	-0.021	(-1.54)	1790	0.134
BG: Bulgaria	-0.082*	(-1.68)	1007	0.195	-0.085*	(-1.76)	846	0.215	-0.135***	(-2.85)	1549	0.051
CZ: Czech Rep.	-0.029*	(-1.80)	2346	0.221	-0.030*	(-1.69)	1680	0.294	-0.046*	(-1.84)	2910	0.127
DK: Denmark	-0.121	(-1.62)	937	0.185	-0.044	(-0.64)	897	0.219	-0.018	(-0.64)	1376	0.046
DE: Germany	0.006	(0.23)	3224	0.101	-0.055***	(-2.60)	3234	0.152	-0.005	(-0.27)	5085	0.147
EE: Estonia	0.027	(1.48)	1924	0.086	-0.042**	(-2.13)	1230	0.156	0.011	(0.51)	1784	0.093
IE: Ireland	-0.001	(-0.19)	2312	0.132	0.002	(0.25)	908	0.198	0.005	(1.14)	1308	0.108
EL: Greece	-0.025	(-1.24)	2803	0.257	-0.033	(-1.23)	1496	0.217	-0.018	(-0.74)	3113	0.083
ES: Spain	-0.015	(-1.04)	4564	0.201	-0.014	(-0.88)	2046	0.163	0.030**	(2.15)	3186	0.067
FR: France	-0.043**	(-2.34)	4418	0.179	-0.017	(-0.99)	2800	0.230	0.006	(0.42)	3944	0.202
HR: Croatia	-0.026	(-1.43)	1132	0.159	0.006	(0.15)	758	0.146	-0.000	(-0.00)	1594	0.150
IT: Italy	-0.037***	(-2.70)	6624	0.163	-0.056***	(-3.39)	2660	0.202	-0.021*	(-1.71)	5950	0.127
CY: Cyprus	-0.033	(-1.34)	1644	0.201	-0.104***	(-3.39)	706	0.246	-0.023	(-1.11)	1500	0.200
LV: Latvia	-0.075**	(-2.54)	1290	0.188	-0.115***	(-3.50)	960	0.252	-0.126***	(-2.67)	1414	0.119
LT: Lithuania	-0.065	(-1.34)	1036	0.193	-0.054**	(-2.21)	1232	0.219	-0.062	(-1.62)	1894	0.098
LU: Luxemburg	-0.062***	(-2.81)	1684	0.284	-0.018*	(-1.91)	960	0.307	0.005	(0.68)	924	0.156
HU: Hungary	-0.085***	(-2.70)	2588	0.179	-0.106***	(-2.79)	1906	0.223	-0.000	(-0.01)	2110	0.148
MT: Malta	-0.023	(-1.50)	1370	0.162	-0.005	(-0.39)	690	0.215	-0.014	(-0.57)	1394	0.089
NL: Netherlands	-0.011	(-0.27)	1995	0.281	-0.126***	(-4.02)	1497	0.350	0.036	(1.07)	1704	0.201
AT: Austria	-0.020	(-0.71)	1760	0.178	-0.028*	(-1.92)	1584	0.253	-0.005	(-0.39)	1762	0.090
PL: Poland	-0.043***	(-3.17)	4152	0.154	-0.033**	(-2.21)	2496	0.177	0.012	(0.62)	3282	0.118
PT: Portugal	-0.033**	(-2.00)	2310	0.165	-0.013	(-0.77)	1196	0.236	-0.013	(-0.52)	2466	0.136
RO: Romania	-0.157***	(-3.58)	1438	0.165	-0.016	(-0.63)	1775	0.104	-0.051	(-1.58)	2401	0.050
SI: Slovenia	-0.026**	(-2.01)	2910	0.085	0.001	(0.04)	1344	0.185	-0.005	(-0.35)	2494	0.116
SK: Slovakia	-0.044	(-1.63)	1544	0.111	-0.096***	(-2.87)	640	0.313	-0.050	(-0.89)	1160	0.070
FI: Finland	-0.018	(-0.83)	2087	0.208	0.033**	(2.54)	1904	0.164	-0.027	(-1.36)	2116	0.117
SE: Sweden	-0.030	(-1.09)	1063	0.268	-0.021	(-0.87)	807	0.286	-0.004	(-0.21)	1301	0.116
UK: UK	-0.001	(-0.22)	3532	0.170	0.004	(1.18)	2334	0.196	-0.007	(-0.64)	3498	0.126
IS: Iceland	0.034	(0.58)	534	0.079	0.002	(0.03)	281	0.163	0.022	(0.33)	402	0.060
NO: Norway	-0.017	(-0.74)	1423	0.206	0.003	(0.13)	1112	0.069	0.014	(1.44)	1185	0.133
CH: Switzerland	-0.075*	(-1.79)	1832	0.144	0.001	(0.07)	1446	0.336	0.025	(1.07)	1702	0.149
RS: Serbia	-0.059**	(-2.55)	1266	0.157	-0.057*	(-1.68)	688	0.165	-0.072**	(-2.13)	1074	0.112
	Multi-family households											
	Couple with dependent children				Couple no children				Elderly couple			
	ME	z-stat	Obs.	Ps. R-	ME	z-stat	Obs.	Ps. R-	ME	z-stat	Obs.	Ps. R-
BE: Belgium	-0.214***	(-2.63)	472	0.316	-0.039	(-0.91)	704	0.277	0.051	(0.86)	216	0.396
BG: Bulgaria	-0.176**	(-2.44)	873	0.151	-0.304***	(-5.03)	1334	0.163	-0.341***	(-3.13)	668	0.105
CZ: Czech Rep.	-0.152**	(-2.32)	690	0.185	-0.129***	(-2.91)	1322	0.28	-0.103	(-1.26)	494	0.094
DK: Denmark	-0.002	(-0.02)	245	0.222	-0.119	(-1.52)	274	0.235	-1.146***	(-2.92)	51	0.644
DE: Germany	-0.130*	(-1.90)	504	0.159	-0.073*	(-1.86)	1152	0.192	0.022	(0.25)	325	0.221
EE: Estonia	-0.069*	(-1.72)	896	0.095	-0.097**	(-2.21)	1084	0.124	-0.546***	(-3.63)	448	0.124
IE: Ireland	-0.044	(-0.77)	488	0.053	-0.088*	(-1.71)	436	0.14	-0.152*	(-1.87)	296	0.308
EL: Greece	-0.050	(-1.13)	861	0.179	-0.06	(-1.37)	1707	0.21	-0.037	(-0.65)	1103	0.212
ES: Spain	-0.131***	(-3.12)	1596	0.130	-0.06	(-1.60)	2522	0.156	0.026	(-0.65)	1624	0.126
FR: France	-0.097	(-1.34)	888	0.118	-0.011	(-0.24)	1030	0.286	-0.061	(-0.74)	318	0.169
HR: Croatia	-0.074	(-1.21)	1006	0.152	-0.113***	(-2.58)	1508	0.189	-0.131	(-1.58)	640	0.206
IT: Italy	-0.175***	(-4.42)	2084	0.138	-0.127***	(-4.33)	3636	0.175	-0.014	(-0.27)	2454	0.088
CY: Cyprus	-0.082	(-1.26)	900	0.163	-0.125**	(-2.48)	994	0.171	-0.029	(-0.42)	492	0.184
LV: Latvia	-0.139*	(-1.95)	642	0.152	-0.234***	(-3.29)	928	0.115	-0.345**	(-2.44)	486	0.178
LT: Lithuania	-0.141	(-1.39)	578	0.18	-0.178***	(-2.64)	972	0.202	-0.529***	(-3.43)	460	0.213
LU: Luxemburg	-0.058	(-1.38)	504	0.172	0.002	(0.05)	692	0.225	-0.007	(-0.50)	286	0.283
HU: Hungary	-0.315***	(-3.90)	1287	0.22	-0.252***	(-3.47)	2006	0.164	-0.043	(-0.31)	498	0.239
MT: Malta	-0.162**	(-2.50)	564	0.17	-0.298***	(-4.40)	1330	0.132	-0.329***	(-2.62)	646	0.077
NL: Netherlands	0.211**	(-2.15)	314	0.20	-0.178**	(-1.97)	448	0.223	na	na	na	na
AT: Austria	-0.292***	(-2.82)	500	0.114	-0.129*	(-1.82)	826	0.126	-0.074	(-0.87)	141	0.303
PL: Poland	-0.066*	(-1.76)	2124	0.107	-0.096***	(-2.70)	2450	0.101	0.093	(-1.26)	1172	0.108
PT: Portugal	-0.159***	(-2.71)	836	0.108	-0.094**	(-2.43)	1412	0.095	-0.09	(-1.17)	842	0.173
RO: Romania	-0.08	(-1.23)	1007	0.141	-0.288***	(-4.47)	1910	0.11	-0.168	(-1.07)	764	0.093
SI: Slovenia	-0.085***	(-2.70)	2172	0.129	-0.118***	(-4.73)	3942	0.099	-0.06	(-0.88)	1650	0.111
SK: Slovakia	-0.176***	(-2.93)	1112	0.226	-0.256***	(-5.55)	2022	0.193	-0.406**	(-2.14)	653	0.091
FI: Finland	0.046	(-0.68)	424	0.266	-0.055	(-1.41)	418	0.229	na	na	na	na
SE: Sweden	-0.068	(-0.89)	173	0.433	na	na	na	na	na	na	na	na
UK: UK	-0.071	(-0.70)	318	0.055	-0.102**	(-2.06)	462	0.184	-0.218*	(-1.81)	184	0.15
IS: Iceland	-0.019	(-0.21)	210	0.088	0.061	(0.89)	261	0.123	-0.067	(-0.62)	62	0.377
NO: Norway	-0.027	(-1.02)	330	0.251	na	na	na	na	na	na	na	na
CH: Switzerland	-0.255**	(-1.97)	328	0.408	0.056	(0.91)	520	0.311	na	na	na	na
RS: Serbia	-0.06	(-1.36)	2080	0.094	-0.189***	(-5.51)	2331	0.112	-0.057	(-0.97)	1410	0.104

	Lone parents				Single adults				Single elderly			
	ME	z-stat	Obs.	Pseudo R-sq.	ME	z-stat	Obs.	Pseudo R-sq.	ME	z-stat	Obs.	Pseudo R-sq.
BE: Belgium	0.063	(0.27)	118	0.231	-0.083*	(-1.83)	1556	0.289	-0.108	(-0.86)	184	0.178
BG: Bulgaria	-0.425**	(-2.18)	129	0.28	-0.320***	(-6.16)	1845	0.198	0.02	(0.18)	615	0.08
CZ: Czech Rep.	-0.365**	(-2.40)	126	0.242	-0.156***	(-4.72)	2385	0.269	-0.290***	(-2.72)	475	0.286
DK: Denmark	na	na	na	na	-0.187*	(-1.78)	435	0.2	-0.219	(-1.62)	114	0.25
DE: Germany	-0.21	(-0.54)	67	0.249	-0.154***	(-3.21)	1742	0.157	0.016	(0.15)	611	0.111
EE: Estonia	0.108	(0.8)	197	0.284	-0.074**	(-2.18)	2097	0.219	-0.192*	(-1.83)	243	0.156
IE: Ireland	-0.29	(-1.50)	157	0.088	0.067	-1.28	1498	0.065	0.041	(0.53)	652	0.13
EL: Greece	0.246	(1.36)	87	0.353	-0.206***	(-5.27)	3219	0.195	0.06	(1.1)	1252	0.125
ES: Spain	-0.161	(-1.23)	301	0.143	-0.073***	(-2.67)	5140	0.195	-0.036	(-0.29)	278	0.173
FR: France	-0.051	(-0.26)	123	0.172	-0.152***	(-3.29)	2143	0.162	-0.192***	(-2.80)	645	0.175
HR: Croatia	-0.276	(-1.42)	95	0.214	-0.121***	(-3.78)	2382	0.207	-0.021	(-0.41)	1548	0.147
IT: Italy	-0.250***	(-2.72)	249	0.202	-0.113***	(-5.26)	7500	0.167	-0.089	(-0.79)	274	0.11
CY: Cyprus	-0.471*	(-1.86)	58	0.345	-0.047	(-1.14)	2118	0.147	-0.066	(-0.73)	825	0.08
LV: Latvia	-0.308**	(-2.42)	244	0.217	-0.254***	(-5.45)	1988	0.175	-0.075	(-0.67)	498	0.12
LT: Lithuania	-0.157	(-0.88)	157	0.173	-0.296***	(-5.02)	1587	0.181	-0.086	(-1.18)	106	0.503
LU: Luxembourg	0.27	(0.54)	22	0.149	-0.032	(-1.08)	1310	0.291	-0.157	(-1.48)	798	0.164
HU: Hungary	-0.12	(-1.00)	306	0.252	-0.149***	(-3.30)	3676	0.192	-0.125	(-0.81)	367	0.072
MT: Malta	-0.323*	(-1.68)	139	0.147	-0.111**	(-2.23)	2393	0.135	na	na	na	na
NL: Netherlands	0.011	(0.04)	42	0.125	-0.001	(-0.01)	745	0.485	-0.047	(-0.39)	216	0.165
AT: Austria	0.326	(0.97)	72	0.141	-0.096	(-1.48)	1380	0.128	0.024	(0.39)	1244	0.185
PL: Poland	-0.1	(-0.79)	355	0.08	-0.263***	(-7.24)	4075	0.168	-0.118	(-1.55)	631	0.222
PT: Portugal	-0.335**	(-2.28)	199	0.253	-0.165***	(-4.77)	2435	0.163	0.269**	(2.28)	653	0.042
RO: Romania	0.023	(0.11)	99	0.125	-0.263***	(-4.95)	2640	0.155	-0.106	(-1.61)	972	0.125
SI: Slovenia	-0.004	(-0.03)	232	0.014	-0.047**	(-2.06)	6003	0.133	-0.009	(-0.09)	594	0.076
SK: Slovakia	-0.409***	(-2.64)	215	0.153	-0.276***	(-6.66)	3485	0.215	na	na	na	na
FI: Finland	na	na	na	na	0.058	(1.45)	739	0.137	na	na	na	na
SE: Sweden	0.254	(0.71)	35	0.215	-0.047	(-1.58)	310	0.171	na	na	na	na
UK: UK	-0.148	(-0.63)	88	0.074	-0.127***	(-2.91)	1071	0.151	-0.043	(-0.22)	162	0.109
IS: Iceland	0.512	(1.64)	32	0.19	-0.061	(-0.94)	403	0.157	0	(.)	21	1
NO: Norway	0.115	(0.24)	30	0.307	-0.049	(-1.46)	488	0.224	na	na	na	na
CH: Switzerland	-0.411	(-1.02)	33	0.554	-0.100*	(-1.96)	1042	0.23	0.601*	(1.85)	26	0.249
RS: Serbia	-0.399***	(-2.82)	192	0.119	-0.240***	(-6.91)	3003	0.159	-0.053	(-0.84)	1050	0.091

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at household level. All models include additional controls for proxy interview status, and household level deprivation. t-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level. OFH: one-family household. MFH: multi-family household. Some family types omitted because income share not relevant (eg single adult, single elderly OFH). n.a. indicates that sample size was too small (less than 100 obs) for reliable estimates).

Table 8: Gender differences in the effect of individual income share on the probability of being PD2 deprived

	One-family households			Multi-family households					
	Couple with dep. children	Couple no dep. children	Elderly couple	Couple with dep. children	Lone parents	Couple no dep. children	Singles	Elderly couple	Elderly single
Female	-0.005 (-0.36)	-0.015 (-1.12)	-0.006 (-0.46)	-0.011 (-0.63)	-0.051 (-0.71)	-0.030*** (-2.72)	-0.025*** (-3.72)	0.013 (0.62)	0.046 (1.45)
Ind. income share	-0.037** (-2.44)	-0.053*** (-3.68)	-0.009 (-0.66)	-0.106*** (-4.29)	-0.254** (-2.50)	-0.137*** (-7.75)	-0.179*** (-13.30)	-0.003 (-0.09)	-0.036 (-0.66)
Female*share	0.017 (0.63)	0.033 (1.30)	0.013 (0.51)	0.003 (0.06)	0.115 (1.07)	0.064** (2.14)	0.076*** (3.93)	-0.049 (-0.79)	0.039 (0.68)
Obs.	67492	43103	66095	27011	4322	41214	72844	18789	15281
Log-likelihood	-24878	-13306.9	-19967.6	-12460.3	-2401.2	-16626.0	-27570.1	-8250.0	-7138.3
Pseudo-R ²	0.221	0.248	0.220	0.218	0.183	0.246	0.230	0.190	0.194

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at household level. All models include additional controls for proxy interview status, and homeownership status, whether the individual is the owner of the accommodation, and a set of country dummies. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Table 9: Sensitivity of the effect of individual income share on PD2 risk to: income share variable defined in terms of gross purely assignable income

	ME	z-statistic	N	Log-likelihood	Pseudo-R-sq.
All	-0.044***	(-9.18)	415,848	-132802727.8	0.220
One-family households					
Couple with children	-0.012	(-1.50)	66,974	-23421469.9	0.225
Lone parents	-0.031	(-0.23)	5,401	-2658901.3	0.161
Couple no children	-0.034***	(-5.72)	42,819	-12453111.5	0.247
Singles no children	na	na	25,675	-12564180.4	0.189
Elderly couples	-0.003	(-0.56)	66,009	-14904693.4	0.222
Elderly singles	na	na	32,569	-11921409.6	0.185
Multi-family households					
Couple with children	-0.096***	(-7.23)	26,841	-9172365.6	0.214
Lone parents	-0.123***	(-3.37)	4,226	-1629259.1	0.182
Couple no children	-0.108***	(-10.33)	41,089	-12752308.0	0.245
Singles	-0.121***	(-13.31)	72,316	-22174370.8	0.233
Elderly couples	-0.026	(-1.06)	18,779	-5583162.6	0.192
Elderly singles	-0.007	(-0.33)	15,263	-4605027.0	0.198

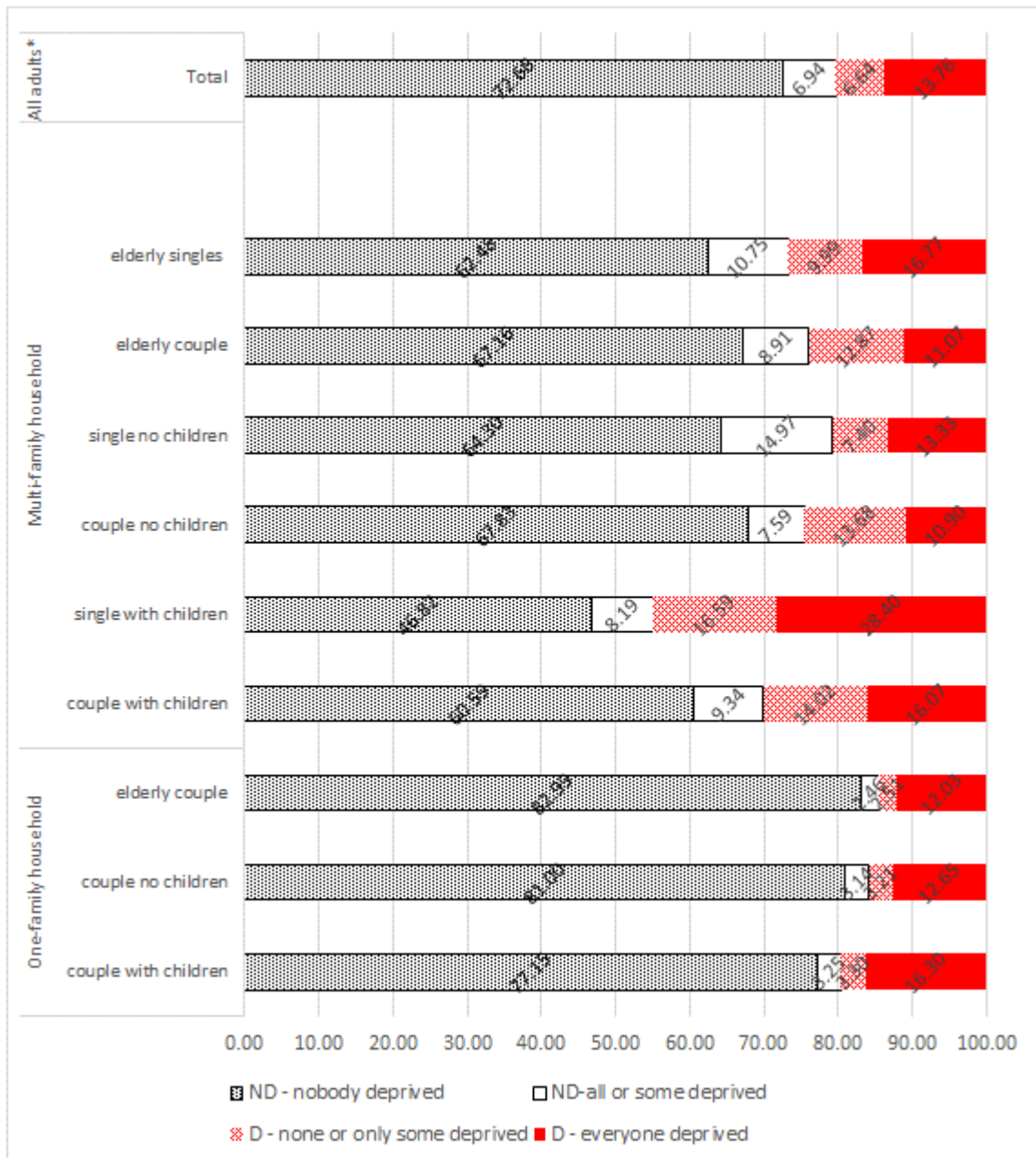
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at household level. All models include additional controls for proxy interview status, and homeownership status, whether the individual is the owner of the accommodation, and a set of country dummies. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Table 10: Sensitivity of the effect of individual income share on PD2 risk to: using detailed number of adults and number of children controls

	ME	<i>z-statistics</i>	N	Log-likelihood	Pseudo R-sq
One-family households					
Couple with children	-0.029***	<i>(-5.08)</i>	67,492	-2.48e+04	0.222
Lone parents	-0.096	<i>(-0.47)</i>	5,951	-3217.882	0.152
Couple no children	-0.036***	<i>(-5.67)</i>	43,103	-1.33e+04	0.248
Single no children	na	<i>na</i>	26776	-1.09e+04	0.184
Elderly couple	-0.003	<i>(-0.51)</i>	66,095	-2.00e+04	0.220
Single elderly	na	<i>na</i>	32,885	-1.41e+04	0.176
Multi-family households					
Couple with children	-0.097***	<i>(-6.82)</i>	27,011	-1.24e+04	0.221
Lone parents	-0.144***	<i>(-3.03)</i>	4,322	-2382.348	0.189
Couple no children	-0.105***	<i>(-9.40)</i>	41,214	-1.66e+04	0.246
Single no children	-0.163***	<i>(-16.94)</i>	72,844	-2.75e+04	0.233
Elderly couple	-0.023	<i>(-0.93)</i>	18,789	-8229.623	0.192
Elderly singles	-0.033	<i>(-1.06)</i>	15,280	-7119.698	0.197

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Standard errors are clustered at household level. All models include additional controls for proxy interview status, and homeownership status, the individual is the owner of the accommodation, and a set of country dummies. *z*-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Figure 8: Per cent of adults PD2 deprived by other household members' deprivation status and family type



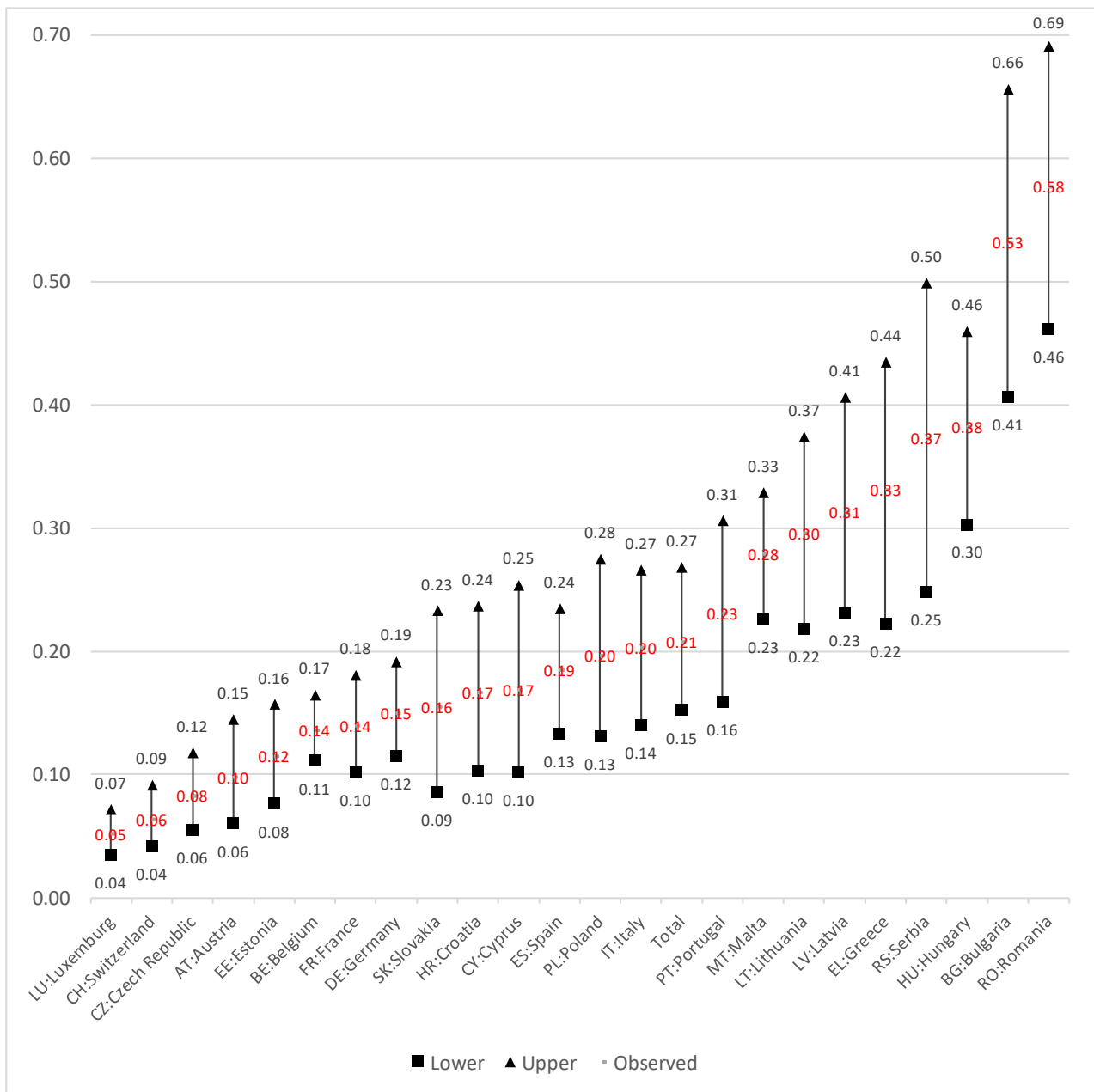
Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Excludes register countries (future version needs to exclude the UK).

Figure 9: Per cent of individuals living in household with unequal PD2 deprivation outcomes across their household members (sorted by proportion of adults in MFH – lowest to highest)



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Exclude single non-elderly and elderly adults and lone parents who live in one family household.

Figure 10: Observed and simulated PD2 risk under alternative scenario about the within-household distribution of deprivation risk



Note: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

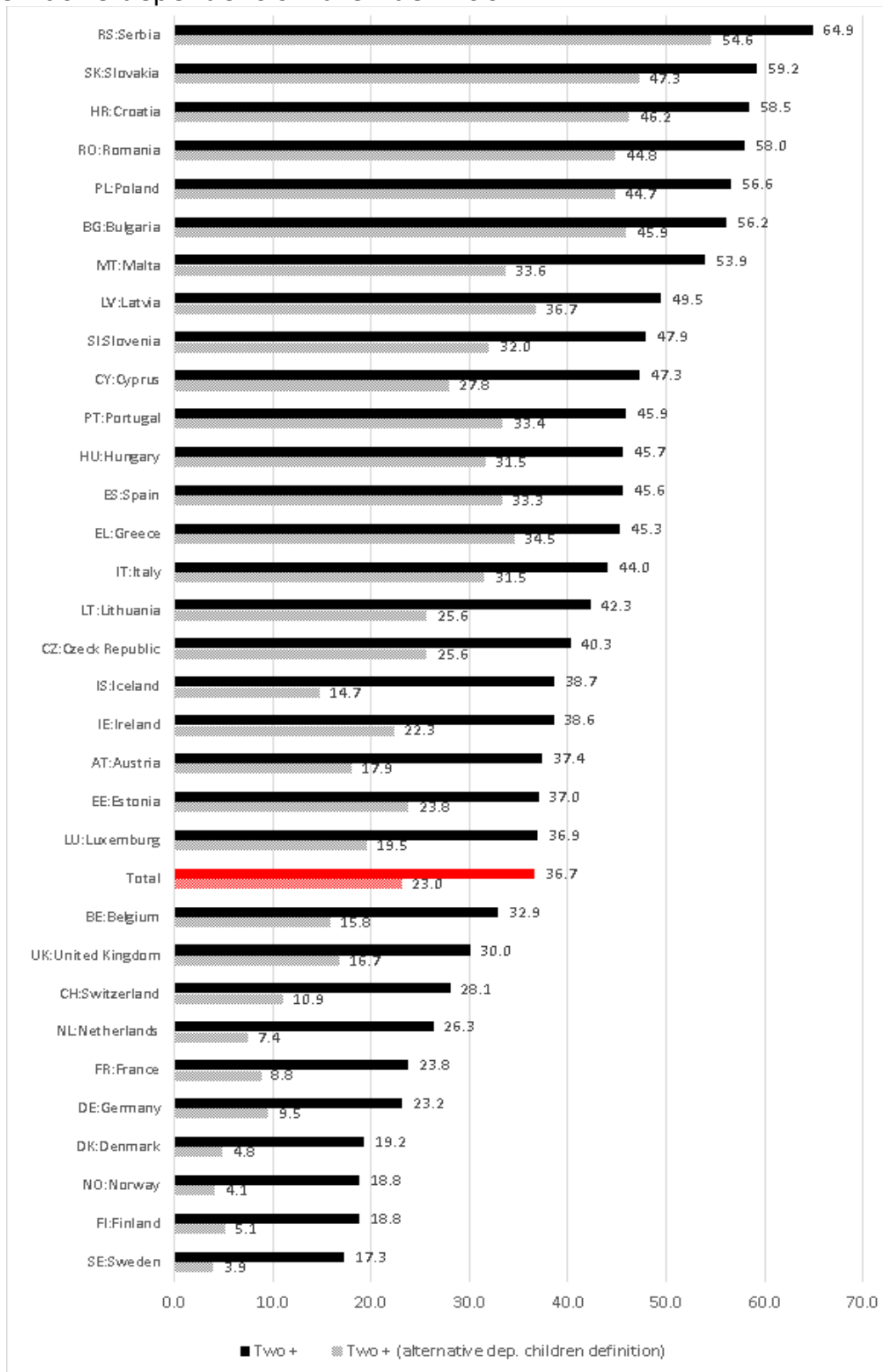
Table 11: Combined household and personal deprivation indicator based on the adjusted headcount approach

	Combined HD3 and PD2 measure based on Adjusted Headcount approach			Dimension: HD3			Dimension: PD2			% contribution of each dimension in the combined HD3/PD2 adjusted headcount measure	
	Headcount (1)	Intensity (2)	Adjusted headcount (3)	Headcount (4)	Intensity (5)	Adjusted headcount (6)	Headcount (7)	Intensity (8)	Adjusted headcount (9)	% contribution of HD3 (10)	% contribution of PD2 (11)
BE: Belgium	0.081	0.475	0.038	0.069	0.459	0.032	0.079	0.573	0.045	0.416	0.584
BG: Bulgaria	0.411	0.556	0.229	0.356	0.532	0.189	0.401	0.669	0.269	0.413	0.587
CZ: Czech Republic	0.055	0.453	0.025	0.052	0.469	0.024	0.051	0.504	0.026	0.480	0.520
DK: Denmark	0.036	0.439	0.016	0.032	0.452	0.014	0.034	0.508	0.017	0.452	0.548
DE: Germany	0.077	0.450	0.034	0.064	0.430	0.028	0.075	0.555	0.041	0.406	0.594
EE: Estonia	0.066	0.452	0.030	0.060	0.455	0.027	0.063	0.514	0.033	0.450	0.550
EL: Greece	0.197	0.436	0.086	0.193	0.497	0.096	0.179	0.423	0.076	0.558	0.442
ES: Spain	0.102	0.458	0.047	0.083	0.428	0.035	0.101	0.577	0.058	0.376	0.624
FR: France	0.074	0.464	0.034	0.062	0.430	0.027	0.073	0.574	0.042	0.391	0.609
HR: Croatia	0.118	0.473	0.056	0.112	0.488	0.054	0.111	0.514	0.057	0.486	0.514
IT: Italy	0.135	0.478	0.064	0.111	0.452	0.050	0.131	0.601	0.079	0.388	0.612
CY: Cyprus	0.107	0.429	0.046	0.102	0.451	0.046	0.102	0.451	0.046	0.500	0.500
LV: Latvia	0.207	0.485	0.101	0.190	0.495	0.094	0.199	0.538	0.107	0.468	0.532
LT: Lithuania	0.177	0.456	0.081	0.161	0.451	0.072	0.173	0.514	0.089	0.447	0.553
LU: Luxembourg	0.021	0.432	0.009	0.016	0.422	0.007	0.021	0.557	0.012	0.368	0.632
HU: Hungary	0.285	0.504	0.144	0.256	0.487	0.125	0.278	0.583	0.162	0.436	0.564
MT: Malta	0.150	0.470	0.070	0.119	0.441	0.053	0.147	0.598	0.088	0.376	0.624
NL: Netherlands	0.038	0.437	0.017	0.034	0.433	0.015	0.037	0.505	0.019	0.441	0.559
AT: Austria	0.045	0.424	0.019	0.038	0.442	0.017	0.044	0.482	0.021	0.447	0.553
PL: Poland	0.108	0.459	0.050	0.095	0.469	0.045	0.103	0.529	0.055	0.450	0.550
PT: Portugal	0.141	0.457	0.065	0.122	0.445	0.054	0.137	0.547	0.075	0.419	0.581
RO: Romania	0.409	0.513	0.210	0.311	0.475	0.148	0.404	0.673	0.272	0.352	0.648
SI: Slovenia	0.078	0.438	0.034	0.072	0.449	0.032	0.075	0.481	0.036	0.471	0.529
SK: Slovakia	0.094	0.467	0.044	0.084	0.473	0.040	0.090	0.539	0.048	0.455	0.545
FI: Finland	0.016	0.409	0.007	0.015	0.456	0.007	0.014	0.433	0.006	0.538	0.462
SE: Sweden	0.010	0.430	0.004	0.009	0.404	0.004	0.010	0.501	0.005	0.444	0.556
IS: Iceland	0.018	0.427	0.008	0.015	0.448	0.007	0.018	0.495	0.009	0.438	0.563
NO: Norway	0.013	0.423	0.005	0.012	0.464	0.005	0.012	0.487	0.006	0.455	0.545
CH: Switzerland	0.024	0.426	0.010	0.018	0.412	0.007	0.024	0.552	0.013	0.350	0.650
RS: Serbia	0.297	0.504	0.150	0.262	0.501	0.131	0.282	0.595	0.168	0.438	0.562
Total	0.119	0.479	0.057	0.100	0.462	0.046	0.116	0.586	0.068	0.404	0.596

Note: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Excludes UK and Ireland. Deprivation threshold is set to 6 (see main text).

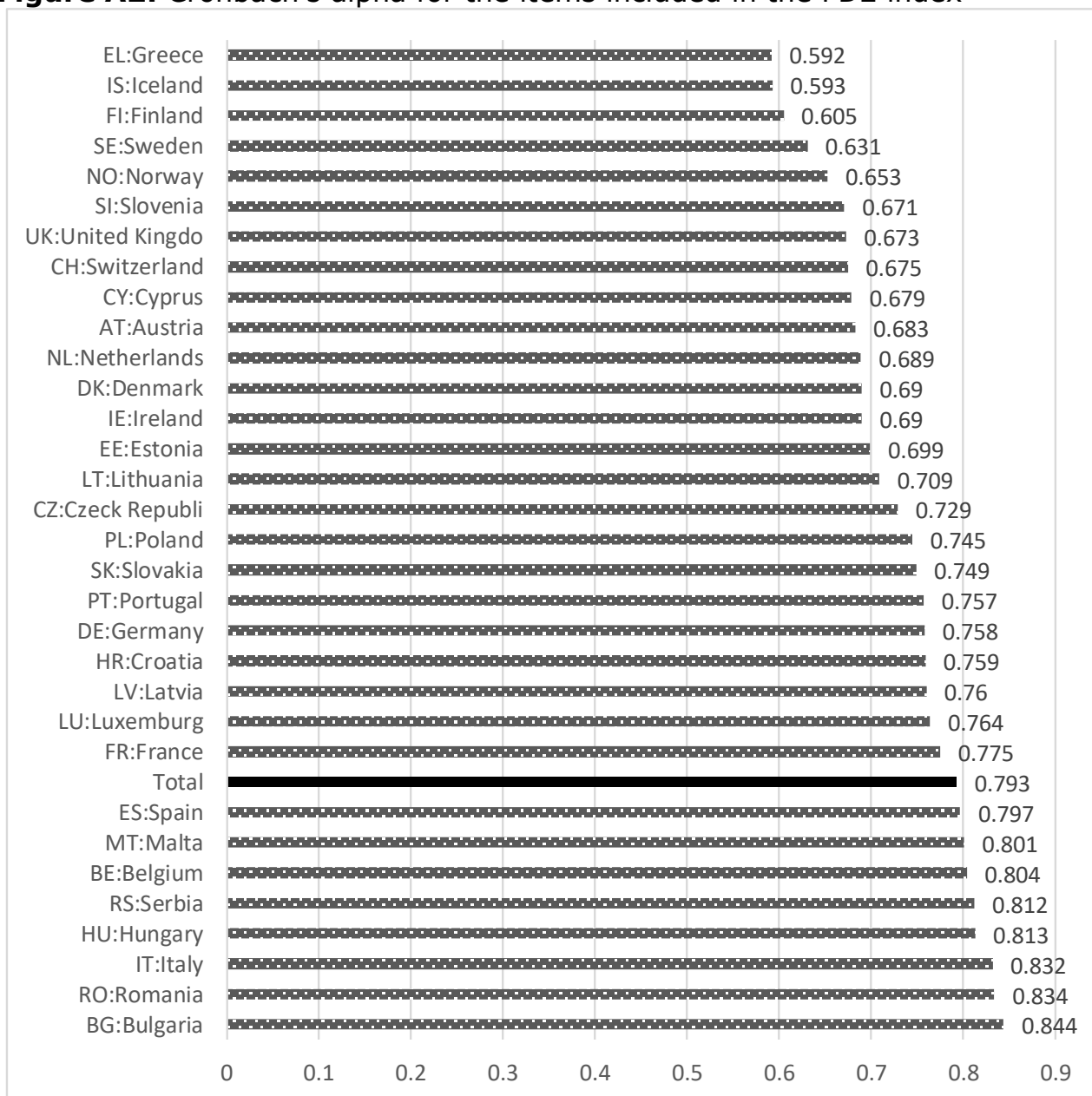
Appendix

Figure A1: Per cent of adults living in multi-family households based on baseline and alternative dependent children definition



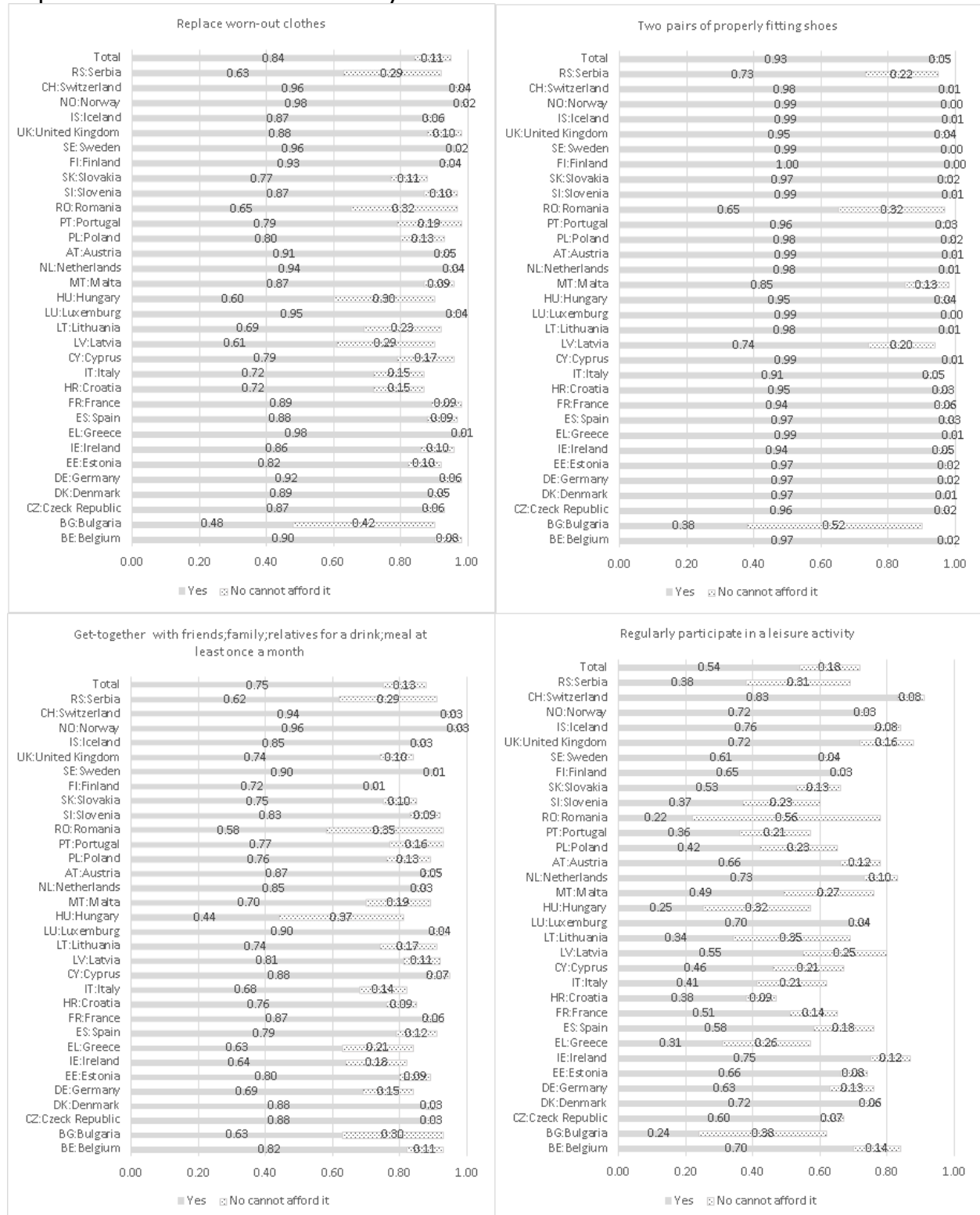
Note: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The baseline definition assumes that all people under age 18 are dependent children (unless they report employment and self-employment income). The alternative (wider) dependent children definition assumes that all people under age 24 are dependent children.

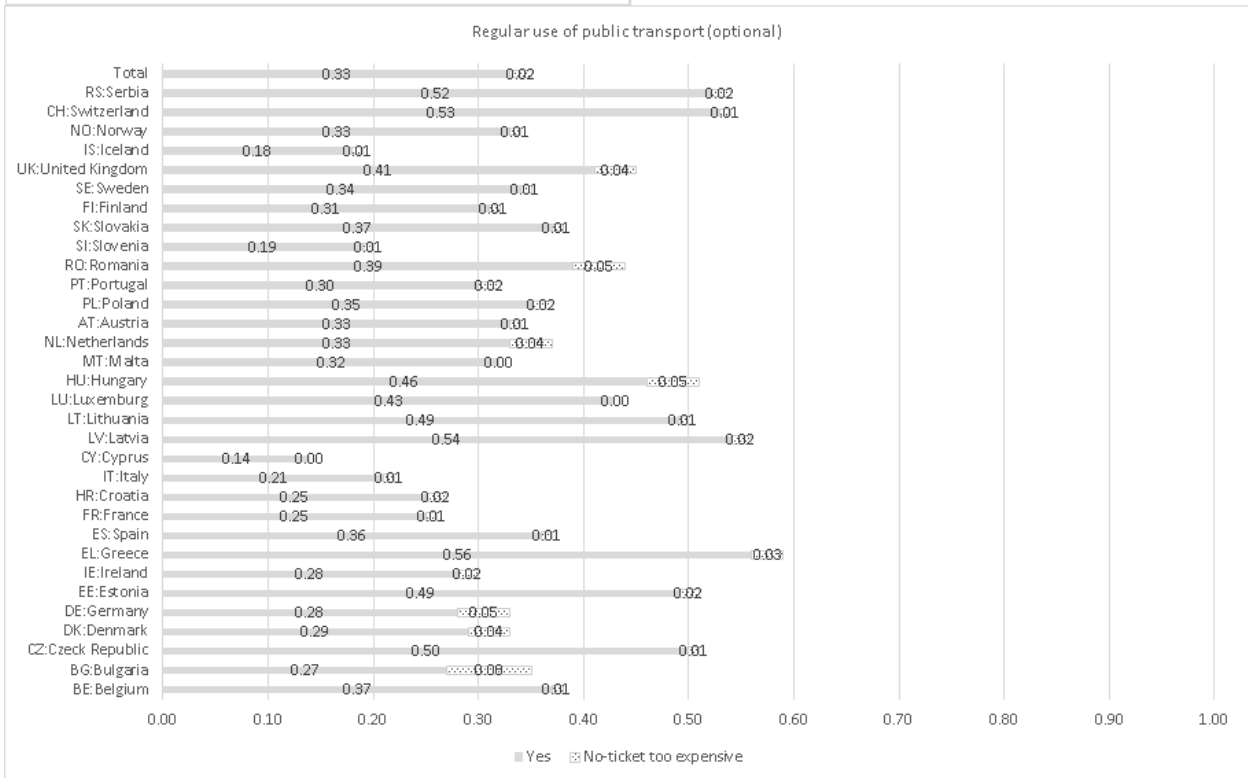
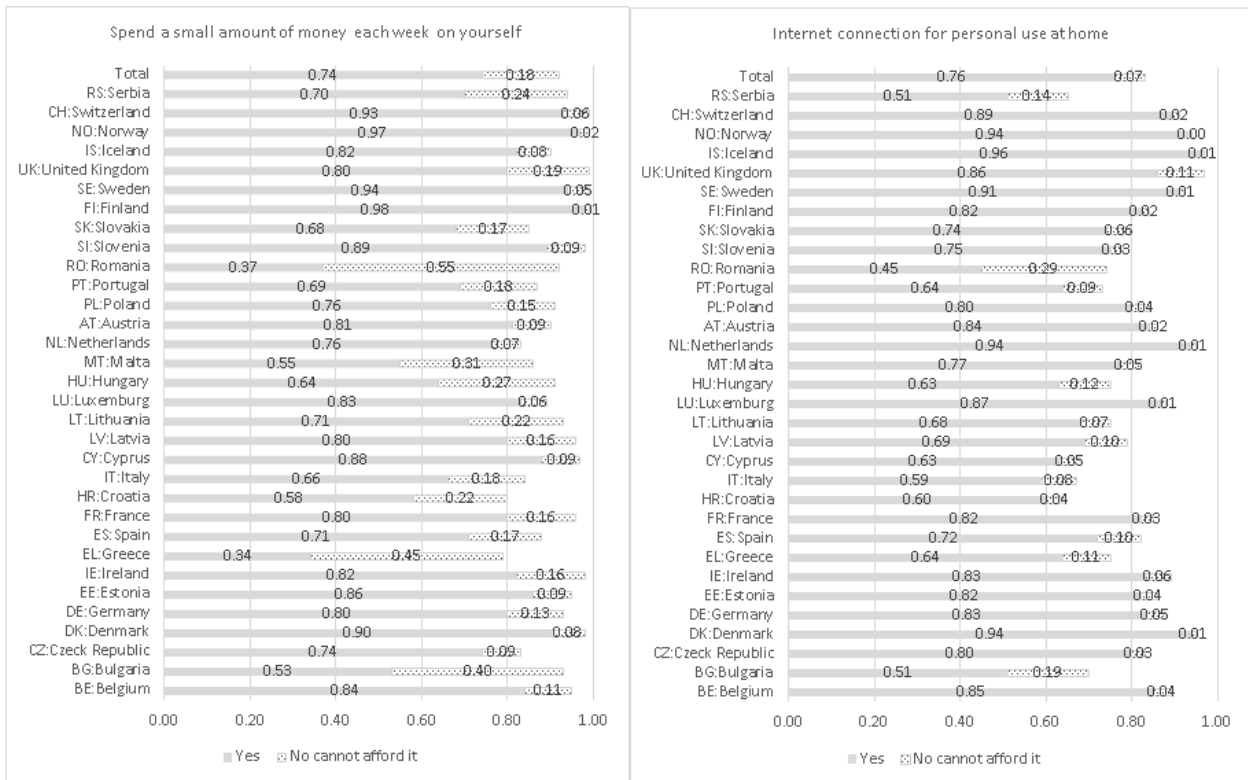
Figure A2: Cronbach's alpha for the items included in the PD2 index



Source: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

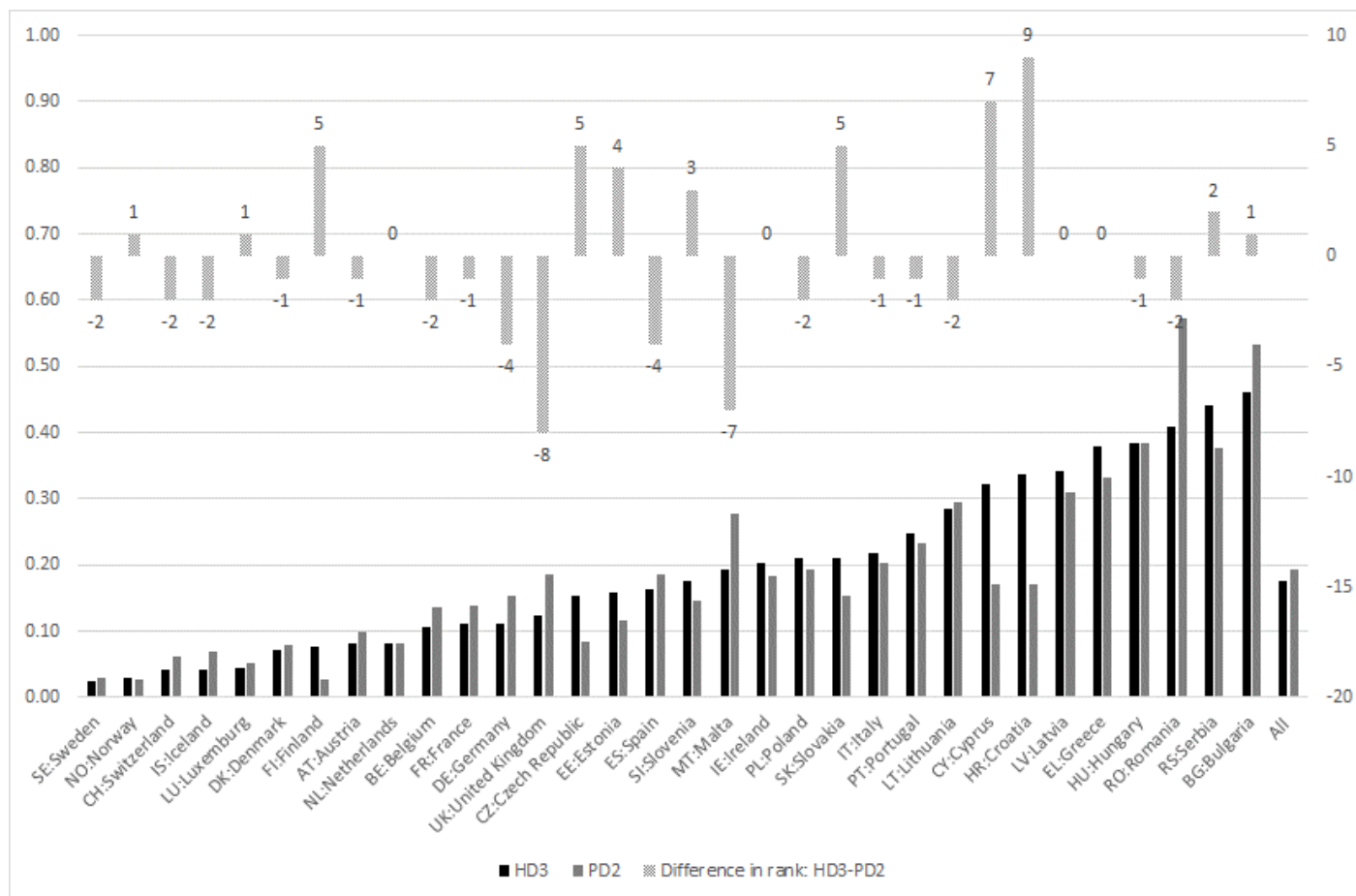
Figure A3: Proportion of people who either have or lack different adult deprivation items because they cannot afford them





Source: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16.

Figure A4: Comparison of country rankings in terms of HD3 and PD2 deprivation indicators (ordered by least HD3 deprived)



Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. Also see note in Table 2.

Table A1: The risk of deprivation among adults in terms of PD2 and HD3 by family type and by whether they live in one- or multi-family household

	One family households											
	Couple with children		Lone parents		Couple no children		Single adults		Elderly couple		Single elderly	
	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2
BE: Belgium	0.076	0.103	0.407	0.456	0.057	0.083	0.237	0.267	0.018	0.056	0.106	0.171
BG: Bulgaria	0.409	0.495	0.73	0.658	0.404	0.472	0.571	0.471	0.589	0.584	0.799	0.681
CZ: Czech Republic	0.129	0.068	0.395	0.267	0.084	0.061	0.232	0.132	0.086	0.044	0.236	0.12
DK: Denmark	0.049	0.079	0.2	0.258	0.044	0.066	0.17	0.143	0.025	0.028	0.062	0.049
DE: Germany	0.088	0.159	0.346	0.343	0.066	0.129	0.242	0.227	0.036	0.096	0.156	0.197
EE: Estonia	0.111	0.079	0.286	0.196	0.119	0.089	0.2	0.126	0.094	0.11	0.221	0.224
IE: Ireland	0.207	0.205	0.5	0.417	0.136	0.124	0.319	0.195	0.056	0.067	0.159	0.102
EL: Greece	0.343	0.38	0.547	0.545	0.325	0.349	0.43	0.104	0.296	0.298	0.423	0.092
ES: Spain	0.164	0.203	0.312	0.308	0.12	0.154	0.207	0.206	0.061	0.127	0.115	0.168
FR: France	0.089	0.126	0.338	0.367	0.073	0.096	0.194	0.193	0.037	0.074	0.123	0.178
HR: Croatia	0.297	0.146	0.52	0.325	0.272	0.17	0.418	0.205	0.25	0.173	0.388	0.244
IT: Italy	0.216	0.225	0.29	0.264	0.176	0.184	0.222	0.171	0.146	0.179	0.22	0.196
CY: Cyprus	0.292	0.196	0.666	0.461	0.263	0.156	0.292	0.162	0.18	0.113	0.302	0.131
LV: Latvia	0.222	0.226	0.502	0.397	0.268	0.29	0.439	0.405	0.296	0.332	0.512	0.441
LT: Lithuania	0.196	0.259	0.468	0.4	0.181	0.243	0.376	0.352	0.27	0.295	0.502	0.404
LU: Luxemburg	0.039	0.073	0.194	0.205	0.042	0.031	0.085	0.086	0.003	0.016	0.019	0.039
HU: Hungary	0.355	0.375	0.675	0.705	0.321	0.352	0.477	0.442	0.236	0.253	0.431	0.368
MT: Malta	0.128	0.235	0.476	0.592	0.076	0.138	0.295	0.283	0.151	0.282	0.236	0.245
NL: Netherlands	0.059	0.077	0.261	0.192	0.036	0.066	0.194	0.132	0.023	0.053	0.078	0.095
AT: Austria	0.069	0.092	0.287	0.311	0.043	0.071	0.164	0.156	0.032	0.054	0.106	0.118
PL: Poland	0.159	0.176	0.375	0.323	0.158	0.163	0.324	0.246	0.141	0.122	0.338	0.276
PT: Portugal	0.184	0.189	0.369	0.419	0.191	0.199	0.309	0.244	0.189	0.186	0.32	0.286
RO: Romania	0.342	0.51	0.596	0.688	0.361	0.476	0.461	0.495	0.361	0.577	0.583	0.698
SI: Slovenia	0.103	0.119	0.31	0.226	0.184	0.159	0.279	0.226	0.099	0.116	0.281	0.194
SK: Slovakia	0.159	0.124	0.375	0.268	0.162	0.128	0.34	0.203	0.164	0.133	0.376	0.212
FI: Finland	0.048	0.034	0.242	0.077	0.051	0.014	0.212	0.047	0.015	0.01	0.098	0.03
SE: Sweden	0.022	0.032	0.106	0.12	0.009	0.016	0.071	0.056	0.002	0.009	0.014	0.035
UK: United Kingdom	0.126	0.198	0.448	0.454	0.073	0.092	0.275	0.264	0.029	0.135	0.099	0.329
IS: Iceland	0.032	0.06	0.159	0.217	0.013	0.058	0.144	0.091	0.011	0.042	0.052	0.091
NO: Norway	0.016	0.02	0.142	0.093	0.009	0.01	0.092	0.06	0.003	0.007	0.022	0.037
CH: Switzerland	0.02	0.045	0.153	0.147	0.018	0.033	0.115	0.114	0.007	0.028	0.03	0.103
RS: Serbia	0.317	0.307	0.631	0.513	0.427	0.395	0.583	0.439	0.373	0.349	0.563	0.439
Total	0.145	0.183	0.363	0.358	0.107	0.136	0.236	0.206	0.085	0.131	0.199	0.227
	Multifamily households											
	Couple with children		Lone parents		Couple no children		Single adults		Elderly couple		Single elderly	
	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2
BE: Belgium	0.123	0.159	0.314	0.33	0.063	0.082	0.143	0.146	0.096	0.14	0.104	0.145
BG: Bulgaria	0.356	0.532	0.623	0.668	0.35	0.529	0.441	0.456	0.35	0.621	0.483	0.607
CZ: Czech Republic	0.165	0.1	0.403	0.292	0.123	0.06	0.186	0.092	0.103	0.048	0.266	0.141
DK: Denmark	0.016	0.043	0.196	0.203	0.011	0.04	0.094	0.084	0.03	0.096	0	0
DE: Germany	0.093	0.195	0.331	0.541	0.064	0.114	0.121	0.126	0.048	0.123	0.087	0.165
EE: Estonia	0.121	0.084	0.315	0.225	0.149	0.095	0.2	0.096	0.079	0.136	0.259	0.182
IE: Ireland	0.183	0.221	0.522	0.447	0.152	0.147	0.243	0.216	0.159	0.146	0.253	0.248
EL: Greece	0.498	0.503	0.662	0.628	0.405	0.44	0.421	0.342	0.336	0.319	0.407	0.289
ES: Spain	0.246	0.299	0.425	0.436	0.174	0.199	0.208	0.161	0.113	0.162	0.178	0.195
FR: France	0.131	0.169	0.34	0.401	0.065	0.109	0.168	0.156	0.092	0.13	0.129	0.166
HR: Croatia	0.312	0.167	0.488	0.282	0.322	0.169	0.376	0.14	0.344	0.165	0.395	0.207
IT: Italy	0.284	0.287	0.392	0.334	0.228	0.264	0.254	0.17	0.175	0.196	0.233	0.211
CY: Cyprus	0.381	0.226	0.56	0.264	0.387	0.209	0.388	0.143	0.321	0.178	0.34	0.162
LV: Latvia	0.327	0.288	0.49	0.42	0.212	0.244	0.379	0.279	0.291	0.329	0.413	0.334
LT: Lithuania	0.207	0.299	0.417	0.46	0.196	0.291	0.293	0.231	0.268	0.296	0.276	0.292
LU: Luxemburg	0.033	0.05	0.111	0.087	0.039	0.04	0.054	0.044	0.027	0.018	0.041	0.055
HU: Hungary	0.472	0.522	0.661	0.711	0.304	0.359	0.435	0.385	0.33	0.381	0.434	0.387
MT: Malta	0.211	0.367	0.534	0.603	0.17	0.296	0.227	0.252	0.166	0.344	0.234	0.372
NL: Netherlands	0.056	0.055	0.336	0.159	0.051	0.067	0.118	0.073	0.057	0.026	0.182	0.178
AT: Austria	0.108	0.124	0.266	0.366	0.041	0.101	0.097	0.07	0.035	0.091	0.072	0.11
PL: Poland	0.169	0.184	0.394	0.344	0.184	0.193	0.252	0.202	0.176	0.2	0.257	0.193
PT: Portugal	0.313	0.288	0.525	0.522	0.196	0.235	0.306	0.221	0.235	0.277	0.375	0.305
RO: Romania	0.459	0.656	0.574	0.805	0.35	0.575	0.447	0.532	0.319	0.613	0.447	0.679
SI: Slovenia	0.166	0.126	0.257	0.23	0.154	0.139	0.198	0.137	0.144	0.153	0.249	0.187
SK: Slovakia	0.264	0.219	0.351	0.284	0.147	0.138	0.217	0.132	0.189	0.192	0.244	0.149
FI: Finland	0.061	0.046	0.192	0.193	0.06	0.016	0.071	0.029	0.012	0.009	0.063	0.002
SE: Sweden	0.04	0.034	0.056	0.189	0.014	0.024	0.019	0.009	0.027	0	0.095	0.051
UK: United Kingdom	0.124	0.2	0.435	0.384	0.115	0.126	0.17	0.13	0.128	0.193	0.129	0.305
IS: Iceland	0.036	0.086	0.287	0.228	0.017	0.053	0.026	0.046	0.016	0.046	0.051	0.125
NO: Norway	0.028	0.018	0.123	0.123	0.003	0.003	0.026	0.024	0.014	0	0	0
CH: Switzerland	0.053	0.112	0.015	0.254	0.032	0.052	0.055	0.046	0	0.007	0	0.097
RS: Serbia	0.424	0.378	0.569	0.477	0.442	0.455	0.486	0.317	0.388	0.383	0.481	0.418
Total	0.234	0.276	0.416	0.419	0.182	0.226	0.235	0.194	0.179	0.231	0.257	0.266

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. See note in Table 2.

Table A2: The risk of deprivation among adults in terms of PD2 and HD3 by age group

	17-24		25-34		35-44		45-54		55-64		65-74		75+	
	HD3	PD3	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2	HD3	PD2
BE: Belgium	0.16	0.14	0.14	0.14	0.12	0.16	0.13	0.17	0.09	0.13	0.07	0.11	0.05	0.10
BG: Bulgaria	0.42	0.42	0.40	0.46	0.42	0.50	0.39	0.52	0.47	0.59	0.55	0.62	0.65	0.62
CZ: Czech Republic	0.19	0.07	0.15	0.08	0.15	0.09	0.16	0.10	0.14	0.09	0.16	0.08	0.16	0.07
DK: Denmark	0.15	0.13	0.09	0.11	0.09	0.11	0.05	0.07	0.05	0.06	0.03	0.03	0.05	0.03
DE: Germany	0.13	0.10	0.13	0.15	0.13	0.17	0.11	0.17	0.13	0.19	0.08	0.14	0.06	0.10
EE: Estonia	0.17	0.04	0.13	0.06	0.13	0.10	0.15	0.12	0.20	0.17	0.16	0.16	0.18	0.18
IE: Ireland	0.28	0.24	0.22	0.21	0.22	0.20	0.24	0.20	0.19	0.19	0.10	0.10	0.08	0.06
EL: Greece	0.53	0.31	0.39	0.32	0.38	0.40	0.38	0.40	0.35	0.36	0.32	0.27	0.38	0.19
ES: Spain	0.23	0.15	0.19	0.16	0.19	0.21	0.19	0.23	0.15	0.19	0.10	0.15	0.10	0.15
FR: France	0.16	0.14	0.13	0.13	0.12	0.15	0.13	0.15	0.10	0.14	0.06	0.12	0.08	0.11
HR: Croatia	0.37	0.11	0.31	0.12	0.31	0.16	0.35	0.19	0.35	0.21	0.32	0.20	0.34	0.19
IT: Italy	0.27	0.15	0.25	0.18	0.23	0.22	0.23	0.24	0.20	0.23	0.18	0.20	0.19	0.17
CY: Cyprus	0.44	0.13	0.32	0.16	0.30	0.19	0.36	0.23	0.28	0.19	0.22	0.13	0.26	0.09
LV: Latvia	0.35	0.24	0.26	0.21	0.31	0.28	0.33	0.32	0.35	0.39	0.40	0.40	0.43	0.35
LT: Lithuania	0.29	0.25	0.20	0.22	0.24	0.29	0.26	0.31	0.28	0.33	0.34	0.37	0.44	0.31
LU: Luxemburg	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.07	0.01	0.03	0.00	0.02
HU: Hungary	0.45	0.38	0.38	0.35	0.37	0.40	0.42	0.46	0.39	0.41	0.34	0.34	0.33	0.28
MT: Malta	0.23	0.25	0.17	0.24	0.19	0.27	0.19	0.28	0.20	0.35	0.17	0.28	0.19	0.26
NL: Netherlands	0.10	0.03	0.10	0.07	0.08	0.09	0.12	0.12	0.06	0.10	0.04	0.06	0.05	0.05
AT: Austria	0.12	0.06	0.09	0.10	0.10	0.12	0.08	0.12	0.08	0.13	0.06	0.07	0.05	0.06
PL: Poland	0.23	0.17	0.17	0.16	0.18	0.18	0.22	0.22	0.24	0.24	0.23	0.22	0.22	0.15
PT: Portugal	0.30	0.20	0.24	0.20	0.22	0.21	0.26	0.28	0.25	0.27	0.23	0.23	0.27	0.23
RO: Romania	0.45	0.56	0.40	0.50	0.39	0.55	0.38	0.57	0.40	0.61	0.41	0.62	0.48	0.67
SI: Slovenia	0.18	0.12	0.16	0.12	0.15	0.12	0.18	0.16	0.21	0.20	0.17	0.16	0.20	0.14
SK: Slovakia	0.25	0.15	0.18	0.12	0.19	0.14	0.21	0.16	0.20	0.18	0.23	0.18	0.31	0.16
FI: Finland	0.14	0.03	0.09	0.03	0.08	0.04	0.08	0.03	0.07	0.03	0.04	0.02	0.06	0.02
SE: Sweden	0.03	0.02	0.04	0.03	0.03	0.04	0.03	0.04	0.02	0.03	0.01	0.02	0.00	0.02
UK: United Kingdom	0.21	0.18	0.16	0.18	0.14	0.19	0.14	0.17	0.11	0.16	0.06	0.17	0.04	0.29
IS: Iceland	0.02	0.05	0.05	0.06	0.06	0.08	0.05	0.09	0.04	0.08	0.02	0.07	0.03	0.03
NO: Norway	0.06	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.02	0.02	0.01	0.02	0.00	0.01
CH: Switzerland	0.05	0.04	0.05	0.05	0.05	0.07	0.06	0.09	0.03	0.05	0.02	0.06	0.02	0.06
RS: Serbia	0.49	0.28	0.41	0.29	0.39	0.35	0.48	0.44	0.45	0.46	0.42	0.38	0.50	0.41
Total	0.22	0.16	0.19	0.18	0.18	0.21	0.18	0.21	0.17	0.21	0.14	0.18	0.15	0.18

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. See also notes in Table 2.

Table A3: The risk of deprivation among adults in terms of PD2 and HD3 by gender

	Men		Women	
	HD3	PD3	HD3	PD2
BE: Belgium	0.105	0.128	0.11	0.145
BG: Bulgaria	0.445	0.502	0.478	0.563
CZ: Czech Republic	0.135	0.068	0.172	0.099
DK: Denmark	0.071	0.085	0.072	0.071
DE: Germany	0.10	0.139	0.122	0.169
EE: Estonia	0.148	0.099	0.166	0.132
IE: Ireland	0.189	0.174	0.214	0.193
EL: Greece	0.373	0.324	0.386	0.338
ES: Spain	0.159	0.174	0.169	0.196
FR: France	0.099	0.115	0.122	0.16
HR: Croatia	0.331	0.156	0.34	0.183
IT: Italy	0.212	0.198	0.222	0.211
CY: Cyprus	0.322	0.161	0.322	0.18
LV: Latvia	0.309	0.279	0.366	0.336
LT: Lithuania	0.264	0.278	0.302	0.309
LU: Luxemburg	0.043	0.050	0.044	0.054
HU: Hungary	0.373	0.365	0.394	0.399
MT: Malta	0.186	0.261	0.198	0.294
NL: Netherlands	0.074	0.062	0.091	0.099
AT: Austria	0.074	0.083	0.09	0.113
PL: Poland	0.201	0.183	0.217	0.202
PT: Portugal	0.237	0.202	0.26	0.259
RO: Romania	0.404	0.557	0.412	0.586
SI: Slovenia	0.170	0.141	0.179	0.153
SK: Slovakia	0.203	0.143	0.219	0.164
FI: Finland	0.071	0.02	0.083	0.034
SE: Sweden	0.019	0.018	0.031	0.041
UK: United Kingdom	0.114	0.164	0.134	0.207
IS: Iceland	0.033	0.051	0.051	0.085
NO: Norway	0.026	0.023	0.035	0.029
CH: Switzerland	0.042	0.052	0.041	0.071
RS: Serbia	0.439	0.361	0.445	0.392
Total	0.166	0.178	0.184	0.208

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. See note in Table 2.

Table A4: Marginal effects from probit models predicting the probability of being PD2 deprived using an alternative individual income share measure (only assignable individual income components)

	All	One-family households						Multi-family households					
		Couple with children	Lone parents	Couple no children	Singles	Elderly couples	Elderly singles	Couple with children	Lone parents	Couple no children	Singles	Elderly couples	Elderly singles
Age	0.012*** (27.22)	-0.003 (-1.24)	0.004 (0.45)	0.011*** (4.91)	0.023*** (9.07)	-0.001 (-0.32)	0.040*** (2.70)	-0.003 (-0.76)	0.001 (0.10)	0.001 (0.21)	0.009*** (6.73)	0.002 (0.14)	0.026 (1.20)
Age square	-0.000*** (-23.09)	0.000* (1.72)	-0.000 (-0.25)	-0.000*** (-3.75)	-0.000*** (-7.18)	-0.000 (-0.19)	-0.000*** (-3.07)	0.000 (0.36)	0.000 (0.48)	0.000 (0.23)	-0.000*** (-2.93)	-0.000 (-0.33)	-0.000 (-1.35)
Women	0.006*** (3.45)	0.009** (2.06)	0.151*** (5.11)	0.001 (0.30)	0.033*** (4.48)	0.000 (0.06)	0.045*** (5.49)	-0.011* (-1.84)	0.012 (0.34)	-0.010** (-2.12)	-0.004 (-0.98)	-0.002 (-0.33)	0.064*** (4.60)
Log equivalised household income	-0.180*** (-58.32)	-0.192*** (-31.49)	-0.250*** (-12.81)	-0.152*** (-23.23)	-0.172*** (-25.83)	-0.142*** (-15.02)	-0.193*** (-17.70)	-0.194*** (-14.57)	-0.234*** (-9.96)	-0.199*** (-25.89)	-0.172*** (-28.75)	-0.203*** (-8.15)	-0.193*** (-16.11)
Individual income share	-0.044*** (-9.18)	-0.012 (-1.50)	-0.031 (-0.23)	-0.034*** (-5.72)	na na	-0.003 (-0.56)	na na	-0.096*** (-7.23)	-0.123*** (-3.37)	-0.108*** (-10.33)	-0.121*** (-13.31)	-0.026 (-1.06)	-0.007 (-0.33)
Proxy respondent	-0.018*** (-7.26)	-0.010* (-1.93)	-0.538*** (-3.99)	-0.007 (-0.95)	-0.177 (-0.89)	-0.022*** (-4.16)	-0.162** (-2.25)	-0.030*** (-2.93)	-0.071** (-2.30)	-0.011 (-1.42)	-0.006 (-1.09)	-0.042*** (-3.25)	-0.098*** (-6.93)
Lives in owner occupied accommodation	-0.092*** (-21.55)	-0.073*** (-8.49)	-0.108 (-0.54)	-0.059*** (-6.04)	-0.089*** (-10.29)	-0.078*** (-9.96)	-0.084*** (-10.55)	-0.097*** (-5.72)	-0.129*** (-3.90)	-0.095*** (-7.44)	-0.098*** (-14.48)	-0.117*** (-4.88)	-0.139*** (-7.98)
Individual is the owner of the accommodation	-0.005* (-1.79)	-0.013* (-1.78)	0.003 (0.01)	-0.015** (-1.97)	na na	0.002 (0.48)	na na	-0.005 (-0.37)	-0.073** (-2.26)	-0.025*** (-2.80)	0.025*** (3.50)	0.007 (0.55)	0.039*** (3.09)
Obs.	415848	66974	5401	42819	25675	66009	32569	26841	4226	41089	72316	18779	15263
Pseudo-R2	0.220	0.225	0.161	0.247	0.189	0.222	0.185	0.214	0.182	0.245	0.233	0.192	0.198

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The sample excludes observations with zero or negative household disposable income as well as those with obvious inconsistencies in the variables identifying household relations. It also excludes individuals with missing information on HD3 and PD2 and in any of the independent variables included in the models. Standard errors are clusters are household level. The model for the pooled sample for all countries and family types include controls for family type. Family level models include country dummies. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Table A5: Marginal effects from probit models predicting the probability of being PD2 deprived using the number of adults and number of children controls

	One family households			Multi-family households					
	Couple with children	Couple no children	Elderly couples	Couple with children	Lone parents	Couple no children	Singles	Elderly couples	Elderly singles
Age	-0.005** (-2.04)	0.011*** (5.20)	-0.001 (-0.30)	-0.001 (-0.24)	0.002 (0.25)	0.001 (0.43)	0.010*** (7.27)	0.004 (0.34)	0.032 (1.40)
Age square	0.000*** (2.72)	-0.000*** (-4.03)	-0.000 (-0.21)	0.000 (0.09)	0.000 (0.42)	-0.000 (-0.02)	-0.000*** (-3.69)	-0.000 (-0.52)	-0.000 (-1.55)
Women	0.005 (1.40)	0.001 (0.35)	0.000 (0.16)	-0.005 (-0.81)	0.015 (0.44)	-0.009* (-1.84)	-0.005 (-1.12)	-0.002 (-0.23)	0.062*** (4.45)
Log equivalised household income	-0.175*** (-22.80)	-0.149*** (-23.67)	-0.138*** (-15.44)	-0.186*** (-14.44)	-0.227*** (-10.17)	-0.193*** (-25.12)	-0.158*** (-24.35)	-0.197*** (-8.29)	-0.188*** (-10.21)
N adults=3	-	-	-	-	0.056* (1.89)	-	-0.000 (-0.00)	-	0.033** (2.40)
N adults=4	-	-	-	0.044*** (3.07)	0.105*** (2.66)	0.040*** (4.62)	0.025*** (2.79)	0.062*** (3.72)	0.072*** (3.68)
N adults=5	-	-	-	0.070*** (3.35)	0.144** (2.56)	0.093*** (6.67)	0.061*** (4.36)	0.067** (2.02)	0.034 (1.23)
N adults=6	-	-	-	0.124*** (4.80)	0.188* (1.72)	0.091*** (4.10)	0.098*** (5.12)	0.128*** (3.03)	0.143*** (2.93)
N child=1	-	-	-	-	-	0.062*** (3.68)	0.029*** (3.94)	0.037* (1.80)	0.042*** (2.62)
N child=2	0.038*** (5.80)	-	-	0.048*** (3.60)	0.109*** (4.00)	0.070*** (2.80)	0.086*** (7.71)	0.018 (0.64)	0.019 (0.79)
N child=3	0.086*** (8.87)	-	-	0.097*** (4.43)	0.029 (0.67)	0.155*** (2.73)	0.095*** (4.31)	-0.124** (-2.30)	0.058 (1.55)
N child=4	0.134*** (7.98)	-	-	0.147*** (3.82)	0.049 (0.68)	0.147* (1.81)	0.135*** (4.08)	0.059 (0.70)	-0.022 (-0.14)
N child=5	0.127*** (4.44)	-	-	0.031 (0.37)	0.089 (0.79)	0.301** (2.46)	0.117 (1.51)	0.143 (0.81)	0.156 (0.97)
N child=6	0.128** (2.30)	-	-	0.164** (2.06)	-0.002 (-0.01)	0.340*** (3.18)	0.182*** (2.74)	0.213 (1.04)	-
Individual income share	-0.029*** (-5.08)	-0.036*** (-5.67)	-0.003 (-0.51)	-0.097*** (-6.82)	-0.144*** (-3.03)	-0.105*** (-9.40)	-0.163*** (-16.94)	-0.023 (-0.93)	-0.033 (-1.06)
Proxy respondent	-0.011* (-1.94)	-0.007 (-1.03)	-0.022*** (-4.15)	-0.032*** (-3.14)	-0.079** (-2.55)	-0.010 (-1.37)	-0.003 (-0.58)	-0.041*** (-3.19)	-0.096*** (-6.59)
Lives in owner occupied accommodation	-0.076*** (-8.90)	-0.061*** (-6.29)	-0.079*** (-10.08)	-0.104*** (-6.14)	-0.135*** (-4.08)	-0.098*** (-7.70)	-0.095*** (-13.89)	-0.116*** (-4.93)	-0.134*** (-7.57)
Individual is the owner of the accommodation	-0.014* (-1.92)	-0.016** (-2.08)	0.002 (0.45)	0.001 (0.10)	-0.064* (-1.95)	-0.023*** (-2.64)	0.014* (1.95)	0.004 (0.30)	0.030** (2.34)
Obs.	67492	43103	66095	27011	4322	41214	72844	18789	15280
Log-likelihood	-2.48e+04	-1.33e+04	-2.00e+04	1.24e+04	-2382.348	-1.66e+04	-2.75e+04	-8229.623	-7119.698
Pseudo-R2	0.222	0.248	0.220	0.221	0.189	0.246	0.233	0.192	0.197

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The sample excludes observations with zero or negative household disposable income as well as those with obvious inconsistencies in the variables identifying household relations. It also excludes individuals with missing information on HD3 and PD2 and in any of the independent variables included in the models. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.

Table A6: Marginal effects from probit models predicting the probability of being PD3 (deprived of 2+ items - enforced lack measure), PD2s deprived (deprived of 2+ items - simple lack measure) and the PD3s measure (deprived of 3+ items - simple lack measure)

	PD3 (3+ threshold)		PD2s (PD2 simple lack)		PD3s (PD3 simple lack)	
	ME	Z-statistic	ME	Z-statistic	ME	Z-statistic
Age	0.009***	(25.53)	0.005***	(9.51)	0.004***	(8.37)
Age squared	-0.000***	(-21.19)	0.000***	(7.70)	0.000***	(8.05)
Female	0.002	(1.64)	0.005**	(2.26)	0.007***	(3.53)
Family type (ref. OFH: Couple with children)						
OFH: Lone parents	0.075***	(8.81)	0.082***	(8.00)	0.100***	(9.54)
OFH: Couple no children	-0.009**	(-2.09)	-0.023***	(-3.97)	-0.017***	(-2.92)
OFH: Single no children	0.013***	(2.81)	0.003	(0.54)	0.025***	(4.07)
OFH: Couple elderly people	-0.019***	(-4.24)	-0.097***	(-15.04)	-0.080***	(-13.99)
OFH: Single elderly people	0.022***	(3.59)	-0.015*	(-1.79)	-0.002	(-0.22)
MFH: Couple with children	0.007	(1.38)	-0.015**	(-2.33)	-0.009	(-1.38)
MFH: Lone parents	0.089***	(9.45)	0.078***	(6.68)	0.083***	(7.57)
MFH: Couple no children	-0.001	(-0.31)	-0.036***	(-6.32)	-0.032***	(-5.89)
MFH: Single no children	0.019***	(4.66)	-0.008	(-1.50)	0.004	(0.82)
MFH: Couple elderly people	0.006	(0.99)	-0.040***	(-4.96)	-0.033***	(-4.62)
MFH: Single elderly people	0.026***	(3.99)	0.037***	(3.74)	0.032***	(3.79)
Log equivalised household income	-0.120***	(-49.97)	-0.245***	(-63.24)	-0.204***	(-61.05)
Individual income share	-0.044***	(-16.54)	-0.089***	(-20.63)	-0.085***	(-22.33)
Proxy respondent	-0.012***	(-5.49)	-0.004	(-1.27)	-0.000	(-0.03)
Lives in owner occupied accommodation	-0.070***	(-18.69)	-0.080***	(-16.86)	-0.073***	(-16.40)
Individual is the owner the accommodation	-0.012***	(-4.79)	-0.015***	(-4.04)	-0.021***	(-6.64)
Country (ref: Belgium)	0.000	(.)	0.000	(.)	0.000	(.)
BG: Bulgaria	-0.015*	(-1.71)	0.021*	(1.83)	0.039***	(3.66)
CZ: Czech Republic	-0.134***	(-20.12)	-0.054***	(-6.68)	-0.084***	(-11.00)
DK: Denmark	-0.047***	(-4.13)	0.008	(0.72)	-0.032***	(-2.70)
DE: Germany	-0.016**	(-2.21)	0.057***	(7.79)	0.015*	(1.93)
EE: Estonia	-0.133***	(-19.39)	-0.192***	(-24.18)	-0.174***	(-23.19)
IE: Ireland	-0.008	(-0.81)	0.127***	(12.33)	0.052***	(4.99)
EL: Greece	-0.081***	(-11.30)	0.105***	(11.68)	0.039***	(4.55)
ES: Spain	-0.037***	(-5.16)	0.031***	(4.09)	0.011	(1.47)
FR: France	-0.001	(-0.09)	0.102***	(13.88)	0.043***	(5.53)
HR: Croatia	-0.129***	(-18.49)	-0.005	(-0.51)	-0.041***	(-4.62)
IT: Italy	0.009	(1.25)	0.168***	(24.23)	0.144***	(19.81)
CY: Cyprus	-0.051***	(-6.36)	0.108***	(12.53)	0.020**	(2.30)
LV: Latvia	-0.083***	(-11.28)	-0.122***	(-14.24)	-0.103***	(-12.59)
LT: Lithuania	-0.084***	(-10.69)	-0.109***	(-11.09)	-0.099***	(-11.11)
LU: Luxemburg	-0.038***	(-4.06)	0.081***	(8.28)	0.013	(1.22)
HU: Hungary	-0.037***	(-4.75)	0.020**	(2.10)	0.001	(0.12)
MT: Malta	0.043***	(4.96)	0.098***	(10.40)	0.072***	(7.71)
NL: Netherlands	-0.078***	(-9.73)	-0.018**	(-2.06)	-0.056***	(-6.17)
AT: Austria	-0.062***	(-7.52)	0.087***	(10.27)	0.018**	(2.06)
PL: Poland	-0.118***	(-17.24)	-0.139***	(-17.43)	-0.136***	(-17.95)
PT: Portugal	-0.069***	(-9.45)	0.007	(0.81)	-0.041***	(-5.01)
RO: Romania	-0.051***	(-5.70)	-0.050***	(-4.24)	-0.048***	(-4.63)
SI: Slovenia	-0.084***	(-12.27)	0.016**	(2.08)	-0.052***	(-6.96)
SK: Slovakia	-0.106***	(-14.97)	-0.043***	(-4.85)	-0.042***	(-5.04)
FI: Finland	-0.122***	(-16.52)	0.097***	(12.54)	-0.012	(-1.44)
SE: Sweden	-0.115***	(-14.71)	0.030***	(3.44)	-0.077***	(-8.86)
IS: Iceland	-0.075***	(-7.84)	0.027**	(2.57)	-0.023**	(-2.21)
NO: Norway	-0.063***	(-6.74)	0.104***	(11.99)	-0.058***	(-5.95)
CH: Switzerland	-0.033***	(-3.06)	-0.045***	(-4.28)	-0.064***	(-5.57)
RS: Serbia	-0.118***	(-16.01)	-0.183***	(-19.98)	-0.152***	(-18.09)
Observations	419626		419626		419626	
Log-likelihood	-105472839		-187661534		-159152148	
Pseudo-R-sq	0.221		0.222		0.247	

Notes: Authors' calculations based on 2014 EU-SILC cross-sectional data UDB ver. 2014-2 1-8-16. The sample excludes observations with zero or negative household disposable income as well as those with obvious inconsistencies in the variables identifying household relations. It also excludes individuals with missing information on HD3 and PD2 and in any of the independent variables included in the models. Standard errors are clustered at household level. z-statistics in parentheses. *, **, ***, indicate statistical significance at 10, 5 and 1 percent level respectively.