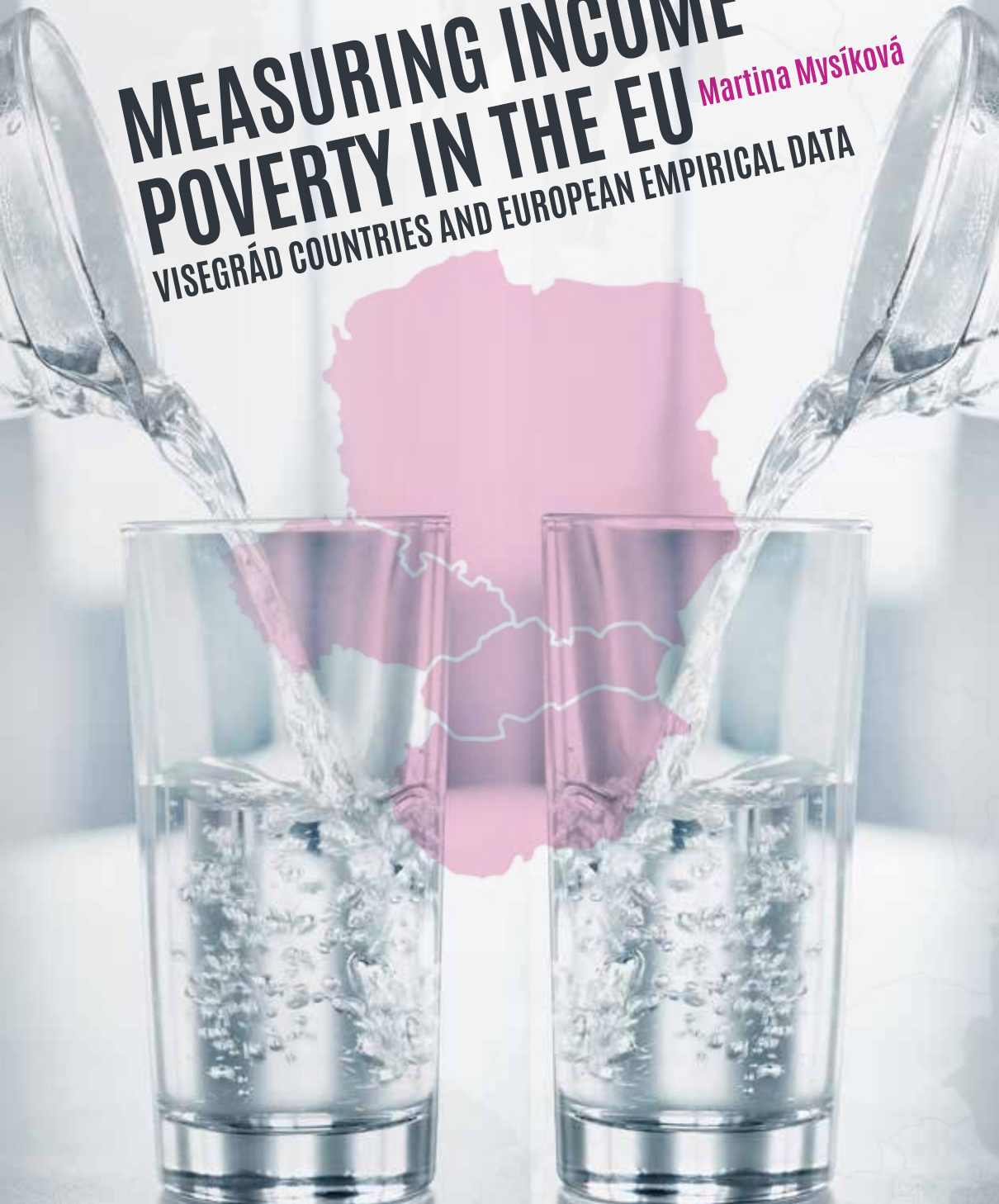


MEASURING INCOME POVERTY IN THE EU

Martina Mysíková

VISEGRÁD COUNTRIES AND EUROPEAN EMPIRICAL DATA



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Institute of Sociology
Czech Academy of Sciences

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Martina Mysíková

Prague 2021

Institute of Sociology of the Czech Academy of Sciences

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Methodology and reality of poverty: Czech Republic in the European context.

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Preface

This book builds on research articles which were mostly written as team projects. Some have been published, and others are forthcoming. In this book, I try to expand the topic somewhat, to devote more space to detailed descriptions of income poverty and related measures, to analyses and explanations, to updates and extensions of the results, to apply longer time periods, and, generally, to share considerations, findings, and ideas that were too extensive to be squeezed into articles.

The previous work on this project (published, accepted for publication, and under review at this time) includes about ten papers related either methodologically or empirically to income poverty, equivalence scales, subjective poverty, and material deprivation. An early paper *On the measurement of the income poverty rate: The equivalence scale across Europe* mainly expressed our motivation to analyse the methodologies used to measure income poverty, and provided some basic statistics and computations. We argued that the equivalence scale which has long been used to measure comparable or equivalised income is outdated today, and may be inappropriate for some EU countries. I was surprised at how positive the referees' comments were on this paper. The two anonymous referees bolstered my belief that reopening the question of how we measure equivalised income and income poverty in the EU really matters.

I admit that this book favours Czechia slightly more than other Visegrád countries in terms of its interpretive detail. The first, and quite obvious reason, is that I am Czech. But secondly, and more relevantly to the research, I maintain that Czechia is a very useful country in which to study the secrets of the relative income poverty rate, as it has consistently the lowest income poverty rate indicator in the EU. This fact raises questions from journalists and the public, but supports the work of policy makers. Each year, when the Czech Statistical Office releases new figures on the income poverty indicators, the media comments as if a 0.5 percentage point change means that something serious has occurred. In this book, I intend to reveal the secret: that a slight change in the methodology of measuring income poverty can cause much greater changes in the income poverty rate, especially in Czechia.

Introduction

Almost every country in the world today employs some type of social policies to fight poverty and to try to ensure that citizens have access to necessities. In poor and developing countries the main focus may be on provision of food, shelter, and drinking water, while the social policies of richer countries often focus on achieving higher living standards, beyond basic survival requirements. However, there is no standard methodology to guide how governments should determine what people need, what will increase their well-being, and what the poor lack to achieve sufficient living conditions. Well-being is a subjective and multidimensional concept, and while we can utilise various indices to measure particular dimensions of well-being, no indicator that captures all of its dimensions exists.

Firstly, well-being itself is not directly and easily measurable. We can measure people's income, consumption, and expenditures, and we can assess the value of their material goods. Though it is generally agreed that income is not the only thing that contributes to welfare, we can assume that consumption, expenditures, and acquisition of material goods are related to income. Income therefore serves as a basic instrument to measure well-being, and poverty indicators are derived from it. Second, because survey data on income is widely available and generally clear and easily quantifiable, it is the most often used poverty indicator. How well income alone describes people's economic well-being depends on how it is measured, how complex and exhaustive the income sources included are, and, last but not least, on the methodology applied to construct the indicator. In this book, we focus on the economic dimension of well-being in terms of income poverty.

Income poverty can be measured in both absolute and relative terms. Absolute poverty uses a fixed poverty line of some certain amount; people living on less are considered poor. For example the US applies a set of 48 income poverty thresholds that vary by family size and composition to determine who is living in poverty, updated for inflation (Semega et al., 2020). The official poverty thresholds do not vary geographically across U.S. states. Extreme poverty, defined by the World Bank as living on less than 1.90 USD (PPP 2011) per person per day, is an example of an absolute income poverty measure. A single international absolute poverty line is set regardless of the general level of welfare in a country, however, the idea that absolute poverty lines should ideally differ by country and region, depending on local conditions, has spurred debate. The extreme absolute poverty concept is applied mainly to poor and developing countries. Applying the World Bank extreme poverty line in the EU would clearly result in very low poverty rates (where the highest

extreme poverty rates were 3.1% in RO and 1.4% in BG in 2017¹). Therefore, the European Commission (2011, p. 24, 29) considers absolute poverty lines to have little relevance in European countries.

The concept of relative income poverty is typically applied in rich and developed countries, such as the European region. The poverty line is derived from income distribution within a country, based on the median national disposable income, and so it varies each year and across countries. The idea is to capture not only those who lack basic survival needs, but to assess people's welfare in relation to a common living standard in the society (Hagenaars and van Praag, 1985). Though the same goals can be achieved using the absolute concept with poverty lines varying across countries, the EU has adopted a relative concept to calculate the official statistics of its members. The relative income poverty indicator applied in the EU is the *at-risk-of-poverty rate* and includes people whose equivalised income falls below the poverty line, which is set at 60% of the national median equivalised income. Chapter 1 of this book is devoted to the at-risk-of-poverty rate, also termed the *income poverty rate* throughout the book. After presenting the measurement methodology in more detail, along with basic statistics and trends in the poverty lines and rates, we focus on the characteristics of those who have been identified as poor (Subchapter 1.1.1).

Setting the relative income poverty line as a percentage of median income is the final methodological step in constructing the income poverty rate. The rate resembles an income inequality indicator rather than a poverty indicator and depends on income distribution in the society. If the income of many people is close to the national poverty line, whether it is higher or lower, the income poverty rate will be highly sensitive to the definition of the poverty line. In some countries, income poverty may be relatively low statistically, but a high percentage of people's equivalised income may be clustered just above the official poverty line. With this income distribution pattern, a definition that sets the poverty line higher will push these persons below the poverty line, leading to potentially significant boosts in the poverty rate. Generally, the high sensitivity of the income poverty rate to the methodology used in its construction weakens the information the rate conveys about the population at which social policies need to be targeted. We discuss the effects the poverty line can have in Subchapter 1.1.2.

As noted, income alone does not capture all aspects of poverty. Alternative poverty measurement instruments are used to quantify various forms of deprivation. In the broader Sen view (Sen, 1987), welfare is not best measured by commodities possessed, but by people's *capabilities to function*, and

2 ¹ World Bank database, World Development Indicators.

income is an inconclusive factor in such a measure. Deprivation can include exclusion from various activities, including employment, or a perceived lack of opportunities for future progress (Ravallion, 2016, pp. 139–141). In a narrower and more concrete sense, deprivation can be measured in material terms, for instance by a defined set of common goods and services that poor people cannot afford. The European concept has recently been extended to include measures of deprivation and social exclusion: material deprivation and low work intensity. The broader European concept of poverty and social exclusion is described in Chapter 1.2.

The absolute or relative measurement of an income poverty concept is not the only issue to be considered. Another aspect is how accurate and exhaustive the data collected is. Microdata including numerous characteristics of households and of household members are needed for accurate poverty measurements. In order to target social policies efficiently, we are not only interested in how many people are at risk of poverty in a country, but also in who they are, in their characteristics, and in the compositions of their families. The data used to determine official poverty indicators in the EU are from the Statistics on Income and Living Conditions (EU-SILC), which has been collected in all EU member states since 2005, and harmonised by Eurostat. The survey includes detailed information on various income sources of all members of a household to derive total household income. Chapter 2 introduces these data in more detail and discusses limitations relevant for measuring income poverty. Before turning to methodological issues, Chapter 2.2 describes another source of EU microdata, the Household Budget Survey (HBS), which collects data on consumption expenditures in special diaries filled in by households. Expenditures do not enter the construction of the income poverty indicator, but can be used for analyses when deriving (or revising, as this book does) the methodology used to compute the income poverty indicator.

Constructing an income poverty indicator requires several assumptions and decisions to be made on the methodological steps to be taken. First, the income compared across households must be transformed into equivalent units. Ideally, we should not simply compare total household income, as households differ by sizes and resources per household member. Income per capita, i.e., total household income divided by the number of household members, is also not preferred, as different composition of a household influences how the total household income can be utilised. Therefore, equivalised income is usually used in income poverty indicators. The logic is that shared living provides economies of scale for household members, and household members are not considered to have equal weights in total household consumption. A wide range of possible equivalence scales exist to guide adjustments of total household incomes,

some distinguishing between adult and child members (Buhmann et al., 1988). In Europe, an equivalence scale derived in the 1990s has been officially applied to all countries through today (2021). The unanswered question raised by the authors of the current equivalence scale (Hagenaars et al., 1994) – whether the same equivalence scale should be used for all countries or whether a common methodology to derive a national equivalence scale should be used – seems to have sunk into oblivion.

Economies of scale depend on consumption structures in particular countries and can change over time, for instance, with the general long-term trend of decreasing shares of household budgets spent on food in the EU (Dennis and Guio, 2004). Consumption structures may differ significantly across countries, even within the EU (Mysíková and Želinský, 2019), and due to changes in the consumption structure, economies of scale may also change in time even in a country. The cross-time and cross-country uniformity of the equivalence scale applied in the EU thus lacks justification. The equivalence scale applied determines the ranking of people's equivalised income within a society, and thus informs the relative income poverty line. The resulting income poverty rate is highly sensitive to the equivalence scale in some countries, but is much less sensitive in others (Mysíková and Želinský, 2019). Chapter 3 discusses this sensitivity and evaluates the appropriateness of the current equivalence scale by estimating the scales under various approaches. Given the availability of comparative data, we apply two approaches to estimate equivalence scales: the expenditure-based approach (Chapter 3.2), which is considered an *objective* approach in contrast to the second, *subjective* approach, which is built on subjective expressions of households about the minimum income they feel that they need to make ends meet (Chapter 3.3).

If the poverty rate changes substantially in response to a slight change in the equivalence scale, the resulting figure has low information value. Each methodological step can influence the robustness of the indicator. A good income poverty indicator should be insensitive to the methodology of its construction if it is to provide reliable views of poverty trends over time and to allow international comparisons. The current indicator has been used for decades, and we aim to revise the methodology to refresh the information value of the indicator. The last section of Chapter 3 shows how income poverty and the rates for population subgroups are affected when updated country-specific equivalence scales are applied.

The at-risk-of-poverty (AROP) indicator has numerous drawbacks. A frequent critique highlights that, given its relativity, it measures income inequality at the bottom of the income distribution, rather than poverty (Fahey, 2007). Indeed, an increase of the income of the middle group is sufficient to increase the

median income, the poverty line, and thus the poverty rate, even if the income levels of lower-income groups do not change at all. Also, when all incomes grow or decline in the same proportion, the relative income poverty rate remains the same. Further, low levels of income poverty lines in some countries still do not ensure that persons with income at the line enjoy a sufficient standard of living (Förster, 2005).

In general, there are a variety of concepts and approaches for measuring (income) poverty that can at least complement – if not supplant – the AROP rate applied in the EU. Along these lines, Ravallion and Chen (2011) introduced the term *weakly relative poverty line*, which combines relative and absolute features. Penne et al. (2016) introduced *reference budgets* as a valuable complementary indicator, with the advantage that “*reference budgets do not depend on the national median income, but try to empirically assess the level of income that is needed at the minimum for adequate social participation*” (p. 8).

We examine another concept which could be used to supplement the official *objective* approach: subjective income poverty indicators. Subjective measures have taken a back seat in recent decades and have not been considered in official statistics. Chapter 4 updates and extends subjective approaches developed in the 1970s. Subjective approaches utilise people’s self-assessments of their living conditions. For instance, respondents are asked what minimum income their household needs and about any difficulties making ends meet. The advantage of a subjective approach is that it considers dimensions income alone cannot capture, such as necessary costs and liabilities. People themselves should be able to evaluate their financial condition better than any external agent. However, we acknowledge that subjective approaches are often criticised for their subjective nature *per se*, as different people can value similar things very differently, and subjective data reflect their personal wishes and desires.

This book deals with the methodology used to formulate the current official EU income poverty indicator, analyses how it fits current national conditions across the EU, and compares it to alternative approaches and indicators, to discuss the actual information value the current indicator provides. The book focuses on the Visegrád countries (V4), which include Czechia (CZ), Hungary (HU), Poland (PL), and Slovakia (SK). These countries are linked by their shared histories and geographical proximity. Further, the V4 (and other Eastern European countries) all adopted the at-risk-of-poverty rate measure and its methodology after joining the EU in 2004 (or later), regardless of its appropriateness for their local conditions. Concerns remain about the fit of the measure, which was developed during the 1980s and 1990s. Research in that period was driven by leading

Western European and other market-oriented OECD countries. The fact that V4 countries simply embraced the income poverty rate measurement tailored to Western European countries was the main motivation for the examination of its methodology and empirics in this book.

Each chapter is also supplemented by European appendices with tables of main estimates and statistics to illuminate the situation of the Visegrád countries in the European context. Where possible, annual trends in statistics and estimation results are presented, while some of the more detailed statistics and estimation results are shown in six-year increments for 2006, 2012, and 2018. The topic of income poverty is interesting to a wide public audience, though the methodology and meanings of the indicator can sometimes be challenging for laypersons to follow. Income poverty is also highly relevant to politicians, who should better understand what it measures in order to target social policies more efficiently.

Chapter 1: Measuring poverty in Europe

Income alone does not capture all dimensions of poverty. Varying concepts of welfare and approaches to measuring it exist, and differ in terms of what factors are considered and the importance assigned to a person's subjective evaluation of her/his welfare (Ravallion, 2016). Welfare can be conceived as deprivation, in the narrow sense of someone's being inadequately nourished, clothed, and sheltered, in the sense of material deprivation due to inability to afford goods and services considered common in a society, or deprivation in the broader sense of Sen's *capability to function* (Sen, 1985, 1987, 1992), where poverty means a lack of capability. Boarini and d'Ercole (2006) distinguish two different dimensions in approaches to poverty measurement: first, they delineate monetary or non-monetary considerations, and second, whether it refers to *inputs* or *outcomes*. Income poverty is an input-based monetary measure, while access to employment is an example of an input-based non-monetary measurement. Material deprivation can be classified as an outcome-based non-monetary measure.

The European concept of poverty has considered income poverty in relative terms. The at-risk-of-poverty (AROP) rate is defined as the share of people whose equivalised income falls below 60% of the national median. The relative concept ensures that income poverty lines differ across countries, so that they capture the common standard of living in each society. At the aggregated EU level, the percentage of persons experiencing income poverty ranged between 16% in 2005 to 17% in 2018, about 73 to 86 million people.²

However, the living standard and absolute income levels inevitably differ across EU countries, with particularly noticeable variations as Eastern European countries joined the EU. To overcome this drawback, the relative income poverty concept has been supplemented by non-monetary but *objective* indicators of deprivation and exclusion (Förster et al., 2004). In addition to income poverty, the composite *at-risk-of-poverty-or-social-exclusion* (AROPE) indicator considers two additional dimensions: material deprivation and low work intensity. The AROP and AROPE indicators should be considered separately, as AROP includes only one of the three dimensions of AROPE. The AROPE rate dropped from 24% in 2008 to 22% in 2018 at the European level (from 116 to 110 million people).³

As a starting point, this chapter considers relative income poverty. Using EU-SILC data, we derive AROP rates using various characteristics of people, and

² Eurostat database, variable ilc_li02 (extracted on 7.1.2020). EU including the number of member countries at the time.

³ Eurostat database, variable ilc_peps01 (extracted on 3.11.2020). EU including the number of member countries at the time.

discuss the income distribution around the poverty line. Methodological issues with the income poverty indicator, specifically the definition of equivalised income applied to construction of the AROP rate, are challenged in Chapter 3. The main focus of this book is devoted to the AROP; however, as it treats the composite AROPE indicator, the other two components, material deprivation and low work intensity, are addressed in Chapter 1.2.

1.1 At risk of (income) poverty

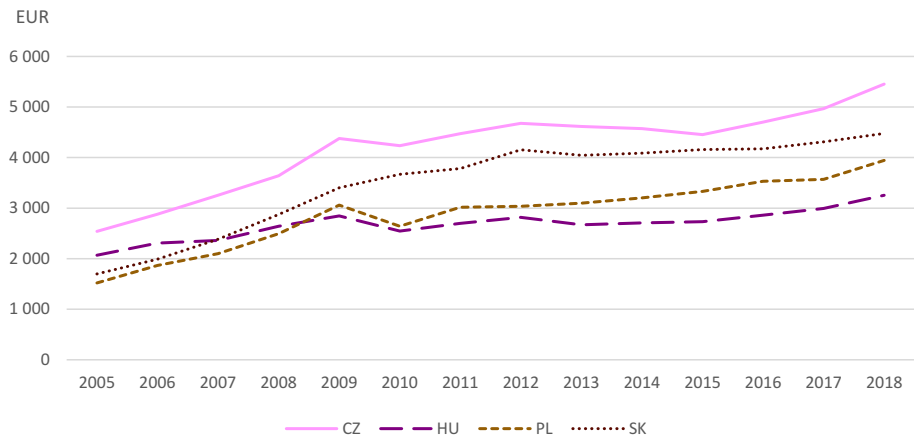
The relativity of the AROP rate, which allows for varying national poverty lines, is aimed to ensure a degree of international comparability taking into consideration different national conditions that would not be achieved by applying a single absolute poverty line across all countries. Using an absolute poverty threshold would capture cross-country differences in economic performance and wage and income levels, but would report little about actual income poverty as it relates to the common standard of living inside countries.

The relative poverty line depends on income level and distribution in a particular country, which are influenced by economic cycles and by changes in income at an individual level each year. Long-term trends in AROP rates should be accompanied by observations of changes in the poverty line in each country. However, the international comparability of the relative AROP is also limited, as the poverty lines represent large cross-country differences in living standards. Goedemé et al. (2019) apply the concept of reference budgets, i.e., the cost of baskets of goods and services that are essential for participating fully in a society. They showed that, while a decent living standard can be achieved at the AROP lines in richer EU countries, the incomes corresponding to AROP lines barely allow for adequate food and housing in the poorest EU countries.

In EU data, poverty lines in EUR are increasing over time, reflecting the growth of nominal income levels (Figure 1.1a; see Table A.1.1a for all EU countries), with the exception of 2010 during the global financial crisis. For the sake of better comparability and to reflect the differences in purchasing powers across countries, we also provide the AROP lines in purchasing power standard (PPS) (Figure 1.1b; see Table A.1.1b for all EU countries). The poverty lines of PL and SK are much closer when defined in PPS. The poverty line remains the highest in CZ, corresponding to its economic performance as the strongest economy in the V4 region. However, a high poverty line does not always lead to a high AROP rate (Figure 1.2). CZ is an example, as its income poverty rate is the lowest in the entire EU (see Table A.1.2 for all EU countries). Within the V4 region, CZ and SK

typically have lower AROP rates than HU and PL,⁴ though the recent decreasing trend in HU and PL has substantially eliminated the differences.

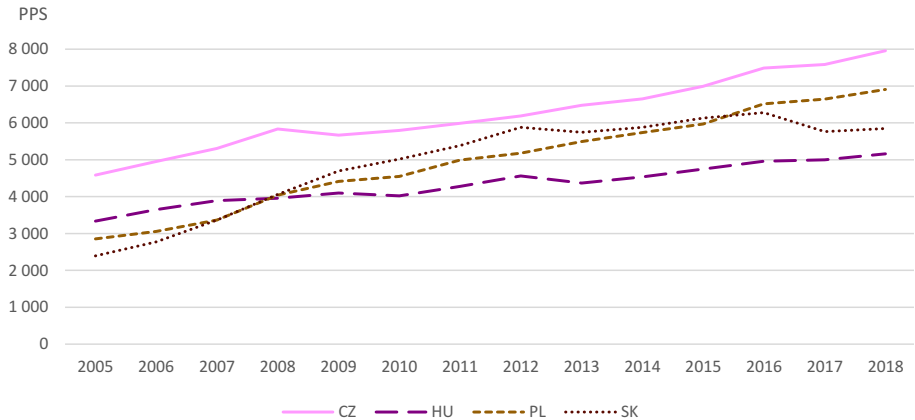
Figure 1.1a AROP lines, V4 (yearly, EUR)



Source: Eurostat database (variable ilc_li01; extracted on 16.1.2020).

Notes: The poverty line is defined as 60% of median equivalised disposable income. AROP – at risk of poverty.

Figure 1.1b AROP lines, V4 (yearly, PPS)

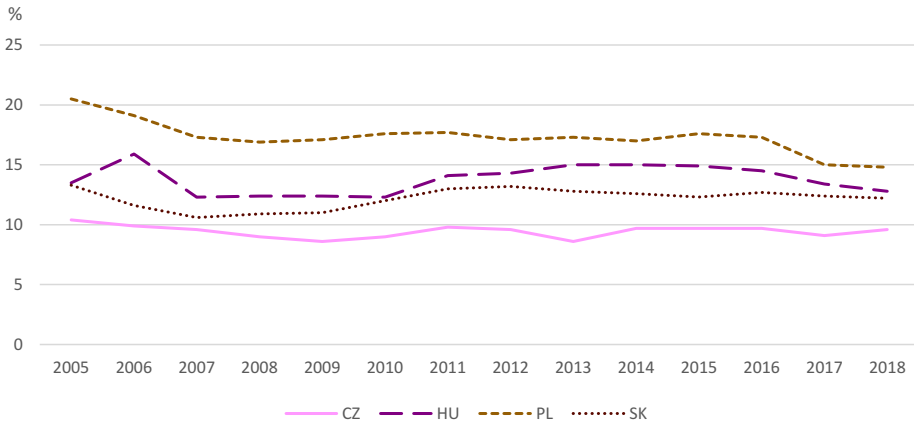


Source: Eurostat database (variable ilc_li01; extracted on 19.4.2021).

Notes: The poverty line is defined as 60% of median equivalised disposable income. AROP – at risk of poverty.

⁴ According to Förster and Tóth (1997), the same ranking of V4 countries held at the beginning of the 1990s, when the relative income poverty rate was around 6% in CZ and SK, and roughly 15% in HU and PL.

Figure 1.2 AROP rate, V4 (%)



Source: Eurostat database (variable ilc_li02; extracted on 7.1.2020).

Another important feature of AROP is that it refers only to current income received by persons and households (for more details, see Chapter 2.1). People’s well-being and living standards are inevitably strongly influenced by their wealth, typically composed mainly of past inflows. In an extreme example, wealthy people living solely on their savings, with no current income, would be counted among the poor if only income is measured.⁵ Data on wealth is generally scarce as collection is highly sensitive, and such data has not been collected in a survey harmonised at the European level to date.⁶ Focusing on income alone is hence a simplification, though it has the advantage of available data.

The income dimension also does not address household costs and necessary expenditures. Two households with the same structure and income level can easily experience different degrees of welfare if they face different costs and liabilities. Housing costs are often studied, and can differ substantially for renters, households paying a mortgage, and homeowners. The concept of *imputed rent* is one way to eliminate these differences. The logic is that, as

⁵ This is a simplified example, as such wealthy people, unless they hide their savings in a pillow at home, would probably have positive income including interest, dividends, profits from capital investments, and etc., which are included in household disposable income and would thus be visible in the data.

⁶ The Household Finance and Consumption Survey (HFCS) survey has been collected in 18 Eurozone countries, plus PL and HU; more countries (including CZ) will join the survey in the future. In three waves, released in 2013, 2016, and 2020, HFCS collected information on the assets, liabilities, income and consumption of households. The survey is organised by the European Central Bank, the national central banks of the Eurosystem countries, and a number of national statistical institutes. Kuypers and Marx (2018, 2019) aimed to integrate wealth into the measurement of poverty using these data for Belgium and Germany. Želinský (2014) utilised the data to supplement an analysis of income poverty in SK.

owners do not pay rent, they are better off than tenants with the same income level. The income of homeowners can be artificially increased by the amount the household would pay as a rent. Imputing rent as income to homeowners can help to minimize the differences in welfare, but the methodology of imputed rent is not straightforward and may not produce comparable results (see Eurostat, 2013, for methodological issues). The concept of AROP does not address imputed rents in household income.⁷

Further, the income concept does not reflect various benefits in kind, such as health, education, and childcare programs. National social systems vary in their generosity, disrupting cross-country comparability of the AROP rate. Even though the income sources included in household income are designed to be as comparable as possible, and the data collection harmonised at the European level, these variations should be kept in mind when interpreting AROP rates.

The AROP rate expresses the share of persons, not households, whose income falls below the poverty line. The first step in constructing the indicator is to compile all household members' income sources into a total disposable household income. This figure includes all types of net market and non-market income after social contributions and taxes, social benefits, and transfers including pensions (see Chapter 2.1).⁸ However, household sizes differ and total household income is not comparable. The AROP indicator thus considers *equivalised income*, which refers to individual equivalent income.

The European concept applies the OECD-modified equivalence scale to transform total household income into equivalent units. The scale assigns a weight of 1.0 to the first adult household member, every other household member older than 13 has a weight of 0.5, and each child under 14 is weighted at 0.3. The logic of the equivalence scale relies on economies of scale from living together and sharing costs. The weights of all household members are summed up to obtain the equivalised household size. Total disposable household income is then divided by the equivalised household size to obtain the equivalised income.⁹ The full definition of the AROP rate is the share of

⁷ Specific indicators describing housing conditions can be derived. For instance, Eurostat produces a *housing costs overburden rate* defined as the percentage of the population living in a household in which the total housing costs net of housing allowances represent more than 40% of the total disposable household income again net of housing allowances.

⁸ See Cantillon et al. (2018) on the impact of social transfers on AROP rates in European countries.

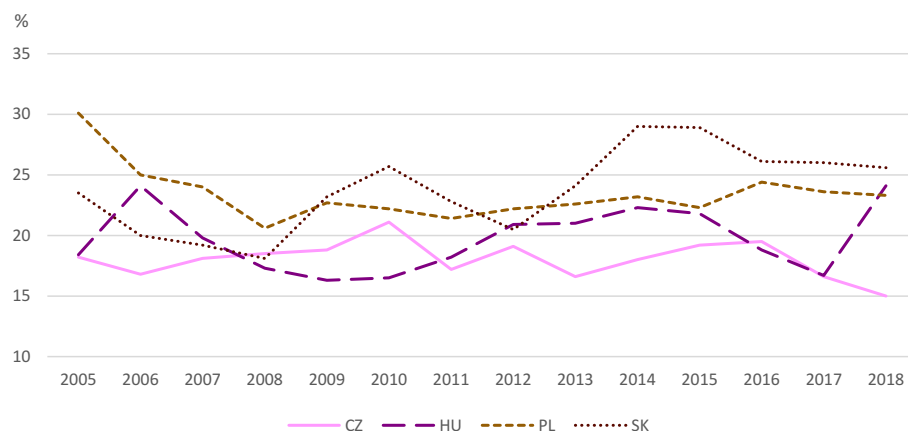
⁹ Consider a two-adult household in which each household member has an annual net income of 10,000 EUR. The total disposable household income is 20,000 EUR. The equivalised household size is 1.5, meaning that the second member only *costs* one half in living expenses. The equivalised income assigned to each adult is $20,000/1.5 = 13,333$ EUR. Though, in reality, each person has an income of 10,000 EUR, an income of 13,333 is assigned to each of them in the construction of the AROP rate, because they save some costs by living together, for instance, on housing, and so they are better off than if they each lived alone with 10,000 EUR in income.

people living in a country who have an equivalised disposable income below the national poverty line, which is set at 60% of the national median equivalised disposable income.

The AROP rate is a headcount ratio – it simply relates the number of people with equivalised income below the national poverty line to the total population. The Foster–Greer–Thorbecke (FGT; see Foster et al., 2010) indices represent a family of poverty metrics in which a higher weight can be placed on the poverty of the poorest individuals. One example is the poverty gap index, a measure of the intensity of poverty. In the sense of FGT-class indices, Eurostat calculates the *relative AROP gap*, defined as the difference between the AROP line and the median equivalised income of persons below the AROP line, expressed as a percentage of the AROP line. In simplified terms, the gap expresses how far the median-poor person is from the poverty line. Figure 1.3 shows poverty gap trends. The poverty gaps are more volatile over time than the AROP lines and rates, meaning that the distribution of people's equalised income below the poverty lines changes substantially.

In the V4, the gap is generally the lowest in CZ, meaning that the equivalised income of at least half of poor persons is relatively close to the poverty line. This also indicates that, if the poverty line drops, the equivalised income of a relatively higher number of persons may then exceed the lower line, and the official poverty rate would decrease substantially. In the V4, the highest gaps occur in PL and SK, so the income poverty rates of these countries would be less sensitive to mild changes in the poverty line as most people are located relatively far below it; however, the AROP gap provides only partial information about the income distribution below the poverty line (see also Subchapter 1.1.2). Within the EU (Table A.1.3), the lowest gap through the period is in FI (14.2% in 2018, very close to CZ at 15.0%), while the highest occurs in RO (35.2% in 2018).

Note that total disposable household income can be directly compared to the poverty line for single-adult households only. For example, if the (monthly) income poverty line is 300 EUR and persons in a household have disposable income of 300 EUR each, a single-adult household with an equivalised household size of 1.0 would be located just at the poverty line. In a two-adult household, with total disposable household income of 600 EUR and an equivalised household size of 1.5, each adult would be assigned an equivalised income $600/1.5 = 400$ EUR so, due to economies of scale from living together, both adults would have an equivalised income above the poverty line. In other words, in terms of actual income for a two-adult household, the poverty line is in fact $300 \times 1.5 = 450$ EUR. Figure 1.4 shows the monthly poverty lines in national currencies for basic household types. Note also that, compared to the

Figure 1.3 Relative AROP gap, V4 (%)

Source: Eurostat database (variable ilc_li11; extracted on 30.10.2020).

Notes: The relative AROP gap is defined as the difference between the AROP line and the median equivalised income of persons living below the AROP line, expressed as a percentage of the AROP line.

poverty lines in EUR (Figure 1.1a), the decreases around 2010 are not apparent in national currencies, because the declines were caused by weakening national currencies during the financial crisis.

The OECD-modified equivalence scale is applied commonly in all European countries. The scale strongly influences the calculation of equivalent income, the poverty line and the composition of the population defined as poor. The current scale was adopted in the 1990s and has not been modified since. Chapter 3 is devoted to the choice of equivalence scale and its impact on the AROP rate, with the aim of bringing the question of what equivalence scale may be most accurate and appropriate back to the current agenda of EU statisticians. In reality, economies of scale are highly dependent on the structure of household consumption expenditures, as some commodities exhibit high economies of scale (housing), and others very low (food). Not only are there across-country differences in the structure of consumption expenditures, but national structures may well have changed over time. Clearly, the current common equivalence scale from the 1990s may not fit the national economies of scale of all European countries today.

A wide range of possible equivalence scales exist (Buhmann et al., 1988), ranging from applying total household income to income per capita. Using total household income would imply maximal economies of scale, and all household members after the first one would have zero weight and would represent zero additional costs. On the other side, income per capita applies zero economies of scale, each household member would be assigned a weight of one, and

Figure 1.4 AROP lines by household type, V4 (monthly, national currency)



Source: EU-SILC 2005–2018. Author's computations.
 Notes: See Table 2.2 for the exchange rates (national currency/EUR).

no costs would be saved by living together. Though applying the extreme case of maximum economies of scale (total household income) is rare, the opposite extreme of applying zero economies of scale (income per capita) is still extant in some income poverty and inequality statistics. Houghton and Khandker (2009) even argue that the per capita measure is the most commonly used, and that *"equivalence scales are not widely used because of the difficulty of agreeing on an appropriate set of weights"* (p. 83). The per capita scale may be suitable for extreme poverty concepts that aim to capture basic food needs (Gustafsson and Yue, 2012), but it is less appropriate for income poverty measurements that go beyond basic subsistence. In using a relative income poverty concept, the EU sets poverty lines to a country standard that assumes all essential needs should be covered, not just food.

One question has persisted since the current equivalence scale was derived: should a common equivalence scale be applied to all countries, or should a common methodology to estimate country-specific equivalence scales be used instead (Hagenaars et al., 1994, p. 194)? Chapter 3 revisits this question and revises several methodological approaches to estimation of equivalence scales.

1.1.1 Characteristics of the poor

National statistical offices observe annual developments in AROP rates with interest, however, policy makers, media, and the public are usually more interested in the prevalence of poverty among different population groups. The first informative view concerns the household type. Singles, who do not share income resources with other adult household members, may be at higher risk of poverty, particularly older people living alone. Similarly, households with children, especially single parent households, constitute a target group for many social policies. Another view of the composition of the *poor* can be informed by basic individual demographic and economic characteristics, including age, gender, education, and economic activity. However, as the AROP rate compares people, not households, statistics derived from individual characteristics are strongly affected by how the households are formed, for instance, by a couples' educational or age homogeneity. This subchapter first shows AROP rates by household types and then proceeds to statistics derived from personal characteristics.

Tables 1.1 to 1.4 describe AROP rates by household type, also distinguishing some types of childless households by gender and age (see Tables A.1.4 to A.1.6 for EU countries in 2006, 2012, and 2018). In V4 countries, income poverty rates for one-adult households, regardless of the number of children, substantially exceeds the overall national rates. For instance, in 2018 in CZ, the AROP rate for single childless adults is five times higher than that of childless adults living

with another adult (not necessarily a couple). Such significant differences result from the equivalence scale, as the economies of scale inherent in shared living frequently push the equivalised income of both partners above the poverty line. In the case of CZ, the large difference indicates that the income of relatively many singles falls just below the poverty line, which would be in accordance with the low relative AROP gap in CZ discussed in Chapter 1.1.

The CZ is unique in terms of the gender difference in AROP rates of single adults. In 2018, it was the only country in the V4 in which the AROP rate was higher for single women than for single men: the difference is extreme, driven mostly by singles aged 65+ (see also Table 1.5 for the AROP rates of females and males aged 65+). Interestingly, the gender difference in the AROP rates of CZ singles was not apparent at the beginning of the observation period. We suspect this phenomenon is linked with the trend of average Czech pensions relative to the poverty line.¹⁰

In single adult households, in 2018 the highest AROP rates occur in the middle category of those aged 35–64, with the exception of CZ, where older single adults are more often at risk of poverty. Not surprisingly, the highest AROP rates are typically seen for single parents. In contrast, AROP rates for members of households with two adults and one or two children is mostly lower than the overall national AROP rate in 2018. This did not always hold; the AROP rates for members from two-adult households with one or two children was higher in 2005, but decreased over the 2005–2018 period by more than the overall AROP rate.

The AROP statistics based on personal characteristics deserve more discussion and explanation. The question is whether we should consider income poverty to be a household-level or personal-level condition. The discussion on what unit should be the base for analyses in economic, sociological, and related fields began decades ago. In traditional economic research, the household used to be the unit of observation and *unitary household models* were applied. Developments in recent decades have led many researchers to abandon this approach and testing of the *income pooling hypothesis* mostly resulted in its rejection in welfare economics (Chiappori, 1992, Ward-Batts, 2008). Regarding income, research recognises that “it is not only the size of the pie, but also the share of it” that matters for the well-being of individual household members.

¹⁰ Figure 1.5 is devoted to the relation between average pensions and poverty lines. Regarding average pensions by gender in Czechia, the gender gap in retirement pensions has been relatively high, but stable at about 18% since 2005 (CZSO, 2020). While female average retirement pensions have always been slightly lower than the AROP line, male average retirement pensions have always been higher.

Table 1.1 AROP rate by household type, CZ (%)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total		10.4	9.8	9.5	9.1	8.6	9.0	9.8	9.6	8.6	9.7	9.7	9.7	9.1	9.6
Adult	Child														
1	0	16.4	17.0	15.9	18.7	19.4	18.1	18.2	14.9	14.7	15.4	19.0	20.2	24.3	27.8
- female		16.4	18.5	17.1	21.5	22.2	21.2	17.2	16.4	17.9	21.5	23.3	29.3	34.3	
- male		16.3	14.6	14.0	14.3	15.0	11.6	13.7	11.5	12.1	11.7	15.3	15.5	16.2	17.5
- age <35		17.5	14.3	14.4	11.0	13.4	11.7	15.4	9.9	11.0	10.7	14.3	11.7	10.5	8.3
- age 35-64		19.3	21.3	19.7	22.6	21.5	19.4	20.4	18.5	18.7	18.4	22.2	23.1	23.5	21.8
- age 65+		13.7	14.4	13.3	17.9	19.6	18.9	17.2	13.6	12.8	14.5	17.8	20.2	28.3	36.9
1	1	46.3	39.1	42.9	32.5	36.5	32.8	35.1	32.0	21.1	26.8	27.6	41.0	26.8	29.5
1	2+	49.5	52.7	57.6	49.2	54.9	59.1	39.2	36.1	40.6	45.6	45.5	42.5	40.1	45.7
2	0	5.3	4.8	4.4	5.5	4.6	4.7	6.1	5.8	5.2	6.6	6.1	5.7	5.3	5.5
- at least one age <35		9.3	10.4	8.6	10.7	8.8	9.3	12.8	11.6	9.7	11.8	11.3	10.0	10.0	9.3
- both age 35-64		6.0	3.6	3.9	5.3	4.6	4.8	5.6	6.2	5.9	7.1	6.4	6.9	5.5	5.1
- at least one age 65+		1.8	2.2	2.1	2.1	2.1	1.8	2.4	2.0	1.9	3.2	2.8	2.8	2.6	4.0
2	1	11.0	11.2	7.9	8.1	6.1	9.1	9.0	8.1	8.2	8.9	6.2	8.0	8.8	9.1
2	2	13.3	11.1	8.1	7.5	6.0	8.2	9.7	8.8	5.8	9.0	10.6	11.2	6.0	4.9
2	3+	16.4	26.3	26.7	13.8	28.6	21.7	20.5	24.7	15.6	30.2	30.1	18.4	18.5	12.3
3	0	4.0	3.2	3.9	5.9	4.9	6.2	4.7	6.3	5.5	5.7	4.9	3.4	3.4	3.8
3	1	9.8	11.0	9.5	8.7	10.8	11.8	10.1	7.9	8.5	8.7	8.3	8.8	8.2	7.2
3	2+	28.3	24.8	25.1	19.9	15.7	18.4	23.8	18.6	12.7	15.3	17.6	15.8	12.4	17.1
4+	0+	8.6	6.9	10.3	7.3	6.3	5.8	8.9	9.9	9.9	6.3	4.2	4.8	4.4	4.9

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.2 AROP rate by household type, HU (%)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total		13.4	15.9	12.4	12.3	12.4	12.3	14.1	14.3	15.0	15.0	14.9	14.5	13.4	12.8
Adult	Child														
1	0	18.5	17.6	15.9	15.0	13.9	13.2	15.9	16.2	14.5	12.9	15.5	17.4	17.3	20.0
- female		15.5	14.5	14.0	11.5	11.3	10.3	12.3	12.1	11.2	9.1	11.6	15.0	16.5	19.7
- male		24.1	24.7	20.4	22.6	19.5	19.3	22.5	23.8	20.4	19.3	21.6	20.9	18.5	20.4
- age <35		16.9	17.1	21.2	19.1	13.9	16.6	14.6	11.5	16.6	9.6	15.6	16.5	18.6	19.3
- age 35-64		28.5	23.4	20.5	23.1	20.4	18.7	24.2	24.3	23.0	20.5	25.5	26.0	24.7	26.5
- age 65+		10.5	13.5	11.5	8.2	8.7	7.7	8.6	9.6	6.2	6.3	5.5	9.0	10.0	14.2
1	1	27.3	35.7	32.0	28.0	20.9	22.6	20.3	18.1	19.2	20.1	35.9	28.2	27.7	47.4
1	2+	39.7	52.4	32.4	49.6	28.6	28.6	32.2	32.5	50.4	50.1	49.8	43.8	28.9	19.0
2	0	7.7	9.7	7.3	7.1	6.1	6.5	7.9	8.3	9.2	9.1	9.5	11.4	12.5	11.9
- at least one age <35		9.2	9.9	10.1	13.0	10.7	12.3	13.4	13.2	16.6	16.0	16.0	20.4	15.8	15.1
- both age 35-64		10.6	11.7	8.9	7.9	7.6	8.2	10.0	9.5	10.3	10.4	11.5	11.5	15.0	13.8
- at least one age 65+		4.4	7.9	3.8	2.7	2.5	2.4	3.1	4.2	4.0	3.7	3.6	6.2	8.4	8.8
2	1	16.5	16.5	13.2	11.7	12.7	12.5	13.5	12.3	13.6	13.4	12.6	15.3	15.4	12.9
2	2	15.6	19.6	14.4	15.2	17.2	15.0	15.4	13.6	13.7	14.3	14.1	12.9	10.6	8.7
2	3+	27.5	36.3	22.6	28.1	28.9	24.7	35.4	35.4	35.1	35.8	30.5	23.7	17.5	12.3
3	0	8.0	8.5	6.9	7.6	6.5	7.1	7.5	10.1	10.8	10.3	13.2	8.7	12.1	8.1
3	1	13.3	18.1	12.3	16.4	11.8	13.7	14.9	16.2	12.6	15.0	11.6	14.6	14.0	11.3
3	2+	13.7	23.7	27.5	18.2	26.0	24.0	29.4	26.0	30.7	29.3	21.8	24.1	9.7	9.3
4+	0+	11.8	12.8	10.1	10.5	13.6	14.4	16.3	17.0	18.3	19.3	18.0	14.2	10.2	12.3

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.3 AROP rate by household type, PL (%)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total		20.6	19.1	17.3	16.9	17.1	17.6	17.7	17.1	17.3	17.0	17.6	17.3	15.0	14.8
Adult	Child														
1	0	16.5	16.1	15.6	20.3	22.2	24.5	25.5	24.4	22.0	20.4	22.9	26.0	27.9	31.4
- female		11.9	10.7	11.7	17.6	20.9	23.0	22.7	22.5	19.8	17.9	20.6	24.5	25.1	30.4
- male		25.3	26.9	24.0	26.0	25.4	27.9	31.6	28.1	26.2	25.2	27.5	29.0	33.8	33.4
- age <35		23.6	17.5	15.0	12.5	13.4	15.4	20.4	14.8	12.2	10.1	15.6	20.7	20.7	19.7
- age 35–64		26.4	26.9	26.0	28.2	28.0	32.1	31.0	29.5	28.6	26.8	30.1	33.8	35.8	36.8
- age 65+		7.1	8.0	8.7	16.1	19.9	21.0	22.0	22.3	19.0	17.8	19.4	21.7	24.3	30.4
1	1	32.1	25.0	30.7	22.3	21.0	24.6	16.3	15.9	23.1	23.2	18.5	31.1	22.3	22.5
1	2+	54.5	43.0	49.9	42.2	53.8	37.1	39.4	34.6	40.0	36.6	28.4	38.8	15.6	28.2
2	0	11.0	10.6	9.8	10.0	12.1	13.0	13.3	11.4	10.7	11.5	12.1	12.1	11.8	13.0
- at least one age <35		17.1	16.3	13.5	10.8	12.6	15.1	13.9	13.4	13.0	13.3	14.5	13.7	10.5	11.3
- both age 35–64		12.5	12.4	11.5	12.2	13.1	12.6	14.6	12.0	12.5	14.5	15.9	14.4	15.1	15.7
- at least one age 65+		5.7	5.7	5.4	6.3	10.1	11.8	11.2	9.4	6.8	7.4	7.0	8.8	9.3	10.8
2	1	18.2	16.7	15.9	13.6	12.0	11.1	11.3	9.9	11.2	11.1	12.9	13.8	12.8	9.8
2	2	23.9	21.5	19.5	16.5	18.4	17.8	17.6	15.4	16.8	14.9	14.1	15.5	13.1	9.0
2	3+	46.0	37.3	33.1	32.0	36.1	34.5	29.0	38.5	35.6	31.8	32.3	26.0	10.1	10.3
3	0	13.6	10.7	12.2	11.4	12.1	11.7	11.2	14.3	12.1	12.4	12.0	11.8	14.0	13.4
3	1	18.7	19.8	19.7	18.5	17.2	20.6	19.1	16.4	16.6	16.7	21.3	19.9	15.5	14.7
3	2+	34.2	29.3	27.7	28.5	29.2	30.0	29.9	27.8	35.4	38.5	31.4	27.4	11.0	13.6
4+	0+	23.3	23.3	19.3	18.7	17.3	17.9	18.9	18.7	19.6	18.9	20.2	18.6	15.6	15.1

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.4 AROP rate by household type, SK (%)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total		13.5	12.2	10.6	11.0	11.0	12.0	13.0	13.2	12.8	12.6	12.3	12.7	12.4	12.2
Adult	Child														
1	0	16.3	15.8	15.4	20.4	23.0	19.1	18.7	19.3	15.5	15.7	15.0	15.5	18.2	17.2
- female		15.8	14.9	15.3	21.2	24.5	17.9	16.8	17.5	14.0	13.3	12.0	12.2	14.5	15.4
- male		18.0	18.9	15.7	17.7	19.6	22.2	23.7	23.5	19.6	20.6	20.7	21.9	25.1	20.6
- age <35		32.5	27.7	19.8	9.0	13.3	22.9	14.9	16.6	8.6	6.3	13.4	15.3	19.2	11.2
- age 35–64		20.6	17.7	16.7	22.9	21.6	23.5	27.0	25.6	23.5	23.2	22.7	24.0	26.5	24.3
- age 65+		11.9	13.5	13.9	20.1	26.2	15.2	12.4	14.7	10.0	11.1	9.4	9.0	11.9	12.4
1	1	22.7	22.5	21.4	21.5	22.2	29.2	25.6	15.9	25.1	28.7	18.7	30.7	35.1	20.3
1	2+	43.3	19.1	35.6	13.1	30.1	18.5	0.0	0.0	29.6	32.6	52.7	56.2	38.5	67.8
2	0	8.3	9.0	6.1	6.4	4.5	6.9	6.0	7.5	7.1	7.8	7.1	6.1	6.4	7.1
- at least one age <35		16.5	12.6	6.7	7.9	7.5	12.8	9.5	11.3	12.1	9.4	6.9	11.4	10.4	9.1
- both age 35–64		8.6	7.9	3.7	5.5	3.5	5.6	7.6	9.0	8.9	11.1	10.7	7.9	7.3	10.8
- at least one age 65+		4.2	8.0	6.9	5.7	3.5	4.3	2.4	3.6	3.0	4.6	4.7	2.3	3.9	3.4
2	1	14.5	11.2	6.4	10.2	12.3	14.4	14.6	12.8	10.3	13.6	9.1	10.4	9.6	11.3
2	2	15.6	14.2	11.7	10.0	9.4	11.0	12.1	16.1	14.1	13.3	16.6	17.7	14.7	14.3
2	3+	28.6	27.5	23.8	36.4	29.0	34.0	44.7	41.5	35.0	29.9	40.4	34.0	38.0	40.4
3	0	6.5	7.0	6.1	6.1	6.4	7.2	9.0	9.5	7.0	8.6	6.2	6.7	7.0	6.9
3	1	20.5	11.7	10.4	10.3	6.4	11.9	14.0	12.6	11.4	10.0	10.1	10.4	15.1	13.7
3	2+	8.6	28.5	26.0	16.2	21.6	15.5	21.9	26.1	20.5	15.5	14.1	20.5	20.3	34.5
4+	0+	13.7	11.1	11.5	10.5	11.7	13.0	13.3	12.3	13.6	12.4	12.8	13.5	11.7	10.1

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

More concretely, total household income affects well-being, however, in cases where resources are not shared equally within the household, the well-being of household members may not be uniform (Mysíková, 2016, 2019, Fialová and Mysíková, 2021). In light of these generally agreed-upon findings, individual level data has gained more attention in recent theoretical and empirical research.

It is important to understand that EU poverty statistics (not only income poverty, but also material deprivation and work intensity, addressed in Chapter 1.2) counts people, not households, below the set threshold. As such, the statistics relate to *people from poor households* and breakdowns by personal characteristics are typically provided. Technically, the concept arises from household-level poverty features, where all household members are assigned the same poverty attributes, and these are translated to a personal level. Poverty statistics by personal characteristics, such as age, gender and education, are then somewhat obscured. Imagine a couple: one has tertiary education and earns a relatively high wage, while the second attained only primary education, and earns minimum wage or is mostly unemployed. Assume that they have three children, and their equivalised income falls below the poverty threshold. Our first look might indicate that the tertiary educated member earning a relatively high wage would not be included in the statistics of those *poor*, yet s/he is. Poverty statistics based on personal characteristics therefore may result in less intuitive findings. Generally, the more heterogeneous household members are in terms of the characteristics considered for in a country, the less clear the resulting statistics will be.¹¹ Regarding gender, note that any income gap is erased with couples, as the poverty attribute arises from joint household-level features. Based on the household-level methodology of construction of poverty indices, the AROP rates usually correlate better to household-level characteristics.

V4 AROP rates by age, gender, education, and economic activity appear in Tables 1.5 to 1.8. There are a few notable features: gender differences in overall populations are smaller than for singles in CZ (as discussed above), and AROP rates for women are slightly higher in 2018 in all V4 countries. Nevertheless, the gender statistics differ over time by countries: while the female rate has been always higher than the male in CZ and SK, in HU and PL the opposite was true until recently. However, the gender statistics in AROP rates are tricky. Note that equivalised income is derived from total household income and, thus, is the same for all household members. The gender differences in personal income are erased in households including members of both genders, because of the

¹¹ According to Mysíková (2015) and based on EU-SILC 2011 data, 75% of Czech partners in dual-earner couples had attained the same level of education: this share was 72% in SK, 67% in PL, and 64% in HU.

procedure used to equalise the income; the gender difference in AROP rates is primarily driven by the households of single adults. The gender difference in AROP rates may be partly related to higher gender pay gaps in CZ and SK than in HU and PL (Mysíková, 2012). The gender differences in AROP rates for people 65+ are more uniform and substantial, and again most apparent in CZ. In 2018, the AROP rate of older women was three times higher than for their male counterparts in CZ, but only about 1.5-times higher in the other V4 countries. This can be related to gender differences in pension payments, but also to the demographic statistics, according to which women live longer than men,¹² meaning that older women more often live alone. As noted above, the economies of scale from living together frequently helps persons in a household to exceed the poverty line.

The rates are strongly differentiated by education in all countries (see Tables A.1.7 to A.1.9 for data on EU countries in 2006, 2012, and 2018). The huge differences in AROP rates between those with primary and tertiary education are inevitable, given educational wage differences (Becker, 1975, Mincer, 1974, Spence, 1973, see also Mysíková, 2018, for CZ empirics), and are intensified by weaker prospects for employment of those with less education (OECD, 2012). For instance, the AROP rate of people aged 16+ with only a primary education reached 28.1%, while the rate of those with tertiary education was 4.5% in PL in 2018. Overall the AROP rate of those with only a primary education was increasing over the 2005–2018 period in all V4 countries despite stable or even decreasing trends in the overall AROP rates.

¹² Life expectancy at age 65 (the mean number of years still to be lived by those who have reached the age of 65, subjected to the current mortality conditions) was 21.5 for women and 18.2 for men in the EU-28 in 2018 (Eurostat database, variable TPS00026, extracted on 19.2.2021).

Table 1.5 AROP rate by age, gender, education, and economic activity, CZ (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	10.4	9.8	9.5	9.1	8.6	9.0	9.8	9.6	8.6	9.7	9.7	9.7	9.1	9.6
Age														
0–15	17.7	16.7	15.9	12.3	12.8	13.6	14.4	13.6	10.8	14.5	14.7	14.5	11.5	10.7
16–34	11.1	10.4	10.1	9.2	8.3	9.2	10.8	9.8	9.0	10.0	9.4	8.6	7.6	7.9
35–64	8.6	8.0	8.1	8.4	7.7	8.0	8.6	9.4	8.7	8.9	9.0	9.1	8.3	8.0
65+	5.3	5.8	5.4	7.4	7.2	6.8	6.6	6.0	5.8	7.0	7.4	8.1	10.7	14.2
Female	11.0	10.7	10.4	10.1	9.5	10.0	10.6	10.5	9.4	10.5	11.0	10.8	10.7	11.4
0–15	18.2	18.0	16.2	12.3	12.3	13.6	13.8	14.0	11.0	13.2	16.1	14.4	11.0	9.9
16–34	12.5	11.3	11.2	10.2	9.0	9.9	11.6	11.0	10.2	11.7	10.5	9.9	9.0	9.4
35–64	8.7	8.6	8.7	9.1	8.7	8.7	9.3	9.9	9.1	9.7	9.8	9.7	9.1	8.5
65+	7.5	8.3	7.9	10.2	10.2	10.4	10.1	8.4	8.1	8.9	10.4	11.4	15.2	19.9
Male	9.7	8.9	8.6	8.0	7.6	8.0	8.9	8.7	7.7	8.9	8.5	8.5	7.6	7.8
0–15	17.1	15.5	15.6	12.3	13.2	13.5	14.9	13.2	10.5	15.6	13.4	14.5	11.9	11.3
16–34	9.9	9.6	9.1	8.2	7.7	8.6	10.2	8.7	7.9	8.3	8.4	7.4	6.3	6.4
35–64	8.6	7.4	7.3	7.5	6.6	7.2	7.9	8.9	8.2	8.1	8.2	8.4	7.5	7.4
65+	2.1	2.4	2.0	3.4	3.0	2.1	2.0	2.7	2.7	4.3	3.5	3.6	4.8	6.7
Education (16+)														
Primary	16.8	17.0	18.3	18.6	18.1	18.2	18.5	17.4	17.3	19.5	21.2	22.6	20.2	22.8
Secondary	8.0	7.4	6.9	6.9	6.2	6.9	8.1	8.4	7.7	8.3	7.9	7.6	8.1	8.6
Tertiary	2.1	1.7	1.9	3.2	2.6	2.5	2.9	2.5	1.8	2.5	2.9	2.8	3.1	3.1
Economic activity (16+)														
Employees	3.9	3.9	3.7	3.6	3.1	3.2	4.5	4.2	3.3	3.7	4.2	3.6	3.3	3.1
Self-employed	4.3	4.3	5.7	6.8	5.7	7.9	8.1	9.4	9.3	7.2	8.1	7.8	7.9	7.5
Unemployed	43.4	37.9	41.9	42.3	34.7	33.9	36.4	41.0	39.9	42.7	41.9	47.2	44.3	48.3
Retired	4.9	5.7	5.5	7.2	7.3	6.7	6.8	6.5	6.1	6.9	7.5	8.2	10.8	14.2
Student	11.7	11.9	11.1	12.8	12.0	12.3	13.9	12.7	10.8	12.3	12.0	11.3	10.2	10.9
Inactive	17.2	15.1	13.5	13.1	14.1	15.2	15.1	14.8	13.4	17.6	15.4	16.5	16.0	17.1

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.6 AROP rate by age, gender, education, and economic activity, HU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	13.4	15.9	12.4	12.3	12.4	12.3	14.1	14.3	15.0	15.0	14.9	14.5	13.4	12.8
Age														
0–15	19.6	25.1	18.7	19.4	20.7	20.1	23.4	22.5	23.8	25.1	21.6	19.6	14.5	12.9
16–34	13.9	16.0	13.9	14.5	14.7	14.7	16.3	16.5	17.9	17.9	17.8	16.1	13.1	12.9
35–64	13.1	14.1	10.8	10.8	10.7	10.9	12.8	13.2	14.1	13.8	15.0	14.8	14.9	13.9
65+	6.5	9.4	6.2	4.3	4.6	4.1	4.9	6.3	4.6	4.5	4.6	6.8	9.1	9.8
Female	13.1	15.6	12.3	12.3	12.1	12.0	13.7	14.0	14.5	14.5	14.4	14.5	13.7	13.6
0–15	19.8	24.5	18.3	19.7	20.1	19.4	22.9	22.8	23.4	25.8	22.1	20.6	16.0	13.6
16–34	14.2	16.3	14.5	15.5	15.3	15.5	17.4	17.0	18.4	18.9	18.0	17.2	13.7	15.3
35–64	12.1	13.4	10.4	10.5	10.4	10.8	12.3	12.5	13.6	13.0	14.4	14.5	14.8	13.9
65+	7.9	10.8	7.8	5.2	5.4	4.8	5.4	6.8	5.4	4.9	4.8	7.3	9.7	11.3
Male	13.8	16.3	12.4	12.4	12.8	12.6	14.5	14.8	15.5	15.5	15.6	14.4	13.1	11.9
0–15	19.5	25.8	19.1	19.0	21.3	20.9	23.8	22.3	24.2	24.5	21.1	18.7	13.1	12.2
16–34	13.6	15.7	13.2	13.5	14.0	13.9	15.3	16.0	17.5	16.9	17.7	15.0	12.4	10.7
35–64	14.2	14.9	11.1	11.2	11.1	11.0	13.4	13.9	14.7	14.6	15.6	15.1	15.1	13.9
65+	4.2	6.9	3.3	2.7	3.1	2.8	4.1	5.4	3.3	3.8	4.1	5.9	7.9	7.4
Education (16+)														
Primary	17.4	24.4	18.6	18.7	19.2	20.1	23.5	26.6	27.4	27.2	27.3	24.7	19.9	23.7
Secondary	10.7	11.0	9.3	9.4	9.0	8.8	10.0	9.7	10.6	10.9	11.7	11.5	11.6	10.1
Tertiary	3.0	3.0	2.3	2.3	2.1	1.8	2.9	2.9	2.5	2.1	4.6	6.0	8.4	4.8
Economic activity (16+)														
Employees	6.4	8.6	6.2	6.2	6.6	6.0	6.3	6.7	8.3	7.9	10.1	10.1	9.5	8.4
Self-employed	14.6	9.3	11.1	7.9	9.4	6.6	8.1	6.7	4.4	7.5	8.1	9.7	19.3	9.7
Unemployed	37.8	44.2	37.5	39.5	36.4	37.3	41.1	42.8	46.7	48.7	48.8	43.5	44.6	44.7
Retired	6.4	8.3	5.7	4.2	4.0	4.2	5.2	5.7	5.8	4.9	5.3	7.3	9.1	10.2
Student	13.6	16.8	17.5	18.0	15.9	15.7	17.4	16.3	16.0	14.8	19.9	18.3	15.4	15.3
Inactive	22.5	27.4	18.9	19.4	20.9	23.5	27.7	28.0	29.4	31.2	27.8	26.4	20.2	23.4

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.7 AROP rate by age, gender, education, and economic activity, PL (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	20.6	19.1	17.3	16.9	17.1	17.6	17.7	17.1	17.3	17.0	17.6	17.3	15.0	14.8
Age														
0–15	29.0	26.1	23.9	22.1	22.7	22.1	21.3	21.1	22.5	21.6	21.6	20.3	13.2	12.4
16–34	22.7	20.7	18.4	16.9	16.8	17.5	17.3	16.8	17.7	17.2	18.6	18.2	14.6	14.3
35–64	19.5	18.5	16.9	16.4	16.1	16.9	17.5	16.7	16.6	17.0	17.6	17.3	16.4	15.8
65+	7.3	7.8	7.8	11.7	14.4	14.2	14.7	14.0	12.3	11.7	12.1	12.8	13.8	15.5
Female														
0–15	29.4	27.1	25.8	22.7	22.6	22.0	20.5	21.3	22.3	21.4	20.3	19.8	12.5	12.4
16–34	23.1	21.0	18.5	17.1	17.4	17.5	17.6	16.9	18.0	17.3	18.7	19.1	14.1	14.0
35–64	17.9	16.8	15.8	15.5	15.6	16.6	16.5	15.7	16.0	16.1	16.6	16.6	15.9	14.9
65+	8.7	9.1	9.2	13.4	16.5	16.8	17.4	16.8	14.6	13.8	13.9	15.2	15.8	18.3
Male														
0–15	28.6	25.1	22.1	21.4	22.7	22.2	22.1	20.8	22.7	21.8	22.8	20.8	13.8	12.3
16–34	22.4	20.5	18.3	16.7	16.1	17.5	17.0	16.8	17.5	17.1	18.6	17.3	15.2	14.7
35–64	21.2	20.3	18.0	17.5	16.5	17.3	18.5	17.9	17.3	17.8	18.6	18.0	17.0	16.7
65+	4.9	5.7	5.6	8.9	10.9	9.9	10.2	9.4	8.5	8.4	9.2	9.1	10.7	11.2
Education (16+)														
Primary	25.6	25.1	23.0	24.4	26.7	28.0	28.0	27.6	26.7	27.8	29.1	29.2	26.6	28.1
Secondary	18.8	18.0	16.2	15.9	15.8	16.5	16.7	16.2	16.7	16.7	17.6	18.0	16.8	16.4
Tertiary	5.2	2.7	3.0	3.8	3.5	4.6	4.5	4.6	4.6	4.0	4.8	5.1	4.8	4.5
Economic activity (16+)														
Employees	11.2	10.8	10.5	10.0	7.9	8.9	8.4	7.8	8.1	8.7	8.7	8.6	6.3	6.1
Self-employed	32.2	29.3	26.5	25.4	27.6	26.7	25.9	26.0	24.9	24.7	27.3	25.9	27.9	27.0
Unemployed	43.6	43.4	40.1	38.1	33.3	37.2	36.2	36.5	38.1	36.9	41.0	41.3	36.5	33.2
Retired	6.8	7.0	6.6	9.9	12.5	12.8	13.2	12.6	11.2	10.7	11.1	12.5	13.4	15.3
Student	24.7	23.4	21.6	22.3	23.0	21.2	24.0	21.8	22.6	21.6	25.3	27.2	24.0	22.2
Inactive	23.1	23.4	22.7	25.2	27.4	27.9	28.4	27.7	26.5	26.3	28.0	29.7	27.5	28.7

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Table 1.8 AROP rate by age, gender, education, and economic activity, SK (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total	13.5	12.2	10.6	11.0	11.0	12.0	13.0	13.2	12.8	12.6	12.3	12.7	12.4	12.2
Age														
0–15	18.4	16.8	15.8	16.4	17.0	18.5	21.3	21.5	19.8	19.1	20.8	21.4	19.7	20.2
16–34	14.6	12.7	11.1	10.6	11.2	12.6	13.3	13.0	13.1	11.9	10.9	12.9	12.9	12.5
35–64	12.5	10.7	8.9	9.5	8.9	10.8	12.3	12.5	12.2	12.8	12.0	11.7	11.2	11.2
65+	7.3	10.2	9.6	10.7	10.8	7.7	6.3	7.8	6.0	6.2	5.6	5.7	6.9	6.4
Female	13.6	12.2	11.0	11.7	11.9	12.2	13.1	13.3	12.9	12.6	12.4	12.8	12.3	12.3
0–15	17.8	16.5	16.2	17.2	18.4	19.6	22.5	22.0	20.2	20.4	23.3	22.4	19.0	19.5
16–34	14.9	12.0	11.5	11.6	12.0	12.9	13.8	13.8	13.3	12.0	11.5	14.9	14.6	14.2
35–64	12.4	10.7	9.0	9.3	8.8	10.5	11.9	12.2	12.2	12.1	11.2	10.6	10.4	10.8
65+	10.0	12.0	11.9	13.5	14.9	10.1	8.2	9.0	7.6	7.5	7.0	6.5	8.3	7.1
Male	13.3	12.3	10.2	10.3	10.1	11.7	12.8	13.2	12.8	12.7	12.1	12.7	12.4	12.2
0–15	18.9	17.1	15.5	15.7	15.9	17.6	20.2	21.1	19.5	18.0	18.4	20.5	20.3	20.9
16–34	14.3	13.3	10.6	9.7	10.5	12.4	12.9	12.3	12.9	11.8	10.4	10.9	11.2	10.9
35–64	12.5	10.6	8.9	9.7	9.0	11.0	12.7	12.9	12.2	13.5	12.9	12.9	12.0	11.5
65+	2.9	7.1	5.7	6.0	4.5	3.9	3.4	5.9	3.3	4.1	3.4	4.3	4.9	5.2
Education (16+)														
Primary	18.7	18.1	19.9	19.5	20.9	20.2	21.2	22.4	22.2	23.8	21.0	22.8	24.0	24.5
Secondary	11.7	10.3	8.1	8.7	9.0	10.2	11.2	11.4	10.8	10.8	10.1	10.0	9.7	8.9
Tertiary	7.2	4.3	2.8	3.5	3.9	4.3	4.6	4.7	4.8	4.6	5.5	5.8	5.7	6.1
Economic activity (16+)														
Employees	7.1	6.2	4.5	5.7	4.4	4.1	4.6	5.0	4.3	4.8	3.9	4.6	5.5	5.2
Self-employed	31.7	16.1	10.5	10.5	15.6	22.3	24.9	16.6	17.6	14.2	21.3	19.4	15.3	13.8
Unemployed	36.3	37.8	41.0	40.6	38.5	38.8	40.0	41.5	39.8	45.8	42.7	47.8	46.7	49.1
Retired	7.1	8.8	7.7	9.5	9.0	6.8	6.6	7.7	6.5	7.0	6.2	6.3	7.7	6.9
Student	18.2	14.6	15.0	13.5	13.7	14.3	16.1	15.3	15.5	13.4	11.8	14.4	17.4	15.7
Inactive	19.9	18.5	20.1	19.3	18.7	22.1	23.7	24.1	22.2	21.5	20.6	22.7	21.9	24.6

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty.

Economic activity plays an important role, with the AROP rates being typically the lowest for the working population. However, the self-employed often experience higher rates, especially in PL in 2018. The income of self-employed workers is less stable and is often reported as being lower than it may be in reality for tax purposes (according to Fusco et al., 2010, self-employed workers tend to be more prone to income poverty and less to actual material deprivation). The highest AROP rates are reported for unemployed workers, approaching nearly

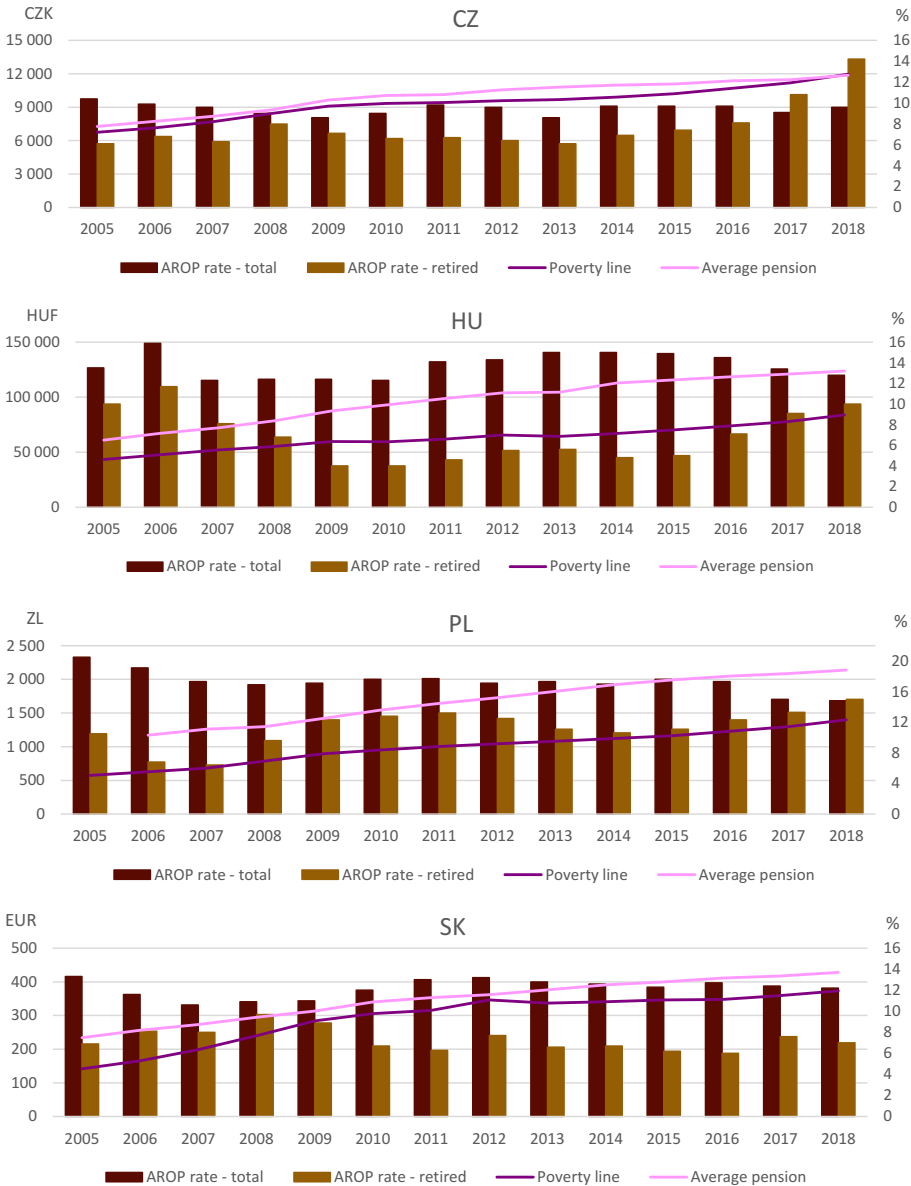
50% in SK and CZ in 2018. Retired people experience lower rates (7–15% in V4 in 2018) than other inactive populations (17–29%).

Figure 1.5 shows the mean monthly pensions reported by national statistical offices for V4 countries in national currencies in comparison to the monthly AROP lines (left axes). The average retirement pensions are relatively close to the poverty lines in CZ and SK throughout the whole period. However, the poverty line crossed the average pension line in CZ in 2017 and, as a consequence, the AROP rate of retirees substantially increased above the total AROP rate (right axis), at 1.5 times higher in 2018 (though it was lower until 2016). This coincides with the fact that the pension income of single retired people was located just below the poverty line in 2018. The poverty rates of CZ retirees are thus highly sensitive to the poverty line. In SK, poverty lines and mean pensions were converging until 2009, as were the AROP rates (more or less). After 2012, the average pension remained consistently above the poverty line.

Average pensions in HU and PL have always been substantially higher than the poverty line. In HU, the trend of the difference between the poverty line and average pension more or less corresponds to the trend of the difference between the AROP rates of the overall population and retirees (right axes for the AROP rates; note also the difference in the scales of the axes across countries). In PL, average pensions include *gross retirement and other pension payments*, and the trends are less obvious.

To summarize, there are several common features of the AROP rates within the V4 region. First, the rates of single-adult households, regardless of the number of children, substantially exceeds the overall rates. This is mainly because the income data used for AROP statistics reflects economies of scale from living together. As a consequence, the shared income and costs of two or more adult household members more often exceeds the poverty line. Not surprisingly, the highest AROP rates most often apply to single parents. Second, AROP rates for women are slightly higher than the rates for men in 2018 in all V4 countries, though gender statistics differed over time in the countries. While the female rate has been always higher than the male in Czechia and Slovakia, the opposite was true in Hungary and Poland until recently. However, a consistent, uniform gender difference pointing to a women's disadvantage in all V4 countries is captured in the statistics for persons aged 65+. The noticeably higher AROP rates of older women than men (with particularly strong differences in Czechia) may be related not only to gender differences in pensions, but also to the demographic fact that older women more frequently live alone than older men.

Figure 1.5 AROP and mean monthly pensions, V4 (% and national currency)



Source: Eurostat database: poverty lines (variable ilc_li01; extracted on 16.1.2020), AROP rate total (variable ilc_li02; extracted on 7.1.2020), AROP rates of retired persons (variable ilc_li04; extracted on 15.5.2020). Mean pensions: CZ – CZSO (2020, Table 13.5); HU – Hungarian Central Statistical Office database (KSH; statinfo.ksh.hu); PL – Central Statistical Office (2010, Table 33, p. 67, for 2005–2009; 2015, Table 26, p. 63, for 2010–2014; 2018, Table 26, p. 61, for 2015–2017); SK – Statistical Office of the Slovak Republic database (STATdat).

Notes: Old-age pensions (*gross retirement and other pension payments* in PL). Mean pensions correspond to the EU-SILC income reference period (i.e., the previous calendar year). APOP (at risk of poverty) rates – right axes; Poverty lines and mean pensions – left axes.

Third, the AROP rates are highly marked by the level of education. Considering only persons aged 16+, tertiary educated persons experience very low AROP rate levels, especially compared to their counterparts with only primary education, whose AROP rates currently exceed 22% across V4 countries. Fourth, regarding the economic activity status, the AROP rates are inevitably lowest for the working population. Interestingly, the rates are somewhat higher for self-employed than for employees, which may be caused by the higher volatility of self-employment income and/or artificial income underreporting by self-employed workers for tax purposes. The latter idea may be supported by the empirical finding that self-employed workers tend to be more prone to income poverty and less to material deprivation (Fusco et al., 2010). As expected, the AROP rate is steadily highest for unemployed people, approaching almost 50% in Slovakia and Czechia. Retired people enjoy relatively comfortable rates, lower than other inactive people. However, in Czechia and Slovakia, the average pension is very close to the poverty line, and it fell slightly below in 2018, leading to a substantial increase in the AROP rate of Czech retirees.

1.1.2 Poverty line

In the relative AROP rate, the poverty line is set at 60% of median equivalised disposable income in EU countries. The definition of the poverty line is rather an arbitrary choice; for instance, the OECD uses 50% of median national equivalised income (OECD, 2019). Earlier studies have related the poverty line to mean income: *"The choice of the median instead of the mean results in lower poverty lines unless the percentage at which the poverty line is set is adjusted accordingly. Because this adjustment is rather arbitrary unless the chosen percentage of the median results in the same poverty cut-off as the preferred percentage of the arithmetic average (e.g. 50%), we will for the sake of comparability with earlier studies use the arithmetic average as the measure of central tendency."* (Hagenaars et al., 1994, p. 13).

Setting a lower (higher) poverty line, *ceteris paribus*, leads by definition to lower (higher) income poverty rates. However, the composition of the poor can change more substantially. For instance, the mean pension in Czechia steadily exceeded the 60% poverty line by a small amount until 2017 and then fell below the poverty line later (see Subchapter 1.1.1), leading to a relatively low poverty rate among Czech retirees. If the poverty line were set higher, for instance, at 70% of the median equivalised income, the AROP rate of older persons would have disproportionately increased. Therefore, while the AROP rate of retirees was at very comfortable levels until 2017, the picture could have been very different if a different poverty line had been set. In this subchapter, we show how the AROP rate is affected by the poverty line.

Table 1.9 presents the poverty line levels, AROP rates and gaps in V4 countries (for EU countries, see Table A.1.10). There are several assumptions related to poverty line levels. First, the higher the median equivalised income in a country is, the higher the difference in poverty lines will be in absolute terms. The highest difference between the 60% and 50% poverty lines (and between the 60% and 70% poverty lines) is in CZ, at roughly 910 EUR yearly in 2018, followed by SK (745 EUR), PL (660 EUR), and HU (540 EUR). Second, as the nominal equivalised income increases over time, the difference between the poverty lines also increases in all countries.

The higher the poverty line, the higher the AROP rate. However, how much the rate changes depends on the distribution of equivalised income around the poverty lines. The AROP gap, defined as the difference between the AROP line and the median equivalised income of persons below the AROP line, expressed as a percentage of the AROP line, provides partial information about the distribution below the poverty line. In simplified terms, the gap expresses how far the median-poor person is from the poverty line. For instance, in 2018, the gap at any poverty line is the smallest in CZ. This suggests that the income of some people living below the poverty line is relatively close to the poverty line and, thus, changing the line can substantially affect the AROP rate. Indeed, changing the poverty line from 50% to 60% would increase the AROP rate by 2.2 times in CZ, 1.9 times in SK, and 1.6 times in HU and PL. If the line were raised from 60% to 70%, the rate would increase by 1.8 times in CZ and HU, 1.5 times in PL, and 1.4 times in SK.

Table 1.9 AROP rates and gaps by poverty line, V4, 2006–2018 (EUR, %)

	CZ			HU			PL			SK		
	2006	2012	2018	2006	2012	2018	2006	2012	2018	2006	2012	2018
50%												
Line	2,398	3,896	4,544	1,924	2,348	2,712	1,556	2,530	3,287	1,637	3,464	3,731
Rate	4.9	5.1	4.4	10.0	8.4	8.0	12.3	10.5	9.0	7.1	7.8	6.3
Gap	18.8	20.9	15.9	24.2	17.2	31.1	24.6	21.2	24.3	23.1	25.3	25.4
60%												
Line	2,878	4,675	5,453	2,308	2,818	3,254	1,867	3,036	3,944	1,965	4,156	4,477
Rate	9.8	9.6	9.6	15.9	14.3	12.8	19.1	17.1	14.8	12.2	13.2	12.2
Gap	17.0	19.1	15.0	24.0	20.9	24.1	25.0	22.2	23.3	20.8	20.5	25.6
70%												
Line	3,358	5,454	6,362	2,693	3,287	3,797	2,178	3,542	4,602	2,292	4,849	5,223
Rate	17.9	16.6	17.1	23.8	22.0	23.0	26.9	24.9	22.8	19.2	20.4	16.7
Gap	16.5	18.0	17.1	22.3	22.2	17.4	25.9	24.1	22.4	21.5	21.8	18.4

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: AROP – at risk of poverty. Poverty lines (yearly in Euros) as a percentage of median equivalised income. A gap is defined as the difference between the AROP line and the median equivalised income of persons below the AROP line, expressed as a percentage of the AROP line.

In terms of social policy implications, the question is who the people with income just around the poverty line are. Figures 1.6 to 1.8 depict the distribution of equivalised income by 10 pp of median equivalised income.¹³ For instance, the sum of the four bottom columns corresponds to the AROP rate with a 60% poverty line. In 2006, incomes in the range of 60% to 70% of median income represented about 8% of the populations of CZ, HU, and PL, and roughly 7% of SK (Figure 1.6). If the poverty line were increased to 70% of median, the AROP rate would thus increase by 8 pp in CZ, HU, and PL, and by 7 pp in SK. Further, the graphs distinguish incomes of people by age (the exact shares and the figures for EU countries are stated in Tables A.1.11 to A.1.24).

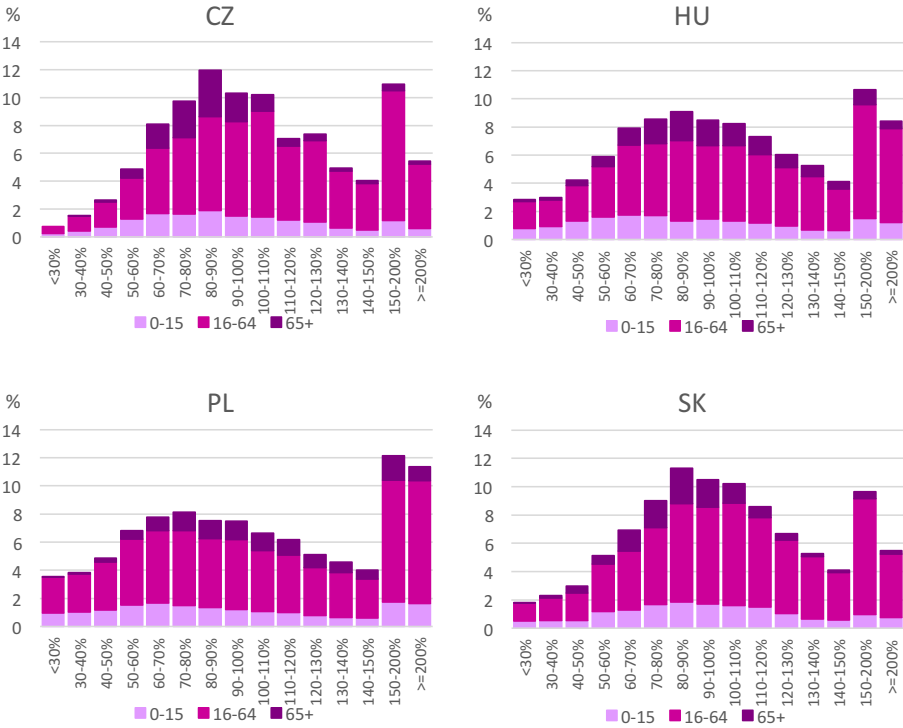
The strongest effect on AROP rates of persons aged 65+ is in CZ, followed by SK. In 2006, the share of older people with equivalised income falling within the range of 60–70% of the median was at 12.6% in CZ, 11.5 % in SK, 8.2% in HU, and 7.1% in PL. The equivalised income of older people in HU and PL was in fact more equally spread along the distribution. While the equivalised income of 37% to 46% of older people fell within the range of 60–100% of the median in HU and PL, this share was 61% in SK and as high as 70% in CZ. This suggests that, in general, most Czech and Slovak older people were relatively worse off than their Hungarian and Polish counterparts. In PL in particular, there was a relatively high share of older people whose equivalised income exceeded a 1.5 multiple of the median (see the last two columns on Figure 1.6); this was rather rare in CZ and SK.

While the figures did not substantially change between 2006 and 2012 (compare Figures 1.6 and 1.7), some trends can be identified between 2012 and 2018 (compare Figures 1.7 and 1.8). Regarding the population aged 65+, 2018 is determinative in CZ. Though the average pension had been very close to the 60% poverty line throughout the period since 2005, it dropped below the line in 2018. As a consequence, the share of older people with equivalised income in the range of 50–60% of median increased from 4.7% in 2012 to 9.9% in 2018; in the same way, the distribution of the equivalised income of older people moved somewhat lower. The AROP rates of people aged 65+ increased, with the most noticeable increase with the poverty line set at 70% (Figure 1.9).

The 2018 income distribution gained a jump in HU, with an increased share of incomes in the range of 60–70% of median. Evidently, the change also occurred due to a higher share of equivalised income assigned to children aged 0–15, though their distribution was relatively equal before. As a consequence, the AROP rates of children with poverty lines set at 50% and 60% are very close to

¹³ Except the bottom column, which includes incomes lower than 30% of the median equivalised income, and the top two columns, which include incomes between 150% and 200% of the median, and incomes higher than 200% of the median, respectively.

Figure 1.6 Distribution of equivalised income by poverty line and age, V4, 2006 (%)

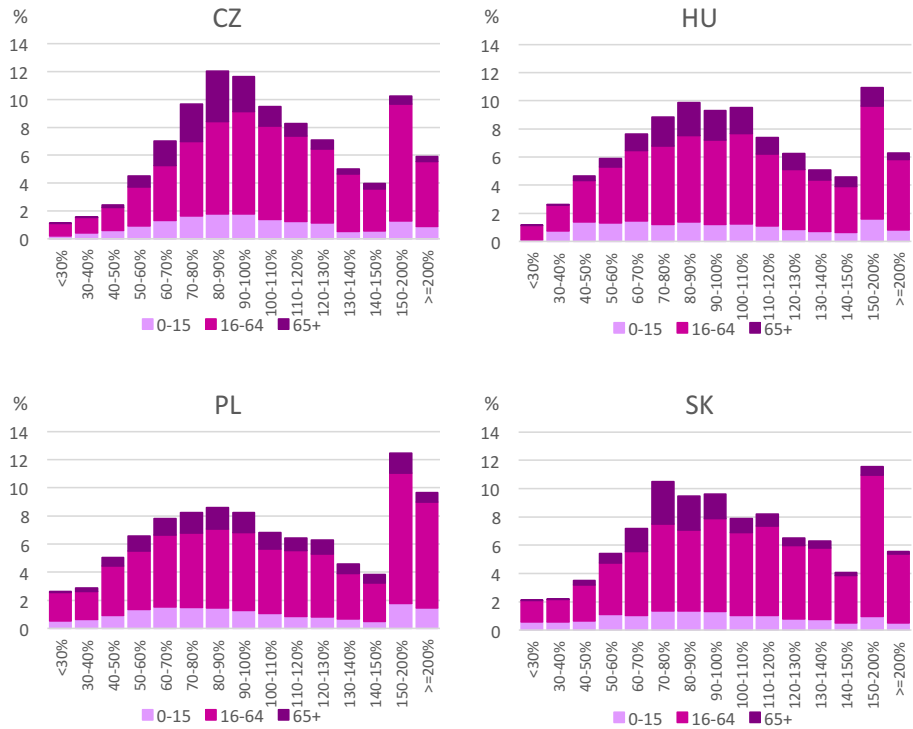


Source: EU-SILC 2006. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income. The sum of all columns within a country equals 100%.

each other (11–13%) in HU in 2018, while the AROP rate at the 70% poverty line reaches a substantially higher figure (29%: see Figure 1.10). In PL, some changes of income distribution around the poverty lines occurred in 2017, as indicated by a decrease in children's AROP rates at all poverty lines (see Figure 1.11).

In SK, the income distribution is a hump-shaped (Figure 1.8) with a low share of incomes between 60–70% of median. Interestingly, the AROP rates of children and those of prime-aged adults 16–64 would have been recently decreasing if the poverty lines were 50% or 70%, but they have been rather stable with the official poverty line at 60% of median income (Figure 1.12). The AROP rates for children 0–15, prime-aged adults 16–64, and older people 65+ with poverty lines set at 50%, 60%, and 70% of median equivalised income of EU countries are set out in Tables A.1.25 to A.1.33.

Figure 1.7 Distribution of equivalised income by poverty line and age, V4, 2012 (%)

Source: EU-SILC 2012. Author's computations.

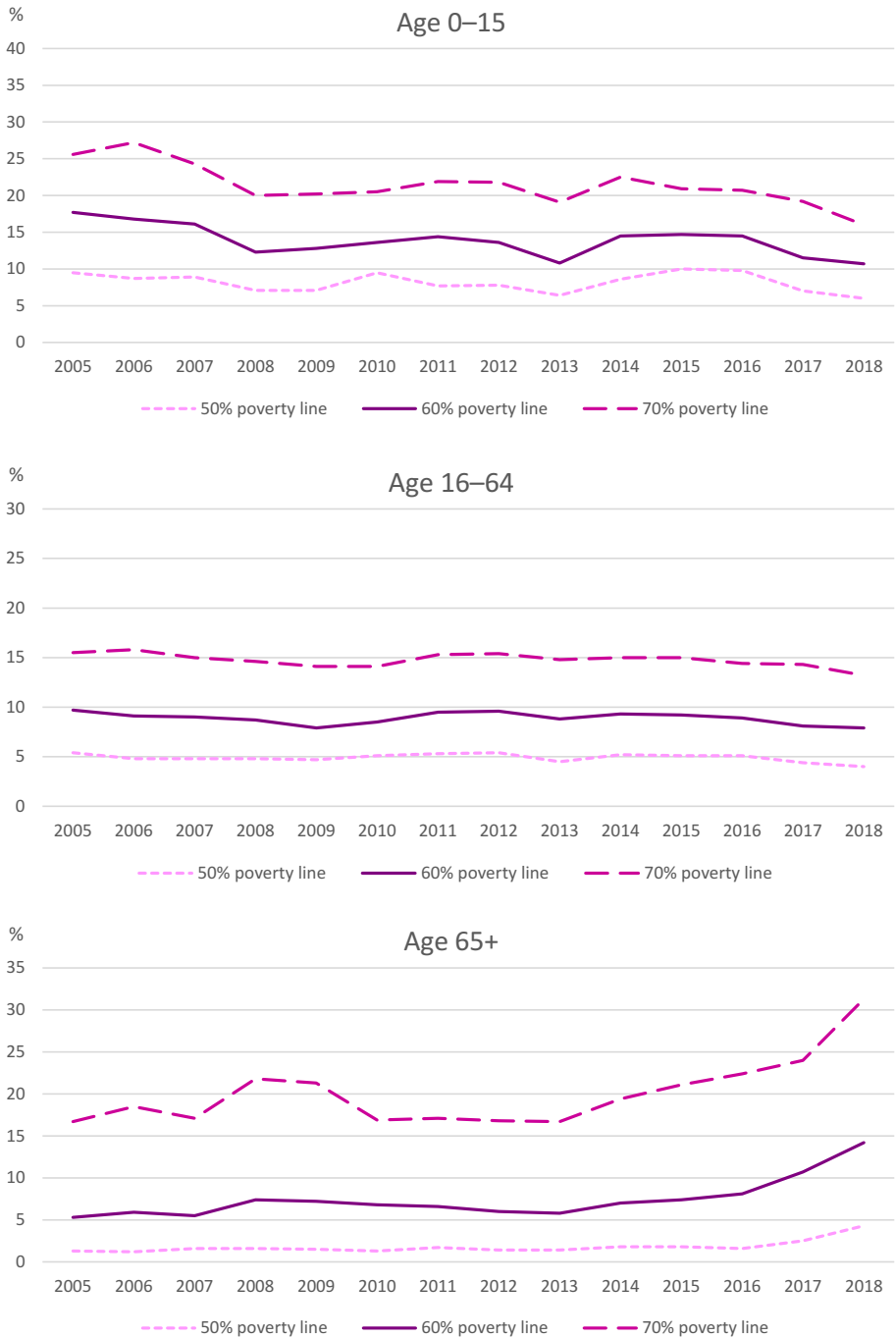
Notes: Poverty lines as a percentage of median equivalised income. The sum of all columns within a country equals 100%.

Figure 1.8 Distribution of equivalised income by poverty line and age, V4, 2018 (%)



Source: EU-SILC 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income. The sum of all columns within a country equals 100%.

Figure 1.9 AROP rate by poverty line and ages, CZ (%)

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).
 Notes: AROP – at risk of poverty.

Figure 1.10 AROP rate by poverty line and ages, HU (%)



Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).
 Notes: AROP – at risk of poverty.

Figure 1.11 AROP rate by poverty line and ages, PL (%)

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).
 Notes: AROP – at risk of poverty.

Figure 1.12 AROP rate by poverty line and ages, SK (%)



Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).
 Notes: AROP – at risk of poverty.

European Appendix

Table A.1.1a AROP lines, EU (yearly, EUR)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	10655	10713	10893	11648	12281	12635	12878	13084	13244	13926	13956	14217	14851	15105
BE	9947	10328	10540	10791	11588	11678	12005	12168	12890	13023	12993	13377	13670	14246
BG		830	888	1303	1697	1810	1749	1716	1754	1987	1999	1891	2154	2154
CY	7894	8722	9609	9614	9871	9708	10194	10156	9524	8640	8276	8412	8698	9202
CZ	2540	2881	3254	3641	4377	4235	4471	4675	4616	4573	4454	4703	4969	5453
DE	9836	9398	10666	10986	11151	11278	11426	11757	11749	11840	12401	12765	13152	13628
DK	13274	13598	14004	14497	15017	15401	16167	16310	16467	16717	17019	17199	17630	18062
EE	1788	2183	2669	3328	3725	3436	3359	3592	3947	4330	4733	5187	5631	6314
EL	5650	5910	6120	6480	6897	7178	6591	5708	5023	4608	4512	4500	4560	4718
ES	6272	6683	6987	8379	8877	8763	8358	8321	8114	7961	8011	8209	8522	8871
FI	10489	10982	11222	11876	12577	12809	13096	13619	13963	14221	14258	14190	14392	14727
FR	9567	9726	9865	11340	11786	11976	11997	12362	12554	12719	12849	13028	13176	13332
HR						3486	3347	3226	3047	3135	3272	3435	3726	3995
HU	2068	2310	2361	2640	2844	2544	2696	2818	2670	2707	2734	2861	2993	3254
IE	11279	11854	13239	13797	13467	12307	11836	11789	11913	12101	12978	13526	13727	14952
IT	8584	8736	9064	9384	9363	9578	9582	9587	9440	9455	9508	9748	9925	10106
LT	1235	1520	1966	2467	2829	2418	2314	2602	2819	2894	3108	3387	3681	4137
LU	17038	17688	17935	18550	19059	19400	19523	19668	19981	20592	21162	20291	21645	24162
LV	1248	1518	2019	2844	3213	2693	2517	2670	2799	3122	3497	3819	3964	4400
MT	5155	5418	5582	6005	6302	6261	6517	6869	7226	7685	8131	8170	8713	8868
NL	10200	10358	10946	11713	12094	12175	12186	12337	12504	12535	12775	13640	14137	14410
PL	1520	1867	2101	2493	3058	2643	3015	3036	3098	3202	3333	3530	3567	3944
PT	4317	4386	4544	4886	4969	5207	5046	4994	4906	4937	5061	5269	5443	5607
RO			962	1171	1303	1222	1254	1229	1209	1293	1389	1469	1645	1970
SE	10499	10795	11307	12130	12286	11338	12950	14307	15241	15503	15184	15098	15225	15324
SI	5278	5590	5944	6536	7118	7042	7199	7273	7111	7146	7399	7396	7628	7946
SK	1698	1988	2383	2875	3403	3670	3784	4156	4042	4086	4158	4171	4310	4477
UK	11124	11697	12686	11354	9757	10263	10281	11500	11217	12317	12617	12682	12597	12594

Source: Eurostat database (variable ilc_li01; extracted on 16.1.2020).

Notes: The poverty line is defined as 60% of median equivalised disposable income. AROP – at risk of poverty.

Table A.1.1b AROP lines, EU (yearly, PPS)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	10317	10452	10686	11359	11683	11710	12255	12361	12542	12997	13189	13842	14017	13923
BE	9320	9707	9787	10046	10501	10399	10895	11038	11738	11755	11953	12801	12543	12812
BG		1920	1979	2859	3436	3531	3499	3418	3540	4052	4129	4045	4520	4331
CY	8866	9817	10951	10945	11256	10816	11497	11444	10299	9457	9188	9704	10126	10503
CZ	4585	4956	5305	5835	5666	5796	5993	6188	6481	6654	6991	7487	7584	7958
DE	9391	9100	10395	10804	10770	10544	11037	11525	11687	11530	12219	12691	12799	13188
DK	9513	9688	10121	10561	10751	10770	11510	11537	11846	11992	12231	12813	12573	12988
EE	2835	3376	3895	4538	4861	4448	4491	4734	5164	5545	6259	7120	7448	8027
EL	6450	6697	6873	7219	7521	7559	6976	6038	5427	5204	5281	5429	5421	5547
ES	6896	7335	7614	9026	9338	8967	8655	8582	8550	8517	8678	9208	9316	9618
FI	8474	8886	9145	9933	10421	10327	10760	11146	11507	11550	11658	11998	11896	12029
FR	8702	8989	9089	10496	10644	10669	10897	11271	11516	11584	11931	12373	12214	12134
HR						4567	4454	4417	4448	4644	4952	5391	5666	5922
HU	3337	3646	3894	3958	4097	4025	4281	4563	4366	4535	4751	4960	4999	5162
IE	9048	9563	10633	10901	10386	10102	9999	9912	10039	9940	10594	11038	10919	11679
IT	8182	8344	8698	9158	9140	9135	9466	9297	9189	9152	9237	9742	9913	10029
LT	2308	2772	3428	4111	4289	3611	3641	4034	4369	4557	4951	5618	5891	6421
LU	16538	15851	16108	16166	16265	15961	15961	15948	16818	16962	17571	16701	17758	16517
LV	2347	2686	3352	4283	4279	3525	3566	3661	3868	4392	4855	5554	5549	6018
MT	7054	7246	7465	7958	8146	8023	8417	8760	9149	9412	10052	10358	10739	10759
NL	9612	9897	10522	11485	11618	11288	11300	11387	11536	11283	11632	12713	12717	12917
PL	2855	3057	3365	4039	4417	4547	4993	5181	5495	5736	5970	6519	6648	6908
PT	4942	5157	5349	5702	5655	5837	5773	5877	5892	6075	6190	6483	6495	6481
RO			1670	1837	2066	2122	2186	2226	2332	2408	2614	2835	3189	3767
SE	8648	9068	9545	10495	10885	10535	10819	11366	12017	11718	12092	12573	12142	12248
SI	6946	7292	7753	8287	8599	8009	8364	8563	8527	8597	9061	9150	9147	9463
SK	2394	2772	3365	4058	4694	5016	5385	5879	5743	5883	6132	6280	5763	5846
UK	10137	10578	11267	11126	10091	9521	9466	9868	10060	10138	10669	10378	10824	11054

Source: Eurostat database (variable ilc_li01; extracted on 19.4.2021).

Notes: The poverty line is defined as 60% of median equivalised disposable income. AROP – at risk of poverty.

Table A.1.2 AROP rate, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	12.6	12.6	12.0	15.2	14.5	14.7	14.5	14.4	14.4	14.1	13.9	14.1	14.4	14.3
BE	14.8	14.7	15.2	14.7	14.6	14.6	15.3	15.3	15.1	15.5	14.9	15.5	15.9	16.4
BG		18.4	22.0	21.4	21.8	20.7	22.2	21.2	21.0	21.8	22.0	22.9	23.4	22.0
CY	16.1	15.6	15.5	15.9	15.8	15.6	14.8	14.7	15.3	14.4	16.2	16.1	15.7	15.4
CZ	10.4	9.9	9.6	9.0	8.6	9.0	9.8	9.6	8.6	9.7	9.7	9.7	9.1	9.6
DE	12.2	12.5	15.2	15.2	15.5	15.6	15.8	16.1	16.1	16.7	16.7	16.5	16.1	16.0
DK	11.8	11.7	11.7	11.8	13.1	13.3	12.1	12.0	11.9	12.1	12.2	11.9	12.4	12.7
EE	18.3	18.3	19.4	19.5	19.7	15.8	17.5	17.5	18.6	21.8	21.6	21.7	21.0	21.9
EL	19.6	20.5	20.3	20.1	19.7	20.1	21.4	23.1	23.1	22.1	21.4	21.2	20.2	18.5
ES	20.1	20.3	19.7	19.8	20.4	20.7	20.6	20.8	20.4	22.2	22.1	22.3	21.6	21.5
FI	11.7	12.6	13.0	13.6	13.8	13.1	13.7	13.2	11.8	12.8	12.4	11.6	11.5	12.0
FR	13.0	13.2	13.1	12.5	12.9	13.3	14.0	14.1	13.7	13.3	13.6	13.6	13.2	13.4
HR						20.6	20.9	20.4	19.5	19.4	20.0	19.5	20.0	19.3
HU	13.5	15.9	12.3	12.4	12.4	12.3	14.1	14.3	15.0	15.0	14.9	14.5	13.4	12.8
IE	19.7	18.5	17.2	15.5	15.0	15.2	15.2	16.3	15.7	16.4	16.2	16.8	15.6	14.9
IT	19.2	19.3	19.5	18.9	18.4	18.7	19.8	19.5	19.3	19.4	19.9	20.6	20.3	20.3
LT	20.5	20.0	19.1	20.9	20.3	20.5	19.2	18.6	20.6	19.1	22.2	21.9	22.9	22.9
LU	13.7	14.1	13.5	13.4	14.9	14.5	13.6	15.1	15.9	16.4	15.3	16.5	18.7	18.3
LV	19.4	23.5	21.2	25.9	26.4	20.9	19.0	19.2	19.4	21.2	22.5	21.8	22.1	23.3
MT	14.3	14.2	15.1	15.3	14.9	15.5	15.6	15.1	15.8	15.8	16.6	16.5	16.7	16.8
NL	10.7	9.7	10.2	10.5	11.1	10.3	11.0	10.1	10.4	11.6	11.6	12.7	13.2	13.3
PL	20.5	19.1	17.3	16.9	17.1	17.6	17.7	17.1	17.3	17.0	17.6	17.3	15.0	14.8
PT	19.4	18.5	18.1	18.5	17.9	17.9	18.0	17.9	18.7	19.5	19.5	19.0	18.3	17.3
RO			24.6	23.6	22.1	21.6	22.3	22.9	23.0	25.1	25.4	25.3	23.6	23.5
SE	9.5	12.3	10.5	13.5	14.4	14.8	15.4	15.2	16.0	15.6	16.3	16.2	15.8	16.4
SI	12.2	11.6	11.5	12.3	11.3	12.7	13.6	13.5	14.5	14.5	14.3	13.9	13.3	13.3
SK	13.3	11.6	10.6	10.9	11.0	12.0	13.0	13.2	12.8	12.6	12.3	12.7	12.4	12.2
UK	19.0	19.0	18.6	18.7	17.3	17.1	16.2	16.0	15.9	16.8	16.6	15.9	17.0	18.9
EU	16.0	16.1	16.6	16.6	16.4	16.5	16.9	16.8	16.7	17.2	17.3	17.3	16.9	17.1

Source: Eurostat database (variable ilc_li02; extracted on 7.1.2020).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.3 Relative AROP gap, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	14.8	15.5	17.0	19.9	19.2	21.8	19.1	20.1	21.3	20.1	20.5	19.8	22.4	21.7
BE	17.8	19.4	17.8	17.2	18.1	18.0	18.6	18.7	19.2	18.8	17.4	19.3	17.8	19.4
BG		28.1	33.5	27.0	27.4	29.6	29.4	31.4	30.9	33.2	30.3	30.4	30.5	26.9
CY	19.4	18.9	19.7	15.3	17.2	18.0	19.0	19.0	17.7	18.5	19.8	17.3	15.1	18.6
CZ	18.2	16.8	18.1	18.5	18.8	21.1	17.2	19.1	16.6	18.0	19.2	19.5	16.6	15.0
DE	18.9	20.4	23.2	22.2	21.5	20.7	21.4	21.1	20.4	23.2	22.0	20.7	20.9	22.0
DK	15.6	16.5	17.0	18.0	18.4	21.6	20.5	19.5	23.5	18.5	22.0	20.8	21.7	19.1
EE	24.0	22.0	20.2	20.3	17.0	23.2	26.0	23.8	21.5	22.0	21.0	20.5	20.7	21.9
EL	23.9	25.8	26.0	24.7	24.1	23.4	26.1	29.9	32.7	31.3	30.6	31.9	30.3	29.1
ES	25.6	26.4	25.9	25.6	25.7	26.8	27.4	30.6	30.9	31.6	33.8	31.4	32.4	28.5
FI	13.8	14.5	14.1	15.7	15.1	13.8	13.5	15.0	15.0	13.9	13.2	13.9	13.7	14.2
FR	16.5	18.5	17.9	14.5	18.2	19.5	17.1	16.2	16.8	16.6	15.7	16.6	16.7	16.8
HR						27.6	27.9	31.0	28.1	27.9	26.4	28.2	26.0	28.9
HU	18.4	24.1	19.8	17.3	16.3	16.5	18.2	20.9	21.0	22.3	21.8	18.8	16.7	24.1
IE	20.2	16.6	17.6	17.7	16.2	15.5	17.5	19.7	17.5	18.9	18.4	18.5	18.3	15.3
IT	24.0	24.1	22.7	23.2	23.1	24.8	26.6	26.0	28.2	28.2	29.3	31.6	28.1	29.5
LT	28.4	29.1	25.7	25.6	23.8	32.6	29.0	22.6	24.8	22.7	26.0	28.0	28.0	28.2
LU	18.6	19.7	18.8	16.6	17.6	18.6	15.7	15.0	17.5	16.3	17.4	20.5	23.4	23.6
LV	27.5	24.4	24.8	28.6	29.0	28.9	31.7	28.6	27.5	23.6	25.5	24.0	25.3	27.8
MT	16.9	18.2	18.1	20.3	16.2	17.3	17.7	16.1	18.9	17.9	17.5	15.9	17.5	17.0
NL	20.9	16.9	17.0	14.9	16.5	16.2	15.5	17.3	16.5	16.9	16.8	17.3	17.8	18.3
PL	30.1	25.0	24.0	20.6	22.7	22.2	21.4	22.2	22.6	23.2	22.3	24.4	23.6	23.3
PT	26.0	23.5	24.3	23.2	23.6	22.7	23.2	24.1	27.4	30.3	29.0	26.7	27.0	24.5
RO			36.6	32.3	31.4	31.3	31.4	31.1	33.6	34.6	38.2	36.2	34.5	35.2
SE	17.9	22.7	20.3	18.0	19.2	19.9	20.3	22.7	19.2	21.7	19.9	21.1	21.2	19.9
SI	19.1	18.6	19.4	19.3	20.2	20.2	19.9	19.1	20.4	22.0	20.3	20.2	19.6	17.5
SK	23.5	20.0	19.2	18.1	23.2	25.7	22.8	20.5	24.1	29.0	28.9	26.1	26.0	25.6
UK	22.3	22.8	22.4	21.0	20.6	21.4	21.3	20.9	19.6	19.4	20.4	22.4	20.1	23.0
EU				21.9	22.2	22.9	23.0	23.4	23.8	24.6	24.8	25.0	24.1	24.3

Source: Eurostat database (variable ilc_li11; extracted on 30.10.2020).

Notes: EU includes member countries at the time. AROP – at risk of poverty. The relative AROP gap is defined as the difference between the AROP line and the median equivalised income of persons living below the AROP line, expressed as a percentage of the AROP line.

Table A.1.4 AROP rate by household type, EU, 2006 (%)

		AT	BE	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU
Total		12.6	14.7	15.8	9.8	12.9	11.7	18.5	20.7	20.5	12.5	13.1	15.9
Adult	Child												
1	0	22.1	23.7	43.4	17.0	21.6	25.5	39.4	24.4	33.4	33.6	18.6	17.6
- female		25.9	28.1	52.2	18.5	20.8	25.0	41.8	27.5	41.9	33.3	20.0	14.5
- male		16.4	18.5	28.1	14.6	22.8	26.0	35.0	17.9	21.0	33.9	16.5	24.7
- age <35		21.0	22.1	16.9	14.3	34.2	49.8	20.1	12.7	12.2	37.9	22.9	17.1
- age 35–64		19.0	21.3	23.9	21.3	20.0	12.3	38.3	17.0	23.7	23.9	12.9	23.4
- age 65+		26.1	27.2	69.6	14.4	17.7	21.0	48.2	33.7	45.7	42.5	21.3	13.5
1	1	25.6	22.6	25.3	39.1	22.4	9.2	25.5	10.2	31.2	17.8	21.7	35.7
1	2+	37.5	43.0	41.0	52.7	28.6	28.8	63.5	32.2	43.2	9.7	34.8	52.4
2	0	11.0	14.8	33.7	4.8	11.7	8.0	13.8	20.9	20.3	7.9	11.0	9.7
- at least one age <35		13.8	11.8	9.7	10.4	14.0	11.9	19.3	14.6	6.5	10.9	14.4	9.9
- both age 35–64		8.7	9.5	19.3	3.6	11.0	1.7	16.4	18.7	18.4	4.6	7.0	11.7
- at least one age 65+		12.1	21.5	50.7	2.2	10.9	13.1	8.2	24.6	30.0	9.5	12.5	7.9
2	1	10.7	11.6	10.1	11.2	8.7	5.8	14.4	12.2	14.1	4.7	10.9	16.5
2	2	11.6	8.0	7.5	11.1	9.6	4.9	14.5	17.7	21.0	5.9	8.6	19.6
2	3+	20.8	15.8	15.5	26.3	12.3	12.8	21.0	36.4	33.6	10.5	18.7	36.3
3	0	7.4	8.2	14.5	3.2	8.4	2.9	12.5	16.1	16.8	6.1	12.0	8.5
3	1	8.1	5.9	12.7	11.0	10.9	2.5	13.6	30.4	24.1	5.6	10.4	18.1
3	2+	15.1	16.9	11.5	24.8	19.7	12.3	27.5	38.0	44.1	11.6	19.9	23.7
4+	0+	5.8	14.0	6.1	6.9	8.0	7.3	10.8	22.5	17.3	11.4	17.1	12.8

Table A.1.4 Cont.

		IE	IT	LT	LU	LV	NL	PL	PT	SE	SI	SK	UK
Total		18.5	19.6	20.0	14.1	22.9	9.9	19.1	18.6	12.3	11.7	12.2	19.2
Adult	Child												
1	0	46.3	27.5	38.0	17.2	53.5	14.6	16.1	34.9	21.9	42.5	15.8	28.6
- female		51.4	33.0	38.8	16.0	55.9	12.1	10.7	38.2	21.8	44.7	14.9	30.9
- male		41.3	19.0	36.2	18.7	47.7	17.8	26.9	28.3	22.0	37.9	18.9	25.9
- age <35		20.3	23.4	15.5	24.4	16.6	33.9	17.5	13.7	38.7	32.0	27.7	23.6
- age 35–64		39.5	20.7	41.1	20.9	46.0	10.6	26.9	30.4	10.5	40.6	17.7	22.6
- age 65+		57.8	33.8	41.3	8.4	66.6	3.6	8.0	39.8	20.2	45.0	13.5	35.7
1	1	25.2	20.0	19.1	40.7	26.0	26.0	25.0	30.7	24.9	19.6	22.5	35.1
1	2+	62.0	43.5	75.2	70.5	50.1	45.2	43.0	61.0	37.1	37.9	19.1	49.1
2	0	14.6	15.4	13.8	7.9	19.6	5.8	10.6	22.8	6.6	12.4	9.0	15.0
- at least one age <35		17.4	12.5	13.6	8.0	16.7	6.4	16.3	16.0	16.3	11.7	12.6	8.1
- both age 35–64		15.0	11.1	16.3	8.7	27.0	4.3	12.4	21.5	2.8	12.9	7.9	11.9
- at least one age 65+		12.3	18.0	10.9	7.2	15.6	7.1	5.7	26.5	4.4	11.7	8.0	23.0
2	1	13.1	17.6	16.0	14.0	13.1	6.1	16.7	11.5	8.6	9.0	11.2	14.4
2	2	11.0	22.0	13.2	13.2	22.0	8.6	21.5	16.3	6.3	10.3	14.2	14.5
2	3+	20.2	33.5	43.6	24.1	51.4	16.0	37.3	37.6	13.6	21.0	27.5	28.7
3	0	11.4	11.7	15.3	7.7	17.1	6.8	10.7	13.6	5.8	8.7	7.0	13.6
3	1	19.9	24.3	17.7	16.3	17.7	5.6	19.8	19.6	6.6	7.0	11.7	12.1
3	2+	22.7	42.2	29.8	25.3	31.2	21.6	29.3	26.4	23.0	11.1	28.5	22.9
4+	0+	14.2	18.4	14.5	14.5	17.2	6.3	23.3	14.2	6.9	5.7	11.1	17.9

Source: EU-SILC 2006. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.5 AROP rate by household type, EU, 2012 (%)

		AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total		14.4	15.3	21.3	14.7	9.6	16.3	12.0	17.5	22.9	20.8	13.2	14.1	20.4	14.3
Adult	Child														
1	0	24.2	20.2	45.3	32.2	14.9	32.0	25.4	31.9	20.4	20.6	33.4	19.3	35.8	16.2
- female		26.7	20.7	55.7	37.5	17.2	32.3	24.2	30.2	21.3	19.1	32.4	18.8	38.0	12.1
- male		20.8	19.7	29.0	25.2	11.5	31.7	26.8	35.1	19.1	22.4	34.7	20.0	31.4	23.8
- age <35		31.0	30.6	23.2	20.4	9.9	40.8	59.5	22.3	20.1	25.4	40.3	29.9	25.5	11.5
- age 35–64		22.0	18.0	31.7	26.5	18.5	33.9	11.2	37.3	19.6	26.3	26.6	19.8	35.4	24.3
- age 65+		23.6	18.2	55.0	46.1	13.6	24.2	17.8	31.4	21.1	13.0	37.1	13.9	36.8	9.6
1	1	26.7	33.8	35.3	26.7	32.0	37.1	13.4	22.3	36.5	33.0	16.8	26.1	29.3	18.1
1	2+	42.3	33.2	75.9	10.6	36.1	41.3	37.9	36.9	68.2	34.4	18.1	47.8	44.7	32.5
2	0	11.3	15.2	18.2	20.5	5.8	12.1	8.2	13.6	14.4	16.6	7.1	8.4	22.3	8.3
- at least one age <35		18.5	13.9	15.7	12.0	11.6	16.5	18.1	18.9	14.6	15.2	11.9	14.7	21.6	13.2
- both age 35–64		7.9	9.4	14.6	12.9	6.2	9.6	0.9	15.3	14.8	17.8	4.6	6.0	21.9	9.5
- at least one age 65+		10.6	20.6	21.1	25.5	2.0	11.0	8.4	8.0	14.1	16.6	6.1	6.4	23.3	4.2
2	1	13.0	14.3	14.4	15.4	8.1	14.1	5.8	12.3	20.5	17.7	8.1	10.7	18.3	12.3
2	2	12.2	8.3	20.5	11.5	8.8	8.5	5.0	12.8	24.9	22.8	6.0	11.2	16.1	13.6
2	3+	23.4	18.6	74.0	23.7	24.7	13.7	6.4	17.1	33.0	40.4	13.7	21.7	31.8	35.4
3	0	7.2	9.4	11.8	11.2	6.3	10.4	3.9	15.3	24.1	14.3	5.3	7.6	14.0	10.1
3	1	13.9	13.7	17.0	15.4	7.9	8.7	1.6	12.7	31.3	29.0	5.3	16.4	17.2	16.2
3	2+	22.4	26.7	32.2	9.1	18.6	16.1	21.0	22.2	39.0	37.7	19.8	29.9	33.1	26.0
4+	0+	9.1	11.8	19.2	6.7	9.9	9.3	10.9	16.6	27.0	23.0	9.4	17.0	16.0	17.0

Table A.1.5 Cont.

		IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total		16.3	19.5	18.6	15.1	19.2	14.9	10.1	17.1	17.9	22.7	15.3	13.6	13.2	16.0
Adult	Child														
1	0	27.9	24.4	31.6	14.9	27.6	20.0	18.2	24.4	24.2	24.2	29.9	37.2	19.3	23.6
- female		21.8	28.0	31.5	13.5	24.0	19.4	17.8	22.5	24.7	25.2	31.8	40.2	17.5	22.7
- male		34.8	19.0	31.7	16.5	35.4	20.6	18.7	28.1	23.1	22.3	27.8	33.5	23.5	24.6
- age <35		32.7	30.1	14.0	13.1	27.3	31.2	37.9	14.8	7.1	25.8	39.6	31.7	16.6	31.6
- age 35–64		37.4	19.9	38.0	19.3	37.0	20.3	13.8	29.5	25.3	22.5	19.9	33.9	25.6	23.4
- age 65+		16.8	26.5	30.5	8.1	20.3	18.1	6.7	22.3	26.1	25.0	32.2	42.0	14.7	21.2
1	1	24.6	32.5	33.0	47.3	36.1	40.3	30.7	15.9	19.0	13.9	26.0	25.1	15.9	21.8
1	2+	43.7	48.1	52.6	53.0	52.6	49.2	29.4	34.6	39.9	43.6	28.4	45.5	0.0	20.1
2	0	13.5	12.9	13.4	6.5	16.8	15.8	5.0	11.4	16.8	12.1	7.4	12.0	7.5	13.3
- at least one age <35		16.5	15.5	23.1	12.3	19.3	4.2	6.5	13.4	13.6	17.0	15.4	16.3	11.3	12.7
- both age 35–64		11.8	12.5	13.5	4.8	20.3	18.0	4.6	12.0	20.0	14.0	4.2	12.1	9.0	12.2
- at least one age 65+		12.3	12.0	6.7	4.0	11.8	22.9	4.4	9.4	16.2	7.7	5.0	9.8	3.6	14.3
2	1	7.6	18.5	14.4	12.1	18.5	14.8	3.6	9.9	15.1	17.9	13.0	11.6	12.8	14.2
2	2	11.9	22.0	14.6	15.2	20.4	18.2	8.8	15.4	15.9	31.3	8.9	11.5	16.1	12.9
2	3+	16.0	37.6	33.4	22.3	34.4	28.3	16.8	38.5	40.1	55.4	24.0	15.7	41.5	21.9
3	0	12.0	12.2	13.7	12.1	13.4	4.5	6.5	14.3	13.2	13.8	7.8	7.6	9.5	13.2
3	1	20.2	26.0	17.0	16.4	12.9	9.0	8.2	16.4	19.8	22.6	10.1	8.4	12.6	15.5
3	2+	20.1	36.1	12.7	30.9	26.0	16.7	22.2	27.8	33.3	42.3	23.7	12.3	26.1	23.5
4+	0+	18.7	19.7	18.0	16.7	15.8	8.2	6.4	18.7	18.1	25.8	17.7	7.3	12.3	15.2

Source: EU-SILC 2012. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.6 AROP rate by household type, EU, 2018 (%)

		AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total		14.3	16.4	22.0	15.4	9.6	15.9	12.7	21.9	18.5	21.5	12.0	13.4	19.3	12.8
Adult	Child														
1	0	22.7	23.8	39.8	21.1	27.8	30.6	26.7	55.3	18.7	21.1	29.0	16.1	44.4	20.0
- female		25.3	23.9	46.3	23.7	34.3	30.8	26.2	58.3	19.2	20.5	27.9	14.4	48.9	19.7
- male		19.5	23.6	30.0	18.6	17.5	30.3	27.3	50.3	17.7	21.7	30.4	18.5	36.5	20.4
- age <35		28.7	25.2	12.8	12.8	8.3	40.0	67.4	31.5	20.1	25.2	41.8	26.3	14.9	19.3
- age 35–64		19.1	26.6	27.7	18.8	21.8	29.0	16.6	35.9	22.4	24.3	21.4	16.5	43.5	26.5
- age 65+		24.3	20.0	49.3	31.4	36.9	28.6	16.5	81.4	16.0	17.0	28.2	11.9	48.1	14.2
1	1	36.8	38.9	36.8	22.0	29.5	40.3	31.8	34.2	20.6	31.2	15.1	24.7	23.7	47.4
1	2+	41.6	49.3	37.7	31.7	45.7	42.6	28.2	43.8	31.0	52.7	27.1	36.2	43.9	19.0
2	0	10.5	13.0	15.4	19.0	5.5	12.9	8.2	16.5	12.0	17.7	5.9	6.9	22.0	11.9
- at least one age <35		14.3	15.4	17.3	13.6	9.3	16.7	21.7	13.6	16.6	20.5	12.4	11.5	17.5	15.1
- both age 35–64		9.3	7.2	12.4	17.7	5.1	8.3	2.6	11.1	16.2	18.2	3.4	5.6	20.5	13.8
- at least one age 65+		9.7	15.4	16.3	20.6	4.0	13.4	2.2	21.9	9.0	15.1	3.5	5.3	23.5	8.8
2	1	16.4	13.1	11.9	14.1	9.1	8.5	8.5	10.6	17.2	19.2	5.9	9.8	11.7	12.9
2	2	14.8	9.4	22.1	9.0	4.9	8.1	4.4	10.8	18.4	20.0	5.6	9.6	10.1	8.7
2	3+	27.5	19.8	52.6	32.4	12.3	14.1	12.0	12.3	19.4	37.7	12.3	31.6	31.0	12.3
3	0	5.6	10.5	12.0	11.2	3.8	8.9	4.9	12.9	16.1	16.1	4.0	11.0	14.2	8.1
3	1	9.1	16.1	12.9	16.6	7.2	8.4	0.0	14.4	31.9	30.7	5.2	15.0	13.9	11.3
3	2+	25.3	24.8	35.6	20.4	17.1	21.3	21.5	15.2	31.9	38.3	6.4	21.8	28.2	9.3
4+	0+	6.7	15.5	25.0	9.6	4.9	8.7	3.5	10.9	23.3	24.8	13.2	16.7	14.5	12.3

Table A.1.6 Cont.

		IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total		14.9	20.3	22.9	18.3	23.3	16.8	13.3	14.8	17.3	23.5	16.4	13.3	12.2	18.9
Adult	Child														
1	0	40.9	24.3	50.7	27.8	52.7	27.1	24.1	31.4	26.1	31.6	30.9	40.3	17.2	26.7
- female		44.8	26.4	54.5	31.6	57.5	35.4	22.6	30.4	27.7	37.2	34.1	41.9	15.4	28.7
- male		37.1	21.5	44.1	24.5	42.8	19.2	25.8	33.4	23.0	23.5	27.7	38.4	20.6	24.5
- age <35		15.5	28.7	22.1	27.6	19.5	6.9	40.1	19.7	15.1	19.3	40.2	33.3	11.2	19.6
- age 35–64		39.1	23.8	42.9	31.8	34.5	28.0	23.4	36.8	25.6	27.5	23.9	40.8	24.3	28.4
- age 65+		45.4	23.7	66.0	21.0	74.0	29.5	10.6	30.4	27.7	36.7	29.3	41.2	12.4	26.7
1	1	14.0	27.6	48.0	33.0	22.3	47.9	19.0	22.5	25.7	23.0	27.3	22.7	20.3	35.3
1	2+	35.9	42.8	54.5	63.9	37.4	41.1	30.7	28.2	28.1	52.1	37.1	32.2	67.8	41.6
2	0	11.0	13.3	17.7	11.0	25.4	20.1	9.6	13.0	16.1	16.3	7.5	11.0	7.1	13.2
- at least one age <35		18.8	16.2	14.7	15.5	12.6	14.4	10.6	11.3	16.6	16.9	15.7	16.3	9.1	11.9
- both age 35–64		11.2	13.6	14.8	12.3	22.2	14.9	7.1	15.7	18.3	14.9	4.2	11.4	10.8	11.0
- at least one age 65+		5.7	11.8	21.0	7.0	34.0	28.3	10.9	10.8	14.6	16.7	5.2	8.8	3.4	15.3
2	1	11.3	18.1	12.9	14.6	12.2	10.5	11.3	9.8	12.1	19.3	13.1	10.2	11.3	16.6
2	2	9.2	23.4	16.0	15.5	8.8	16.9	8.1	9.0	12.7	26.5	10.5	9.7	14.3	16.3
2	3+	14.1	34.6	36.7	30.3	15.9	36.3	13.4	10.3	26.0	57.3	28.6	17.0	40.4	30.7
3	0	13.3	14.5	10.5	15.1	13.9	8.8	11.3	13.4	13.9	14.4	6.3	6.3	6.9	13.9
3	1	14.0	27.7	14.8	12.2	15.0	15.8	12.7	14.7	18.8	23.9	4.0	7.2	13.7	19.7
3	2+	16.1	34.5	22.0	46.0	26.2	48.2	23.3	13.6	38.8	33.1	19.7	11.0	34.5	29.6
4+	0+	9.0	23.1	8.9	19.7	16.1	9.3	9.6	15.1	17.8	23.6	18.8	7.0	10.1	17.2

Source: EU-SILC 2018. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.7 AROP rate by age, gender, education, and economic activity, EU, 2006 (%)

	AT	BE	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU
Total	12.6	14.7	15.8	9.8	12.9	11.7	18.5	20.7	20.5	12.5	13.1	15.9
Age												
0–15	14.8	15.0	11.0	16.7	12.5	9.9	20.6	21.6	23.6	8.7	13.4	25.1
16–34	12.5	13.0	9.4	10.4	14.6	20.7	15.6	20.2	16.0	15.4	14.7	16.0
35–64	10.2	12.2	12.0	8.0	12.1	5.5	17.2	18.4	18.4	9.1	10.7	14.1
65+	16.2	23.2	52.1	5.8	13.1	17.4	24.2	25.5	30.6	22.0	16.1	9.4
Female	14.0	15.6	17.8	10.7	13.3	12.0	20.0	21.6	21.7	13.0	14.0	15.6
0–15	15.4	14.6	11.8	18.0	12.4	9.7	20.0	22.1	23.8	8.3	13.9	24.5
16–34	14.2	13.0	10.8	11.3	14.5	21.3	16.9	21.7	17.0	15.6	15.7	16.3
35–64	10.6	13.4	14.3	8.6	12.5	5.1	17.3	18.5	18.9	7.8	11.2	13.4
65+	20.2	25.0	54.2	8.3	14.4	18.6	29.1	27.3	32.9	26.2	17.7	10.8
Male	11.0	13.7	13.6	8.9	12.5	11.4	16.7	19.7	19.3	12.0	12.2	16.3
0–15	14.3	15.3	10.2	15.5	12.6	10.0	21.1	21.2	23.4	9.2	12.9	25.8
16–34	10.9	13.0	8.0	9.6	14.7	20.1	14.4	18.8	15.1	15.3	13.7	15.7
35–64	9.8	11.0	9.7	7.4	11.6	6.0	17.1	18.3	17.8	10.3	10.3	14.9
65+	10.5	20.8	49.6	2.4	11.6	15.9	14.2	23.2	27.5	15.8	13.9	6.9
Education (16+)												
Primary	21.9	22.0	31.0	17.0	19.1	14.2	26.7	27.1	24.1	20.8	17.7	24.4
Secondary	9.1	12.0	9.8	7.4	13.1	10.7	17.1	15.8	12.5	13.2	10.4	11.0
Tertiary	6.0	5.7	4.3	1.7	8.7	8.3	10.3	5.8	7.3	3.9	7.6	3.0
Economic activity (16+)												
Employees	6.9	3.9	8.0	3.9	7.3	4.2	7.4	11.4	7.6	3.9	6.1	8.6
Self-employed	8.6	14.8	6.6	4.3	12.3	15.9	28.4	23.3	26.1	13.7	16.8	9.3
Unemployed	32.6	37.4	23.3	37.9	38.7	24.3	50.1	29.6	30.8	35.8	30.0	44.2
Retired	13.0	18.8	49.8	5.7	12.8	14.6	26.3	23.8	24.3	20.2	12.6	8.3
Student	16.2	15.9	7.5	11.9	20.4	37.6	19.1	24.5	20.8	25.6	21.0	16.8
Inactive	22.6	30.3	21.5	15.1	18.5	15.4	36.5	26.3	32.0	18.4	26.4	27.4

Table A.1.7 Cont.

	IE	IT	LT	LU	LV	NL	PL	PT	SE	SI	SK	UK
Total	18.5	19.6	20.0	14.1	22.9	9.9	19.1	18.6	12.3	11.7	12.2	19.2
Age												
0–15	20.9	24.5	24.1	19.1	25.1	13.8	26.1	20.2	14.0	11.8	16.8	24.2
16–34	15.9	20.0	17.9	15.6	17.7	13.5	20.7	14.6	18.4	8.5	12.7	17.9
35–64	16.4	16.6	18.8	12.8	23.3	7.2	18.5	17.3	7.7	10.5	10.7	14.5
65+	27.2	21.7	22.0	7.9	29.1	6.1	7.8	26.7	11.8	19.9	10.2	27.7
Female	19.5	21.1	20.8	14.3	24.6	10.1	18.5	19.3	12.2	13.0	12.2	20.2
0–15	21.5	24.8	22.8	17.8	24.2	14.8	27.1	19.7	12.9	12.6	16.5	23.4
16–34	15.7	22.0	18.3	17.4	18.7	13.1	21.0	15.2	17.3	8.7	12.0	19.1
35–64	17.4	17.5	18.1	13.3	23.5	7.9	16.8	18.0	7.2	10.2	10.7	15.1
65+	30.8	24.5	28.1	8.0	34.6	5.6	9.1	26.9	15.5	24.9	12.0	30.2
Male	17.5	18.0	19.1	13.8	21.0	9.7	19.7	17.9	12.4	10.3	12.3	18.3
0–15	20.4	24.1	25.3	20.3	26.0	12.8	25.1	20.5	15.1	11.0	17.1	24.9
16–34	16.1	18.0	17.6	14.0	16.8	13.9	20.5	13.9	19.5	8.3	13.3	16.9
35–64	15.5	15.7	19.5	12.3	23.0	6.6	20.3	16.5	8.2	10.8	10.6	13.8
65+	22.7	17.8	10.3	7.9	17.2	6.7	5.7	26.4	7.1	11.9	7.1	24.5
Education (16+)												
Primary	27.0	24.2	29.6	19.5	35.8	9.5	25.1	18.5	12.8	21.4	18.1	28.9
Secondary	13.7	13.4	19.1	9.4	20.2	9.5	18.0	9.9	9.8	7.9	10.3	15.4
Tertiary	5.6	5.7	4.1	4.3	8.0	6.5	2.7	2.5	10.2	2.7	4.3	8.7
Economic activity (16+)												
Employees	5.2	8.9	11.3	10.5	11.0	4.4	10.8	7.9	6.7	4.2	6.2	5.4
Self-employed	11.3	17.4	23.3	15.0	27.0	17.9	29.3	27.9	18.1	17.1	16.1	19.3
Unemployed	45.4	40.6	49.4	43.7	52.1	28.8	43.4	27.0	24.4	30.6	37.8	57.5
Retired	25.2	16.7	22.4	6.7	32.8	5.9	7.0	23.3	11.2	16.5	8.8	28.2
Student	27.4	24.6	22.3	18.2	26.3	25.9	23.4	21.3	29.6	7.4	14.6	25.2
Inactive	32.9	30.2	29.6	16.9	34.2	10.3	23.4	32.8	16.2	33.2	18.5	39.6

Source: EU-SILC 2006. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.8 AROP rate by age, gender, education, and economic activity, EU, 2012 (%)

	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total	14.4	15.3	21.3	14.7	9.6	16.3	12.0	17.5	22.9	20.8	13.2	14.1	20.4	14.3
Age														
0–15	18.3	17.3	28.8	14.3	13.6	14.9	10.2	16.2	26.2	26.9	11.2	18.8	23.3	22.5
16–34	17.2	15.2	19.3	11.7	9.8	19.5	23.9	16.3	27.0	22.8	16.2	17.1	17.8	16.5
35–64	11.1	12.8	16.6	12.4	9.4	15.8	6.0	19.0	22.7	19.8	10.1	12.1	18.7	13.2
65+	15.1	19.4	28.3	29.3	6.0	14.9	12.8	17.2	16.1	14.8	18.4	9.4	25.6	6.3
Female	15.3	15.9	22.9	16.4	10.5	17.4	11.9	18.1	23.4	20.9	13.6	14.6	21.4	14.0
0–15	17.3	16.6	29.7	14.1	14.0	15.1	10.3	15.9	26.7	27.8	10.7	18.7	24.8	22.8
16–34	18.9	16.4	20.5	12.9	11.0	21.3	24.3	17.1	27.6	23.9	15.7	18.1	17.7	17.0
35–64	11.4	13.6	15.9	14.2	9.9	16.6	5.1	18.5	23.2	19.5	8.6	12.6	18.3	12.5
65+	17.8	19.5	34.4	33.6	8.4	16.4	14.1	20.1	17.0	14.8	23.3	10.5	29.1	6.8
Male	13.5	14.7	19.5	12.9	8.7	15.2	12.0	16.8	22.5	20.7	12.9	13.6	19.4	14.8
0–15	19.3	17.9	27.9	14.5	13.2	14.7	10.1	16.4	25.6	26.1	11.6	18.9	21.9	22.3
16–34	15.6	14.1	18.2	10.6	8.7	17.7	23.5	15.6	26.4	21.8	16.7	16.1	17.8	16.0
35–64	10.8	11.9	17.4	10.4	8.9	15.0	6.9	19.6	22.2	20.1	11.6	11.6	19.2	13.9
65+	11.5	19.2	19.4	24.2	2.7	13.3	11.1	11.2	15.0	14.7	11.9	8.0	20.3	5.4
Education (16+)														
Primary	20.5	24.4	40.7	26.2	17.4	28.2	17.8	26.6	27.4	24.8	20.3	18.2	36.2	26.6
Secondary	11.9	12.2	13.2	11.2	8.4	17.8	11.3	20.1	23.6	18.8	15.6	12.6	15.3	9.7
Tertiary	10.0	7.4	5.3	6.1	2.5	9.2	7.3	8.8	9.5	8.7	4.4	7.0	4.8	2.9
Economic activity (16+)														
Employees	8.2	4.7	9.1	8.9	4.2	7.9	5.0	8.5	9.2	9.8	2.9	7.6	6.2	6.7
Self-employed	10.9	13.6	10.9	10.5	9.4	19.4	17.9	25.8	27.6	21.5	13.6	18.5	18.1	6.7
Unemployed	39.9	38.7	42.6	21.2	41.0	65.9	26.5	44.6	41.9	38.1	38.9	30.8	39.1	42.8
Retired	14.3	16.2	26.1	27.7	6.5	15.8	11.7	20.0	13.3	12.5	17.5	8.7	20.8	5.7
Student	21.7	18.6	12.3	7.8	12.7	26.6	35.4	23.1	29.1	27.4	26.9	23.0	17.3	16.3
Inactive	23.2	35.0	40.9	22.9	14.8	27.5	11.9	36.5	33.0	25.8	23.8	34.0	45.2	28.0

Table A.1.8 Cont.

	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total	16.3	19.5	18.6	15.1	19.2	14.9	10.1	17.1	17.9	22.7	15.3	13.6	13.2	16.0
Age														
0–15	17.8	26.1	19.5	22.3	23.9	21.6	13.6	21.1	21.1	32.8	17.0	13.5	21.5	17.4
16–34	17.5	22.3	18.8	16.9	18.7	9.8	14.2	16.8	17.2	25.8	21.2	11.7	13.0	17.3
35–64	15.8	17.4	18.1	13.7	20.2	13.1	7.9	16.7	17.4	19.8	10.5	12.6	12.5	14.2
65+	12.8	16.1	18.7	6.1	13.9	17.5	5.5	14.0	17.1	14.6	15.9	19.6	7.8	16.4
Female	16.5	20.8	19.0	15.6	19.1	15.6	10.6	17.1	18.2	22.7	16.1	14.5	13.3	16.2
0–15	19.3	26.7	20.1	22.8	21.7	22.2	13.9	21.3	20.5	31.8	16.4	13.3	22.0	18.2
16–34	17.5	24.5	15.8	17.6	19.4	11.8	16.7	16.9	17.4	27.0	21.2	12.3	13.8	16.4
35–64	15.2	18.3	19.2	13.8	19.5	14.0	7.9	15.7	17.9	18.3	10.2	11.9	12.2	14.4
65+	13.0	18.4	21.2	8.0	16.4	16.0	5.4	16.8	18.2	18.3	20.9	25.0	9.0	17.7
Male	16.2	18.1	18.1	14.7	19.3	14.2	9.5	17.1	17.5	22.9	14.4	12.5	13.2	15.7
0–15	16.3	25.5	18.9	21.9	25.9	21.0	13.3	20.8	21.7	33.7	17.5	13.3	21.1	16.7
16–34	17.5	20.1	21.6	16.3	18.1	7.8	11.8	16.8	17.0	24.6	21.0	11.1	12.3	18.2
35–64	16.3	16.5	16.8	13.6	20.9	12.3	7.9	17.9	16.9	21.4	10.7	13.2	12.9	14.0
65+	12.6	13.1	13.8	3.6	8.5	19.3	5.5	9.4	15.6	9.0	9.8	11.8	5.9	14.9
Education (16+)														
Primary	21.0	23.8	29.6	20.1	28.6	16.7	9.8	27.6	19.5	33.8	22.5	25.8	22.4	22.5
Secondary	18.2	14.3	19.8	10.6	18.6	7.3	9.6	16.2	11.7	15.3	12.4	12.4	11.4	16.2
Tertiary	9.5	7.5	5.6	5.9	6.5	4.0	8.0	4.6	3.5	2.6	10.5	3.6	4.7	8.9
Economic activity (16+)														
Employees	4.1	9.7	7.5	10.5	10.1	4.7	4.1	7.8	7.1	5.9	6.9	4.6	5.0	7.7
Self-employed	15.3	17.0	19.1	17.1	18.1	12.4	14.4	26.0	29.8	50.5	15.8	22.9	16.6	15.4
Unemployed	33.8	40.1	52.7	46.0	45.6	45.6	23.0	36.5	33.0	53.2	35.6	37.1	41.5	51.8
Retired	12.0	12.3	21.2	5.5	15.9	16.0	5.4	12.6	15.6	10.9	15.6	16.9	7.7	17.7
Student	27.3	23.2	23.4	18.9	23.2	17.4	24.1	21.8	22.8	23.8	34.0	10.0	15.3	26.9
Inactive	25.0	29.8	25.0	19.1	32.0	20.9	14.0	27.7	33.5	45.5	31.4	33.6	24.1	30.5

Source: EU-SILC 2012. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.9 AROP rate by age, gender, education, and economic activity, EU, 2018 (%)

	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total	14.3	16.4	22.0	15.4	9.6	15.9	12.7	21.9	18.5	21.5	12.0	13.4	19.3	12.8
Age														
0–15	19.5	19.9	26.8	17.1	10.7	14.0	11.3	15.0	21.7	26.2	10.5	19.4	19.2	12.9
16–34	15.7	16.8	21.3	13.7	7.9	18.2	25.5	16.2	22.9	25.9	17.6	15.4	14.4	12.9
35–64	11.8	14.6	17.0	13.5	8.0	14.2	7.7	16.5	18.9	20.4	8.6	11.9	17.8	13.9
65+	13.9	16.6	29.2	21.4	14.2	18.4	8.9	46.3	11.6	15.6	13.2	8.2	28.1	9.8
Female	15.2	17.1	23.4	15.9	11.4	16.7	12.8	24.2	18.5	22.2	12.3	13.3	20.4	13.6
0–15	20.0	19.7	28.8	15.8	9.9	13.3	9.7	15.3	20.9	26.9	11.0	18.9	18.6	13.6
16–34	17.0	17.5	21.0	14.5	9.4	19.7	27.3	15.2	23.4	28.6	17.2	15.0	14.8	15.3
35–64	11.6	15.6	15.9	14.0	8.5	14.8	7.8	15.6	18.9	20.5	7.2	12.3	18.0	13.9
65+	17.6	17.5	35.0	23.4	19.9	19.8	8.8	52.3	12.6	16.3	16.7	8.9	31.3	11.3
Male	13.3	15.6	20.4	14.8	7.8	15.1	12.6	19.3	18.5	20.9	11.7	13.5	18.1	11.9
0–15	19.1	20.0	24.9	18.4	11.3	14.5	12.6	14.6	22.4	25.5	10.1	19.9	19.8	12.2
16–34	14.5	16.0	21.5	12.9	6.4	16.7	23.7	17.2	22.4	23.3	18.1	15.9	14.0	10.7
35–64	12.0	13.5	18.1	13.1	7.4	13.5	7.6	17.5	19.0	20.3	10.1	11.5	17.7	13.9
65+	9.2	15.4	20.5	19.2	6.7	17.0	9.2	34.9	10.4	14.7	8.7	7.4	23.5	7.4
Education (16+)														
Primary	21.6	28.0	44.4	29.5	22.8	31.7	15.8	38.5	22.8	27.8	19.0	18.1	38.6	23.7
Secondary	11.4	14.7	15.4	13.1	8.6	17.7	13.5	26.1	18.7	20.6	13.7	11.2	15.4	10.1
Tertiary	10.8	6.5	6.2	4.4	3.1	9.3	9.9	13.7	8.5	9.3	4.5	5.7	4.5	4.8
Economic activity (16+)														
Employees	7.7	4.7	10.6	8.3	3.1	8.1	5.0	9.4	8.9	12.1	2.7	6.9	5.8	8.4
Self-employed	14.8	14.9	11.6	8.8	7.5	18.9	21.2	17.4	20.2	24.0	11.5	16.9	12.8	9.7
Unemployed	40.6	50.1	54.5	35.3	48.3	65.4	40.8	43.3	40.9	46.8	36.2	32.0	43.9	44.7
Retired	13.0	14.5	28.0	21.8	14.2	19.0	9.2	51.9	8.7	12.8	12.9	7.3	24.6	10.2
Student	19.8	23.5	16.4	12.0	10.9	28.4	37.3	20.5	25.1	28.5	29.1	21.4	17.8	15.3
Inactive	27.9	44.0	38.6	26.0	17.1	31.4	18.5	38.5	25.0	28.3	22.8	34.2	44.4	23.4

Table A.1.9 Cont.

	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total	14.9	20.3	22.9	18.3	23.3	16.8	13.3	14.8	17.3	23.5	16.4	13.3	12.2	18.9
Age														
0–15	14.8	26.3	23.9	22.0	16.2	20.7	13.0	12.4	18.5	31.8	19.4	11.7	20.2	23.8
16–34	12.5	23.7	16.7	19.8	14.5	10.8	17.3	14.3	17.6	24.6	22.4	11.8	12.5	18.5
35–64	14.7	19.3	19.0	18.0	20.1	15.4	12.1	15.8	16.5	20.0	11.9	12.6	11.2	16.5
65+	20.1	15.3	37.7	12.1	45.7	26.0	10.8	15.5	17.7	22.8	14.6	18.3	6.4	19.3
Female														
0–15	14.9	25.7	20.6	23.4	16.5	20.2	12.3	12.4	19.3	32.3	21.1	11.3	19.5	24.4
16–34	14.2	25.6	18.1	20.9	13.7	10.9	18.4	14.0	16.8	25.7	22.5	12.0	14.2	20.4
35–64	15.3	20.2	18.4	18.7	20.6	17.3	12.5	14.9	17.0	19.4	12.0	11.9	10.8	17.1
65+	24.5	16.9	43.6	15.7	49.8	28.4	10.8	18.3	19.7	27.5	19.2	22.3	7.1	21.7
Male														
0–15	14.6	26.9	27.0	20.9	16.0	21.1	13.7	12.3	17.8	31.3	17.7	12.1	20.9	23.2
16–34	10.7	22.0	15.4	18.7	15.3	10.7	16.2	14.7	18.3	23.6	22.4	11.6	10.9	16.7
35–64	14.0	18.4	19.6	17.3	19.6	13.6	11.8	16.7	15.9	20.6	11.8	13.2	11.5	15.9
65+	15.1	13.1	25.8	8.5	37.5	23.3	10.9	11.2	14.9	15.9	9.3	12.9	5.2	16.6
Education (16+)														
Primary	27.9	25.3	42.2	24.3	43.0	23.7	16.0	28.1	22.3	43.6	24.5	26.5	24.5	26.7
Secondary	14.1	16.0	25.1	15.3	27.6	10.6	14.6	16.4	12.7	14.4	11.4	13.1	8.9	19.2
Tertiary	7.8	8.7	9.1	11.3	9.9	3.3	9.1	4.5	4.5	1.3	10.0	5.2	6.1	11.3
Economic activity (16+)														
Employees	3.8	12.3	7.8	13.6	7.3	5.8	6.0	6.1	8.8	4.9	5.8	4.8	5.2	9.6
Self-employed	12.0	18.1	15.7	24.4	25.3	12.7	15.9	27.0	25.8	52.8	19.9	21.8	13.8	19.0
Unemployed	45.4	43.6	54.0	46.6	48.2	50.4	28.8	33.2	41.0	39.8	49.0	42.7	49.1	44.4
Retired	19.5	11.9	41.0	8.9	48.5	23.8	10.0	15.3	15.8	19.4	15.9	18.2	6.9	21.6
Student	21.4	24.1	19.0	22.3	25.4	16.6	29.6	22.2	21.1	27.5	36.9	12.1	15.7	31.3
Inactive	33.2	31.7	43.4	28.9	43.6	32.3	25.2	28.7	37.5	47.5	45.0	32.1	24.6	36.6

Source: EU-SILC 2018. Author's computations.

Notes: AROP – at risk of poverty.

Table A.1.10 AROP rates and gaps by poverty line, EU, 2006–2018 (EUR, %)

	2006			2012			2018		
	Line	Rate	Gap	Line	Rate	Gap	Line	Rate	Gap
AT									
50%	8,926	6.1	20.3	10,904	8.4	23.1	12,588	8.8	20.5
60%	10,711	12.6	15.5	13,084	14.4	20.1	15,105	14.3	21.7
70%	12,497	20.1	20.2	15,265	21.6	21.8	17,623	22.3	22.1
BE									
50%	8,597	8.2	15.8	10,140	8.3	18.1	11,843	9.0	17.4
60%	10,316	14.7	19.4	12,168	15.3	18.7	14,212	16.4	19.4
70%	12,036	23.5	20.3	14,196	24.3	20.0	16,580	25.6	21.1
BG									
50%				1,428	15.2	30.2	1,795	15.4	26.9
60%				1,713	21.3	31.9	2,154	22.0	26.9
70%				1,999	28.3	31.2	2,513	29.2	30.0
CY									
50%	7,266	8.9	16.9	8,464	8.0	16.2	7,668	8.4	12.5
60%	8,719	15.8	19.0	10,156	14.7	19.0	9,202	15.4	18.6
70%	10,173	23.3	21.9	11,849	23.9	19.4	10,735	25.2	20.3
CZ									
50%	2,398	4.9	18.8	3,896	5.1	20.9	4,544	4.4	15.9
60%	2,878	9.8	17.0	4,675	9.6	19.1	5,453	9.6	15.0
70%	3,358	17.9	16.5	5,454	16.6	18.0	6,362	17.1	17.1
DE									
50%	7,776	7.6	24.1	9,725	9.9	17.5	11,387	9.8	19.2
60%	9,332	12.9	21.1	11,669	16.3	21.6	13,664	15.9	22.6
70%	10,887	20.1	21.9	13,614	23.8	24.1	15,942	23.9	22.7
DK									
50%	11,331	5.8	27.7	13,592	6.6	27.7	15,052	6.8	23.0
60%	13,598	11.7	16.5	16,310	12.0	19.5	18,062	12.7	19.1
70%	15,864	19.6	17.4	19,029	20.4	18.0	21,073	20.8	18.3
EE									
50%	1,794	11.1	24.5	2,994	10.9	27.8	5,262	13.9	18.6
60%	2,153	18.5	23.3	3,592	17.5	23.8	6,314	21.9	21.9
70%	2,512	26.3	23.9	4,191	26.7	22.0	7,367	30.1	26.9
EL									
50%	4,891	13.6	23.2	4,593	15.4	32.5	3,932	12.9	27.8
60%	5,870	20.7	25.9	5,512	22.9	29.0	4,718	18.5	29.1
70%	6,848	28.1	27.5	6,431	30.2	29.2	5,504	26.4	27.6
ES									
50%	5,543	13.8	27.1	6,934	14.4	33.4	7,392	14.6	28.7
60%	6,652	20.5	27.3	8,321	20.8	30.6	8,871	21.5	28.5
70%	7,760	27.8	28.3	9,707	28.9	28.3	10,349	28.9	28.9
FI									
50%	9,113	5.4	14.7	11,350	6.0	16.3	12,272	5.4	15.4
60%	10,935	12.5	14.5	13,619	13.2	15.0	14,727	12.0	14.2
70%	12,758	21.7	17.3	15,889	21.8	18.8	17,181	20.9	16.9
FR									
50%	8,093	7.1	16.3	10,300	6.9	18.1	11,110	6.7	14.7
60%	9,712	13.1	18.8	12,360	14.1	16.3	13,332	13.4	17.0
70%	11,331	21.3	18.7	14,420	21.6	20.5	15,554	21.1	19.5
HR									
50%				2,689	14.1	26.7	3,329	13.6	26.5
60%				3,226	20.4	30.8	3,995	19.3	28.8
70%				3,764	27.5	30.0	4,661	26.2	29.9
HU									
50%	1,924	10.0	24.2	2,348	8.4	17.2	2,712	8.0	31.1
60%	2,308	15.9	24.0	2,818	14.3	20.9	3,254	12.8	24.1
70%	2,693	23.8	22.3	3,287	22.0	22.2	3,797	23.0	17.4

Table A.1.10 Cont.

	2006			2012			2018		
	Line	Rate	Gap	Line	Rate	Gap	Line	Rate	Gap
IE									
50%	9,840	9.1	14.9	9,824	9.6	21.5	12,460	7.1	14.6
60%	11,808	18.5	16.4	11,789	16.3	19.7	14,952	14.9	15.3
70%	13,776	27.4	21.6	13,754	24.5	22.0	17,444	24.1	18.6
IT									
50%	7,260	12.6	26.2	7,990	12.4	31.1	8,422	13.6	32.7
60%	8,712	19.6	24.2	9,587	19.5	26.0	10,106	20.3	29.5
70%	10,164	27.2	26.0	11,185	27.2	26.6	11,791	28.3	27.3
LT									
50%	1,266	13.2	29.8	2,169	11.3	25.5	3,448	15.8	25.1
60%	1,519	20.0	29.1	2,602	18.6	22.6	4,137	22.9	28.2
70%	1,772	28.3	26.0	3,036	27.0	23.6	4,827	30.7	29.1
LU									
50%	14,740	8.1	19.4	16,390	7.1	16.1	20,135	11.9	24.8
60%	17,688	14.1	19.7	19,668	15.1	15.0	24,162	18.3	24.4
70%	20,636	21.0	22.3	22,945	24.7	17.9	28,189	26.6	25.4
LV									
50%	1,240	15.4	26.7	2,225	13.5	28.8	3,666	16.3	25.2
60%	1,488	22.9	26.2	2,670	19.2	28.6	4,400	23.3	27.8
70%	1,736	30.5	28.9	3,115	28.2	26.6	5,133	30.3	31.8
MT									
50%				5,747	7.4	13.7	7,409	8.6	16.4
60%				6,896	14.9	16.4	8,891	16.8	16.9
70%				8,046	24.0	20.0	10,373	25.3	20.6
NL									
50%	8,630	5.0	35.9	10,281	5.2	18.7	12,008	7.0	20.9
60%	10,356	9.9	17.3	12,337	10.1	17.3	14,410	13.3	18.3
70%	12,082	18.6	15.6	14,393	17.9	18.1	16,811	21.4	18.9
PL									
50%	1,556	12.3	24.6	2,530	10.5	21.2	3,287	9.0	24.3
60%	1,867	19.1	25.0	3,036	17.1	22.2	3,944	14.8	23.3
70%	2,178	26.9	25.9	3,542	24.9	24.1	4,602	22.8	22.4
PT									
50%	3,648	11.5	23.6	4,113	11.5	25.0	4,673	10.8	23.3
60%	4,378	18.6	23.6	4,936	17.9	24.6	5,607	17.3	24.5
70%	5,108	25.9	25.6	5,759	24.5	26.8	6,542	25.3	23.7
RO									
50%				1,019	16.5	31.3	1,642	17.2	35.4
60%				1,223	22.8	31.4	1,970	23.5	35.2
70%				1,427	29.6	32.5	2,299	30.1	35.2
SE									
50%	8,865	7.3	29.0	11,922	8.7	23.2	12,770	9.5	18.8
60%	10,638	12.3	21.8	14,307	15.3	22.7	15,324	16.4	19.9
70%	12,411	19.7	20.5	16,691	24.1	21.2	17,878	24.5	22.7
SI									
50%	4,659	6.6	15.7	6,053	7.5	16.9	6,626	7.0	16.7
60%	5,591	11.7	18.6	7,264	13.6	19.0	7,951	13.3	17.6
70%	6,523	19.1	19.9	8,474	20.7	21.2	9,276	20.7	21.0
SK									
50%	1,637	7.1	23.1	3,464	7.8	25.3	3,731	6.3	25.4
60%	1,965	12.2	20.8	4,156	13.2	20.5	4,477	12.2	25.6
70%	2,292	19.2	21.5	4,849	20.4	21.8	5,223	16.7	18.4
UK									
50%	9,654	12.0	22.2	9,583	9.2	22.1	10,500	12.0	26.0
60%	11,584	19.2	22.8	11,500	16.0	20.9	12,600	18.9	24.9
70%	13,515	27.4	24.9	13,417	24.5	21.2	14,700	26.6	25.8

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: AROP – at risk of poverty. Poverty lines (yearly in Euros) as a percentage of median equivalised income (using various equivalence scales). A gap is defined as the difference between the AROP line and the median equivalised income of persons below the AROP line, expressed as a percentage of the AROP line.

Table A.1.11 Distribution of equivalised income by poverty line and age, AT and BE, 2006–2018 (%)

AT	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.3	1.3	0.2	1.8	0.4	1.8	0.4	2.7	0.5	1.6	0.3	2.4
30-40%	0.2	0.9	0.2	1.3	0.4	1.2	0.2	1.8	0.6	1.2	0.2	2.0
40-50%	0.7	1.8	0.5	3.0	0.6	2.5	0.9	3.9	0.8	2.7	0.8	4.3
50-60%	1.2	3.4	1.8	6.4	1.5	3.4	1.1	6.0	1.3	3.2	1.0	5.5
60-70%	1.8	4.1	1.7	7.6	1.5	4.1	1.5	7.2	1.8	4.7	1.5	8.0
70-80%	2.3	5.8	1.6	9.7	2.1	5.2	1.9	9.2	1.8	5.2	1.6	8.5
80-90%	2.3	6.2	1.3	9.8	2.0	5.7	1.7	9.4	1.8	5.8	2.1	9.6
90-100%	2.1	6.6	1.7	10.3	1.8	6.3	1.8	9.9	1.9	5.9	1.7	9.5
100-110%	1.6	6.1	1.5	9.2	1.0	5.2	1.6	7.9	1.2	5.6	1.6	8.4
110-120%	1.1	5.7	1.1	7.9	1.0	5.2	1.3	7.5	1.0	5.7	1.2	8.0
120-130%	0.9	4.9	1.2	7.1	0.9	5.0	1.0	6.9	0.9	4.9	1.0	6.8
130-140%	0.6	3.8	0.8	5.2	0.6	4.3	0.9	5.8	0.6	4.2	1.0	5.7
140-150%	0.4	3.2	0.5	4.1	0.3	2.7	0.4	3.5	0.5	3.1	0.6	4.2
150-200%	1.1	8.7	1.3	11.1	1.0	8.9	1.5	11.5	1.0	8.6	1.5	11.1
>=200%	0.5	4.2	0.8	5.5	0.6	5.3	1.1	7.0	0.4	4.6	0.9	5.9
Total	17.3	66.6	16.1	100.0	15.7	67.0	17.3	100.0	15.8	67.0	17.1	100.0
BE	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.3	1.0	0.3	1.5	0.3	1.0	0.5	1.8	0.2	0.8	0.2	1.2
30-40%	0.4	1.2	0.3	1.8	0.4	1.3	0.2	1.9	0.7	1.6	0.2	2.5
40-50%	0.9	2.5	1.4	4.9	1.1	2.9	0.5	4.6	1.3	3.4	0.6	5.3
50-60%	1.3	3.5	1.8	6.5	1.4	3.6	2.0	7.0	1.5	4.0	2.0	7.4
60-70%	1.5	4.5	2.8	8.8	1.5	4.5	3.1	9.0	1.2	4.5	3.5	9.2
70-80%	1.5	5.1	2.8	9.4	1.7	5.0	2.3	9.0	1.3	4.3	2.2	7.8
80-90%	1.5	5.6	1.7	8.7	1.7	5.1	2.1	8.9	1.4	4.9	2.1	8.4
90-100%	1.5	5.6	1.3	8.4	1.4	5.0	1.4	7.8	1.6	5.1	1.6	8.2
100-110%	2.0	5.8	0.9	8.7	1.7	5.8	1.1	8.6	1.6	5.5	1.5	8.6
110-120%	1.6	5.2	0.8	7.6	1.4	5.3	0.9	7.6	1.8	5.3	1.1	8.1
120-130%	1.5	4.8	0.6	6.9	1.2	5.3	0.6	7.1	1.6	5.5	0.8	7.9
130-140%	1.2	4.2	0.3	5.8	1.1	3.8	0.5	5.4	1.3	4.7	0.6	6.6
140-150%	0.7	3.0	0.2	4.0	1.1	4.2	0.3	5.6	0.8	3.3	0.4	4.6
150-200%	1.9	9.0	0.7	11.7	1.7	8.2	0.7	10.6	1.6	7.9	0.9	10.4
>=200%	0.9	4.2	0.3	5.4	0.8	3.9	0.3	5.0	0.5	2.9	0.4	3.8
Total	18.8	65.1	16.1	100.0	18.6	65.0	16.5	100.0	18.2	63.7	18.0	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.12 Distribution of equivalised income by poverty line and age, BG and CY, 2006–2018 (%)

BG	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%					1.6	3.7	0.4	5.7	1.5	3.4	0.3	5.2
30-40%					1.0	2.4	1.1	4.5	0.8	2.3	0.9	4.0
40-50%					0.7	2.5	1.8	5.1	0.9	2.9	2.4	6.2
50-60%					0.9	3.1	2.0	6.0	0.9	3.1	2.5	6.6
60-70%					0.9	3.9	2.3	7.1	1.0	3.8	2.4	7.2
70-80%					1.0	4.1	2.3	7.4	1.0	4.2	2.1	7.3
80-90%					0.8	4.0	1.5	6.3	1.1	4.1	1.7	7.0
90-100%					1.2	5.4	1.4	7.9	1.0	4.2	1.4	6.6
100-110%					1.0	4.9	1.3	7.2	0.8	4.2	1.3	6.4
110-120%					1.0	4.8	0.8	6.6	0.7	3.1	1.0	4.7
120-130%					0.9	4.3	0.8	6.1	0.7	3.8	0.9	5.4
130-140%					0.6	3.3	0.6	4.5	0.6	2.6	0.7	4.0
140-150%					0.6	3.2	0.5	4.3	0.6	2.6	0.5	3.6
150-200%					1.5	9.6	1.1	12.2	1.9	9.7	1.7	13.2
>=200%					1.0	7.4	0.8	9.1	1.7	9.7	1.1	12.6
<i>Total</i>					14.6	66.6	18.8	100.0	15.3	63.7	21.0	100.0
CY	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.1	0.7	0.2	1.0	0.2	0.9	0.1	1.2	0.1	0.4	0.0	0.5
30-40%	0.3	1.3	1.3	2.9	0.3	1.3	0.4	2.0	0.5	1.2	0.2	1.9
40-50%	0.5	2.0	2.5	5.1	0.9	2.7	1.3	4.8	1.4	3.6	1.1	6.1
50-60%	1.2	3.5	2.1	6.9	1.1	3.6	2.0	6.7	1.1	4.1	1.8	6.9
60-70%	1.8	4.7	1.1	7.6	1.3	5.6	2.3	9.2	1.9	5.4	2.6	9.8
70-80%	2.5	6.6	0.9	10.0	1.6	5.0	1.4	8.0	1.6	5.1	1.4	8.1
80-90%	2.1	6.2	0.6	8.9	2.1	7.1	0.9	10.2	1.3	5.7	1.0	8.1
90-100%	1.8	5.6	0.4	7.8	1.6	5.8	0.6	7.9	1.6	6.2	0.8	8.6
100-110%	1.6	5.9	0.4	7.9	1.4	6.0	0.6	8.0	1.7	6.1	0.7	8.5
110-120%	1.5	5.8	0.4	7.6	1.2	4.6	0.6	6.3	0.8	5.6	0.7	7.1
120-130%	1.3	5.1	0.4	6.8	0.9	4.1	0.4	5.3	1.2	4.7	0.6	6.6
130-140%	1.0	3.3	0.3	4.5	0.9	3.7	0.3	5.0	0.8	3.3	0.5	4.6
140-150%	0.9	2.9	0.2	4.0	0.6	2.7	0.2	3.6	0.7	3.1	0.4	4.2
150-200%	2.2	8.8	0.4	11.4	2.5	9.0	0.7	12.3	1.7	7.6	1.5	10.8
>=200%	1.0	6.2	0.4	7.6	1.2	7.3	1.0	9.5	1.1	5.9	1.3	8.3
<i>Total</i>	20.0	68.3	11.8	100.0	17.8	69.4	12.8	100.0	17.5	67.9	14.6	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.13 Distribution of equivalised income by poverty line and age, CZ and DE, 2006–2018 (%)

CZ	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.2	0.5	0.0	0.8	0.2	0.9	0.0	1.2	0.2	0.6	0.1	0.9
30-40%	0.4	1.1	0.0	1.5	0.4	1.1	0.0	1.6	0.2	0.6	0.1	0.9
40-50%	0.7	1.8	0.1	2.6	0.6	1.6	0.2	2.4	0.6	1.4	0.6	2.5
50-60%	1.3	2.9	0.6	4.9	0.9	2.8	0.8	4.5	0.8	2.5	1.9	5.2
60-70%	1.7	4.7	1.7	8.1	1.3	4.0	1.7	7.0	0.9	3.4	3.3	7.6
70-80%	1.6	5.5	2.6	9.7	1.7	5.3	2.7	9.7	1.9	5.1	4.0	11.1
80-90%	1.9	6.7	3.4	12.0	1.8	6.7	3.6	12.0	1.9	5.7	3.4	11.0
90-100%	1.5	6.8	2.0	10.3	1.8	7.3	2.5	11.6	1.8	7.1	1.9	10.7
100-110%	1.4	7.6	1.2	10.2	1.4	6.7	1.4	9.5	1.8	6.5	1.1	9.5
110-120%	1.2	5.3	0.5	7.0	1.3	6.1	0.9	8.3	1.6	5.8	0.7	8.2
120-130%	1.1	5.8	0.5	7.4	1.2	5.3	0.6	7.1	1.3	4.9	0.6	6.7
130-140%	0.6	4.1	0.2	4.9	0.5	4.1	0.4	5.0	0.7	3.8	0.3	4.9
140-150%	0.5	3.3	0.2	4.0	0.6	3.0	0.4	4.0	0.8	3.2	0.2	4.2
150-200%	1.2	9.3	0.5	11.0	1.3	8.4	0.6	10.3	1.5	8.9	0.6	11.1
>=200%	0.6	4.7	0.2	5.4	0.9	4.7	0.4	5.9	0.9	4.4	0.3	5.5
<i>Total</i>	16.0	70.2	13.8	100.0	15.8	68.1	16.1	100.0	16.9	63.9	19.1	100.0
DE	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.3	1.6	0.5	2.4	0.2	1.4	0.2	1.8	0.2	1.5	0.4	2.0
30-40%	0.3	1.3	0.2	1.9	0.2	1.8	0.5	2.5	0.3	2.0	0.5	2.8
40-50%	0.6	2.3	0.5	3.3	0.7	3.9	1.0	5.5	0.6	3.2	1.1	5.0
50-60%	0.8	3.3	1.2	5.3	1.0	4.1	1.3	6.5	1.0	3.4	1.7	6.1
60-70%	1.3	4.2	1.7	7.1	1.4	4.2	1.8	7.5	1.5	4.4	2.2	8.0
70-80%	1.7	4.7	1.9	8.3	1.6	5.0	2.4	9.0	1.2	4.6	2.6	8.5
80-90%	2.2	6.4	2.2	10.9	1.4	4.7	2.4	8.5	1.5	5.4	2.5	9.4
90-100%	2.0	6.4	2.3	10.7	1.3	5.0	2.3	8.6	1.3	5.0	1.9	8.2
100-110%	1.8	6.3	2.2	10.3	1.2	5.0	1.5	7.8	1.4	5.3	1.4	8.1
110-120%	1.3	5.4	1.7	8.4	1.1	4.8	1.3	7.2	1.0	4.9	1.3	7.2
120-130%	0.8	4.5	1.1	6.4	0.8	4.3	1.0	6.0	1.0	4.4	0.9	6.2
130-140%	0.6	3.4	0.8	4.8	0.8	3.8	0.7	5.3	0.7	3.6	0.7	5.1
140-150%	0.5	3.1	0.5	4.1	0.6	3.2	0.6	4.4	0.6	3.3	0.7	4.5
150-200%	0.8	8.5	1.1	10.4	1.4	9.1	1.8	12.4	1.4	8.6	1.6	11.6
>=200%	0.5	4.5	0.6	5.6	0.7	5.2	1.1	7.0	0.9	5.3	1.0	7.1
<i>Total</i>	15.5	65.9	18.6	100.0	14.5	65.5	20.0	100.0	14.5	64.9	20.6	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.14 Distribution of equivalised income by poverty line and age, DK and EE, 2006–2018 (%)

DK	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.3	1.6	0.1	2.0	0.5	1.8	0.1	2.5	0.0	1.6	0.1	1.6
30-40%	0.2	1.1	0.1	1.4	0.2	1.3	0.1	1.6	0.3	2.2	0.1	2.6
40-50%	0.4	1.8	0.2	2.4	0.4	1.8	0.3	2.6	0.6	1.9	0.1	2.6
50-60%	1.1	2.7	2.2	5.9	0.7	2.9	1.7	5.4	1.0	3.3	1.5	5.9
60-70%	1.3	3.4	3.2	7.9	1.2	3.6	3.5	8.4	1.3	3.4	3.5	8.1
70-80%	1.7	4.5	3.4	9.6	1.9	4.9	3.3	10.2	1.2	4.5	4.1	9.8
80-90%	2.4	6.1	1.6	10.1	2.0	5.3	2.4	9.7	2.1	5.3	2.6	10.0
90-100%	2.8	6.6	1.4	10.8	2.1	5.8	1.8	9.7	2.0	5.5	1.9	9.3
100-110%	2.6	6.8	0.7	10.1	2.2	6.4	1.0	9.6	1.9	6.1	1.5	9.5
110-120%	2.3	6.8	0.6	9.8	2.0	5.5	0.7	8.2	1.6	5.3	0.9	7.7
120-130%	1.6	6.0	0.5	8.1	1.6	5.3	0.5	7.4	1.3	4.5	0.8	6.6
130-140%	1.0	4.4	0.3	5.7	0.9	4.1	0.5	5.6	1.3	4.1	0.5	5.9
140-150%	0.6	3.5	0.3	4.4	0.8	3.5	0.3	4.7	0.8	3.2	0.4	4.4
150-200%	1.2	7.5	0.4	9.0	1.5	7.9	0.7	10.0	1.5	7.8	1.0	10.3
>=200%	0.4	2.4	0.2	2.9	0.6	3.4	0.4	4.5	0.8	4.0	0.7	5.6
<i>Total</i>	20.0	64.9	15.1	100.0	18.9	63.6	17.5	100.0	17.7	62.7	19.6	100.0
EE	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.7	2.6	0.1	3.5	0.6	3.1	0.1	3.8	0.4	2.6	0.2	3.2
30-40%	0.5	1.9	0.3	2.8	0.5	2.3	0.1	2.9	0.5	2.0	0.8	3.3
40-50%	1.1	2.8	1.0	4.9	0.6	3.1	0.5	4.2	0.7	2.2	4.4	7.3
50-60%	1.1	3.7	2.6	7.4	1.0	3.5	2.2	6.7	1.0	3.5	3.5	8.0
60-70%	1.1	4.0	2.8	7.9	1.1	4.3	3.8	9.2	1.4	3.6	3.2	8.2
70-80%	1.5	4.6	2.8	8.9	1.2	4.3	2.6	8.1	1.3	3.9	1.4	6.6
80-90%	1.3	4.6	2.0	7.9	1.2	4.8	2.4	8.4	1.4	4.5	0.8	6.8
90-100%	1.2	4.5	1.1	6.9	1.2	4.5	1.1	6.8	1.3	4.4	0.8	6.5
100-110%	1.1	4.4	0.7	6.2	1.1	4.2	0.7	6.1	1.2	4.6	0.8	6.6
110-120%	0.9	3.9	0.6	5.5	1.0	3.5	0.6	5.1	1.4	4.3	0.5	6.2
120-130%	0.9	4.3	0.4	5.6	0.9	3.4	0.4	4.7	1.0	4.0	0.7	5.7
130-140%	0.6	3.5	0.4	4.5	0.7	3.1	0.4	4.2	0.5	2.8	0.3	3.6
140-150%	0.6	3.0	0.3	4.0	0.7	3.0	0.3	4.0	0.7	3.2	0.3	4.2
150-200%	1.9	10.0	0.9	12.8	2.5	10.6	1.1	14.2	2.4	10.3	1.0	13.6
>=200%	2.0	9.0	0.4	11.5	2.4	8.9	0.4	11.7	2.1	7.5	0.5	10.1
<i>Total</i>	16.6	66.8	16.6	100.0	16.5	66.5	16.9	100.0	17.4	63.4	19.2	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.15 Distribution of equivalised income by poverty line and age, EL and ES, 2006–2018 (%)

EL	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.8	2.6	0.5	3.9	1.2	4.8	0.3	6.4	0.8	3.4	0.3	4.5
30-40%	0.7	2.6	0.9	4.2	0.9	2.8	0.2	3.9	0.7	2.6	0.3	3.6
40-50%	0.8	3.1	1.6	5.5	1.0	3.3	0.7	5.0	0.9	3.2	0.7	4.8
50-60%	1.1	4.3	1.7	7.1	1.0	4.7	1.9	7.6	1.0	3.5	1.2	5.6
60-70%	1.1	4.6	1.7	7.4	1.3	4.5	1.5	7.3	1.5	4.7	1.7	7.9
70-80%	1.2	4.6	1.9	7.7	1.1	4.3	1.5	6.8	1.3	4.6	2.2	8.2
80-90%	1.3	4.7	1.6	7.7	1.0	4.1	1.7	6.8	1.2	4.5	2.2	7.9
90-100%	0.8	4.0	1.6	6.4	0.8	3.7	1.7	6.2	1.1	4.3	2.2	7.6
100-110%	1.0	4.8	1.4	7.2	0.8	4.3	1.9	7.0	1.0	4.5	1.9	7.5
110-120%	0.8	3.9	0.9	5.6	1.0	3.6	1.4	6.0	0.8	3.7	1.6	6.2
120-130%	0.8	3.3	1.1	5.2	1.0	4.2	1.2	6.4	0.8	3.5	1.3	5.5
130-140%	0.6	3.1	0.6	4.4	0.8	3.2	1.2	5.1	0.7	3.0	1.1	4.8
140-150%	0.6	3.0	0.6	4.1	0.5	2.8	0.9	4.2	0.7	2.8	1.0	4.5
150-200%	2.3	8.9	1.4	12.6	2.0	9.5	2.0	13.5	1.7	8.9	2.6	13.2
>=200%	1.6	8.3	1.0	10.9	1.3	5.1	1.5	7.8	1.1	5.8	1.5	8.4
Total	15.6	65.9	18.4	100.0	15.6	65.0	19.5	100.0	15.2	63.1	21.7	100.0
ES	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	1.0	3.2	0.5	4.7	1.4	4.4	0.4	6.2	1.2	4.1	0.4	5.7
30-40%	0.6	2.2	0.9	3.7	0.8	2.4	0.3	3.4	0.7	2.4	0.4	3.5
40-50%	0.9	2.8	1.6	5.3	1.0	3.2	0.5	4.7	1.1	3.5	0.9	5.5
50-60%	1.2	3.6	2.0	6.8	1.1	4.1	1.3	6.5	1.2	4.5	1.2	6.9
60-70%	1.2	4.1	1.9	7.3	1.4	4.7	1.9	8.1	1.1	4.1	2.2	7.4
70-80%	1.3	4.7	1.7	7.8	1.3	4.4	1.5	7.2	1.1	4.4	1.6	7.1
80-90%	1.2	4.9	1.3	7.5	1.2	4.5	1.5	7.1	1.1	4.2	1.7	6.9
90-100%	1.0	4.8	1.1	6.9	1.1	4.3	1.4	6.8	1.1	4.5	1.5	7.0
100-110%	1.0	4.5	1.0	6.5	1.0	4.4	1.4	6.8	0.9	4.3	1.4	6.6
110-120%	0.9	4.6	0.8	6.3	0.8	3.8	1.1	5.6	0.9	3.7	1.2	5.8
120-130%	0.7	3.6	0.7	5.0	0.7	3.0	0.9	4.6	0.7	3.5	1.0	5.2
130-140%	0.7	3.8	0.5	5.0	0.6	3.2	0.7	4.4	0.7	3.0	1.0	4.7
140-150%	0.6	3.5	0.3	4.4	0.6	2.7	0.6	3.9	0.7	3.1	0.8	4.5
150-200%	1.8	10.0	1.1	12.9	1.9	9.7	1.9	13.4	2.2	8.9	2.0	13.0
>=200%	1.5	7.6	0.7	9.8	1.4	8.2	1.5	11.2	1.4	7.2	1.6	10.2
Total	15.6	68.0	16.4	100.0	16.2	66.9	16.9	100.0	16.0	65.2	18.8	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.16 Distribution of equivalised income by poverty line and age, FI and FR, 2006–2018 (%)

FI	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.1	0.8	0.0	0.9	0.0	0.9	0.0	1.0	0.1	0.8	0.0	0.9
30-40%	0.1	0.9	0.2	1.2	0.3	1.2	0.1	1.6	0.1	1.0	0.1	1.2
40-50%	0.4	2.0	1.0	3.4	0.5	2.2	0.8	3.5	0.4	2.1	0.7	3.3
50-60%	1.1	3.7	2.3	7.1	1.2	3.7	2.3	7.2	1.2	3.5	2.0	6.6
60-70%	1.8	4.6	2.8	9.2	1.5	4.2	2.9	8.6	1.6	4.4	2.9	8.9
70-80%	2.0	5.1	2.4	9.5	1.9	4.7	2.4	9.0	1.8	4.8	3.3	9.8
80-90%	2.4	5.3	1.8	9.5	1.9	5.3	2.3	9.5	2.1	5.1	2.7	9.9
90-100%	1.9	6.0	1.3	9.3	1.9	6.0	1.8	9.6	1.8	5.3	2.3	9.4
100-110%	2.4	6.9	1.0	10.3	1.9	5.9	1.3	9.1	1.9	5.8	1.7	9.4
110-120%	1.7	6.0	0.8	8.5	1.6	5.3	0.8	7.7	1.5	5.2	1.4	8.1
120-130%	1.3	5.1	0.4	6.8	1.2	4.8	0.8	6.8	1.2	4.4	0.9	6.4
130-140%	0.8	4.1	0.5	5.4	1.0	4.5	0.5	6.0	1.0	3.8	0.8	5.6
140-150%	0.7	3.1	0.2	4.0	0.7	3.6	0.3	4.6	0.6	2.9	0.5	4.1
150-200%	1.5	8.0	0.6	10.1	1.6	8.3	1.0	10.8	1.4	8.2	1.3	10.9
>=200%	0.6	3.9	0.4	4.9	0.6	3.9	0.6	5.1	0.7	4.2	0.7	5.6
<i>Total</i>	18.7	65.5	15.8	100.0	17.7	64.3	18.0	100.0	17.3	61.4	21.3	100.0
FR	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.2	0.9	0.3	1.3	0.3	1.1	0.1	1.4	0.2	0.7	0.0	1.0
30-40%	0.3	1.1	0.3	1.7	0.5	1.2	0.1	1.8	0.4	1.1	0.1	1.6
40-50%	0.7	2.4	0.9	4.1	0.9	2.3	0.5	3.7	1.2	2.7	0.3	4.2
50-60%	1.4	3.5	1.1	6.0	1.9	4.3	1.0	7.2	1.9	3.6	1.2	6.7
60-70%	1.8	4.7	1.7	8.2	1.6	4.3	1.6	7.5	1.8	4.3	1.6	7.7
70-80%	1.8	5.4	2.0	9.2	1.9	5.2	1.8	8.9	1.9	4.9	1.8	8.6
80-90%	2.1	5.6	2.0	9.7	1.9	5.9	2.0	9.8	1.7	6.0	2.1	9.8
90-100%	2.1	6.2	1.5	9.8	1.9	6.2	1.6	9.7	1.9	6.4	2.1	10.4
100-110%	1.9	5.9	1.2	9.0	1.7	5.4	1.2	8.3	1.6	6.0	1.9	9.5
110-120%	1.5	5.1	0.9	7.6	1.2	4.6	1.1	6.9	1.5	5.5	1.6	8.6
120-130%	1.2	4.1	0.8	6.0	1.0	4.0	0.9	6.0	1.2	4.0	1.1	6.2
130-140%	0.9	3.6	0.6	5.1	0.9	3.7	0.8	5.3	0.7	3.1	0.8	4.6
140-150%	0.7	3.1	0.6	4.4	0.8	3.0	0.7	4.5	0.5	2.5	0.8	3.8
150-200%	1.6	7.8	1.6	11.1	1.4	7.1	2.0	10.5	1.5	6.3	2.3	10.2
>=200%	1.1	4.7	0.9	6.8	1.2	5.5	1.9	8.6	0.8	4.6	1.8	7.1
<i>Total</i>	19.3	64.3	16.4	100.0	19.1	63.8	17.1	100.0	18.8	61.6	19.5	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.17 Distribution of equivalised income by poverty line and age, HR and HU, 2006–2018 (%)

HR	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%					0.7	3.0	0.7	4.5	0.6	2.7	1.0	4.3
30-40%					1.0	2.7	1.0	4.7	0.6	2.2	1.2	4.0
40-50%					1.0	2.9	1.1	5.0	1.0	2.7	1.7	5.4
50-60%					1.2	3.6	1.6	6.3	0.8	3.2	1.6	5.7
60-70%					1.3	4.0	1.7	7.0	1.2	4.0	1.7	7.0
70-80%					1.3	4.5	1.6	7.3	1.1	4.4	1.9	7.5
80-90%					1.4	5.0	1.3	7.7	1.2	4.8	1.8	7.8
90-100%					1.2	4.9	1.3	7.5	1.4	5.4	1.7	8.5
100-110%					1.4	4.7	1.4	7.5	1.1	4.5	1.2	6.8
110-120%					1.0	4.2	1.2	6.5	1.1	4.5	1.3	6.8
120-130%					0.9	4.3	0.7	5.9	0.8	4.3	0.9	6.0
130-140%					0.6	3.7	0.6	4.9	0.8	3.9	0.7	5.3
140-150%					0.5	2.8	0.6	3.9	0.7	2.9	0.6	4.1
150-200%					1.8	9.3	1.6	12.7	2.2	9.8	1.5	13.5
>=200%					1.1	6.8	0.8	8.7	1.0	5.6	0.8	7.4
Total					16.5	66.2	17.4	100.0	15.6	64.7	19.7	100.0
HU	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.8	1.9	0.1	2.8	0.1	1.0	0.0	1.2	0.6	2.4	0.2	3.2
30-40%	0.9	1.9	0.2	3.0	0.7	1.8	0.0	2.6	0.5	1.2	0.1	1.8
40-50%	1.3	2.5	0.4	4.2	1.4	3.0	0.3	4.6	0.5	2.0	0.5	3.0
50-60%	1.6	3.6	0.7	5.9	1.3	4.0	0.6	5.9	0.4	3.3	1.1	4.8
60-70%	1.7	5.0	1.2	7.9	1.5	5.0	1.2	7.6	2.4	6.0	1.8	10.2
70-80%	1.7	5.1	1.7	8.6	1.2	5.6	2.1	8.8	1.4	5.1	2.5	8.9
80-90%	1.3	5.7	2.1	9.1	1.4	6.1	2.4	9.9	1.8	5.5	2.1	9.3
90-100%	1.5	5.2	1.8	8.5	1.2	6.0	2.1	9.3	1.2	5.8	1.8	8.7
100-110%	1.3	5.4	1.6	8.2	1.2	6.4	1.9	9.5	1.3	5.9	1.7	8.9
110-120%	1.2	4.9	1.3	7.3	1.1	5.1	1.2	7.4	0.9	4.8	1.5	7.2
120-130%	1.0	4.1	0.9	6.0	0.8	4.3	1.1	6.2	0.8	4.1	1.2	6.1
130-140%	0.7	3.8	0.8	5.3	0.7	3.7	0.7	5.1	0.7	3.5	1.0	5.2
140-150%	0.6	3.0	0.5	4.1	0.7	3.3	0.7	4.6	0.5	2.9	0.7	4.0
150-200%	1.5	8.1	1.1	10.6	1.6	8.0	1.3	10.9	1.3	8.2	1.9	11.4
>=200%	1.2	6.7	0.6	8.4	0.8	5.0	0.5	6.3	1.1	5.2	0.8	7.1
Total	18.3	66.8	14.9	100.0	15.7	68.3	16.0	100.0	15.3	66.0	18.7	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.18 Distribution of equivalised income by poverty line and age, IE and IT, 2006–2018 (%)

IE	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.1	0.6	0.1	0.9	0.5	1.9	0.4	2.7	0.1	0.9	0.2	1.2
30-40%	0.7	1.7	0.1	2.5	0.5	1.7	0.2	2.4	0.3	1.1	0.1	1.5
40-50%	1.7	3.6	0.5	5.7	1.1	3.0	0.4	4.5	1.0	3.1	0.3	4.4
50-60%	2.1	4.9	2.3	9.4	2.0	4.1	0.6	6.7	1.9	3.8	2.2	7.8
60-70%	2.0	4.7	2.2	8.9	2.0	4.9	1.2	8.1	2.6	4.6	2.0	9.2
70-80%	1.7	4.4	1.5	7.6	2.1	5.2	1.7	9.0	2.2	4.3	1.6	8.1
80-90%	2.4	4.9	0.9	8.1	2.2	5.1	2.0	9.2	2.5	5.1	1.2	8.8
90-100%	1.8	4.5	0.6	6.9	2.0	4.4	0.8	7.3	2.1	5.8	1.1	8.9
100-110%	1.7	4.7	0.6	7.0	1.8	4.6	0.6	7.0	1.9	6.3	1.0	9.2
110-120%	1.5	4.6	0.5	6.5	1.6	4.4	0.9	6.9	1.5	5.0	0.8	7.3
120-130%	1.0	3.9	0.4	5.3	1.2	3.2	0.5	5.0	1.0	3.0	0.6	4.6
130-140%	1.0	3.7	0.3	5.1	0.9	3.2	0.3	4.5	1.0	3.1	0.6	4.8
140-150%	1.0	2.8	0.3	4.0	0.9	2.5	0.3	3.6	0.9	2.7	0.5	4.0
150-200%	1.9	10.4	0.7	13.0	2.8	9.7	1.1	13.5	2.1	9.4	1.2	12.7
>=200%	1.4	7.4	0.3	9.2	1.6	6.9	1.0	9.5	1.1	5.7	0.6	7.4
Total	22.1	66.7	11.2	100.0	23.2	64.7	12.1	100.0	22.2	63.9	13.9	100.0
IT	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.9	2.8	0.4	4.2	1.3	3.5	0.2	5.0	1.1	4.3	0.5	6.0
30-40%	0.8	2.1	0.5	3.3	0.7	1.9	0.4	2.9	0.7	2.3	0.4	3.4
40-50%	0.9	2.9	1.3	5.1	0.8	2.8	0.8	4.5	0.8	2.6	0.8	4.2
50-60%	1.3	3.8	2.0	7.1	1.3	3.9	1.9	7.1	1.1	3.8	1.7	6.7
60-70%	1.5	4.3	1.7	7.6	1.5	4.4	1.7	7.7	1.5	4.7	1.8	8.0
70-80%	1.3	4.2	1.9	7.4	1.3	4.1	1.8	7.2	1.3	4.4	1.9	7.6
80-90%	1.2	4.4	2.0	7.6	1.2	4.6	2.2	8.0	0.9	3.9	1.9	6.7
90-100%	1.2	4.9	1.7	7.8	1.2	4.6	1.9	7.6	1.0	4.3	2.1	7.4
100-110%	1.1	4.7	1.4	7.2	1.1	4.3	1.8	7.1	0.9	4.2	1.7	6.9
110-120%	1.0	4.3	1.1	6.4	1.1	4.5	1.4	7.0	0.9	4.0	1.6	6.5
120-130%	0.9	4.1	0.9	5.8	0.8	3.9	1.2	5.9	0.9	4.1	1.4	6.3
130-140%	0.6	3.4	0.7	4.7	0.6	3.2	1.0	4.8	0.6	3.3	1.1	5.0
140-150%	0.5	2.8	0.6	4.0	0.5	2.9	0.7	4.2	0.6	2.8	1.0	4.4
150-200%	1.5	9.3	1.9	12.7	1.4	8.8	2.1	12.2	1.3	8.1	2.5	11.9
>=200%	1.2	6.8	1.3	9.2	0.8	6.4	1.6	8.8	0.8	6.1	2.1	9.0
Total	15.8	64.8	19.4	100.0	15.4	63.9	20.7	100.0	14.5	63.0	22.5	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.19 Distribution of equivalised income by poverty line and age, LT and LU, 2006–2018 (%)

LT	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	1.4	3.2	0.2	4.8	0.5	2.8	0.2	3.5	1.3	3.9	0.5	5.8
30-40%	0.8	2.4	0.4	3.5	0.6	2.2	0.2	3.0	0.5	2.0	1.0	3.5
40-50%	1.0	3.0	0.9	4.9	1.2	3.1	0.5	4.8	0.9	2.7	2.9	6.4
50-60%	1.3	3.6	2.0	6.8	0.9	4.0	2.5	7.3	1.1	3.1	3.0	7.2
60-70%	1.3	4.6	2.4	8.3	1.5	4.3	2.5	8.4	1.2	4.2	2.4	7.7
70-80%	1.0	3.8	2.2	7.0	1.0	3.8	2.1	6.8	1.1	4.1	1.9	7.2
80-90%	1.2	4.4	1.9	7.5	1.5	5.3	2.4	9.2	0.9	3.6	1.3	5.8
90-100%	1.2	4.6	1.4	7.3	1.1	3.9	1.9	6.9	1.2	4.0	1.2	6.4
100-110%	1.3	4.8	0.9	7.0	0.7	3.9	1.0	5.6	0.9	3.7	0.9	5.5
110-120%	1.0	3.6	0.8	5.3	1.0	3.6	1.0	5.6	0.9	4.2	0.9	6.0
120-130%	1.2	3.9	0.4	5.5	0.7	3.2	0.8	4.7	0.9	4.1	0.9	5.9
130-140%	0.6	2.8	0.3	3.7	0.9	3.4	0.7	5.0	0.4	2.7	0.4	3.5
140-150%	0.8	3.0	0.3	4.1	0.6	2.8	0.4	3.8	0.6	2.8	0.3	3.7
150-200%	2.3	8.8	0.9	12.0	2.3	10.6	1.0	13.9	2.0	9.7	1.1	12.8
>=200%	2.0	9.9	0.6	12.4	1.7	9.0	0.8	11.4	2.0	9.6	1.1	12.7
Total	18.3	66.4	15.3	100.0	16.0	66.0	18.0	100.0	15.9	64.2	19.9	100.0
LU	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.4	1.1	0.1	1.6	0.2	0.7	0.1	1.1	0.6	2.8	0.6	4.0
30-40%	0.6	1.5	0.1	2.2	0.4	1.3	0.1	1.7	0.6	2.0	0.2	2.8
40-50%	1.3	2.6	0.4	4.3	1.3	2.9	0.2	4.4	1.3	3.4	0.5	5.2
50-60%	1.5	4.0	0.5	6.0	2.3	5.2	0.5	8.0	1.2	4.7	0.5	6.4
60-70%	1.6	4.3	1.0	6.9	2.6	6.1	0.9	9.6	1.9	5.7	0.7	8.3
70-80%	1.8	5.7	1.6	9.1	1.9	5.6	0.9	8.5	1.5	6.0	1.0	8.5
80-90%	2.2	7.1	2.0	11.3	1.8	6.1	1.7	9.6	1.3	5.0	1.3	7.5
90-100%	1.3	5.7	1.6	8.5	1.1	4.8	1.2	7.1	1.2	5.1	1.1	7.4
100-110%	1.6	4.9	1.6	8.0	1.3	5.1	1.3	7.7	1.0	4.3	1.5	6.8
110-120%	1.5	5.8	1.5	8.8	1.0	4.7	1.1	6.8	0.9	3.9	1.0	5.8
120-130%	1.1	4.0	0.9	6.0	0.8	3.9	0.9	5.6	0.6	3.0	1.0	4.5
130-140%	1.2	4.1	0.4	5.7	0.9	3.8	0.7	5.5	0.6	3.0	0.6	4.2
140-150%	0.7	2.5	0.5	3.7	1.0	3.6	0.6	5.2	0.8	3.0	0.7	4.5
150-200%	1.7	7.2	0.9	9.9	1.4	8.9	1.8	12.1	1.9	9.1	1.8	12.8
>=200%	1.2	6.2	0.6	7.9	0.8	5.2	1.2	7.1	1.6	8.1	1.8	11.5
Total	19.8	66.7	13.5	100.0	18.8	68.0	13.2	100.0	16.8	68.9	14.3	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.20 Distribution of equivalised income by poverty line and age, LV and MT, 2006–2018 (%)

LV	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	1.2	4.3	0.2	5.7	0.8	3.6	0.1	4.5	0.8	3.9	0.8	5.4
30-40%	0.8	2.4	0.4	3.6	0.9	2.6	0.3	3.7	0.4	1.9	1.6	3.9
40-50%	1.1	3.6	1.3	6.0	1.0	3.5	0.6	5.2	0.8	2.6	3.5	6.9
50-60%	1.1	3.7	2.7	7.6	0.9	3.3	1.5	5.7	0.7	3.1	3.3	7.0
60-70%	1.0	4.0	2.6	7.5	1.1	4.6	3.3	9.0	1.0	3.8	2.2	6.9
70-80%	1.1	4.3	1.9	7.3	1.1	4.4	2.2	7.7	1.5	4.1	1.5	7.1
80-90%	1.4	4.1	1.3	6.8	1.1	4.4	2.5	8.1	1.2	3.8	1.1	6.1
90-100%	0.8	3.8	0.9	5.5	0.7	3.7	1.6	6.0	1.4	4.1	1.0	6.5
100-110%	1.2	4.0	0.7	5.8	0.9	4.4	1.1	6.5	1.0	4.1	0.8	5.9
110-120%	0.9	3.3	0.6	4.7	0.7	3.5	0.8	5.0	0.8	3.1	0.5	4.4
120-130%	0.9	3.2	0.5	4.6	0.9	3.4	0.7	5.0	1.0	4.1	0.7	5.7
130-140%	0.6	2.9	0.4	3.9	0.5	2.9	0.6	4.0	1.0	3.6	0.5	5.1
140-150%	0.6	2.4	0.3	3.3	0.6	2.9	0.5	4.0	0.8	2.7	0.4	3.8
150-200%	2.2	9.9	1.0	13.1	1.7	9.4	1.3	12.5	2.4	9.5	1.1	13.1
>=200%	2.3	11.4	1.0	14.7	2.1	9.7	1.1	13.0	2.2	8.8	1.0	12.0
Total	17.1	67.3	15.7	100.0	15.3	66.2	18.5	100.0	16.9	63.2	19.9	100.0
MT	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%					0.2	0.8	0.3	1.2	0.2	0.7	0.2	1.1
30-40%					0.4	0.8	0.4	1.6	0.6	1.4	0.3	2.3
40-50%					1.5	2.4	0.7	4.7	1.1	3.1	1.1	5.2
50-60%					2.5	3.6	1.3	7.5	1.0	4.0	3.2	8.2
60-70%					2.4	4.5	2.2	9.1	1.0	4.6	3.0	8.5
70-80%					2.3	5.3	2.4	10.0	1.1	4.9	2.1	8.1
80-90%					1.8	4.6	1.6	8.0	1.2	5.1	1.9	8.2
90-100%					1.8	4.7	1.6	8.0	1.3	5.5	1.5	8.4
100-110%					2.2	5.6	1.4	9.2	0.9	5.4	1.2	7.5
110-120%					1.3	5.2	0.8	7.3	0.9	5.2	1.0	7.0
120-130%					1.3	4.4	0.6	6.2	0.9	4.9	0.8	6.7
130-140%					0.7	3.6	0.6	4.9	0.9	4.5	0.3	5.7
140-150%					0.9	3.6	0.5	5.0	0.6	3.3	0.5	4.4
150-200%					1.3	8.6	1.0	10.9	1.2	8.7	0.6	10.5
>=200%					0.6	5.4	0.4	6.4	1.2	6.7	0.4	8.2
Total					21.3	63.1	15.6	100.0	14.1	67.8	18.1	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.21 Distribution of equivalised income by poverty line and age, NL and PL, 2006–2018 (%)

NL	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.6	1.4	0.1	2.1	0.2	1.0	0.1	1.3	0.4	1.7	0.1	2.3
30-40%	0.2	0.7	0.0	1.0	0.3	0.7	0.1	1.1	0.3	1.0	0.2	1.5
40-50%	0.5	1.2	0.2	1.9	0.8	1.8	0.2	2.7	0.7	2.2	0.4	3.3
50-60%	1.4	2.9	0.5	4.9	1.4	3.1	0.5	4.9	0.9	4.0	1.3	6.3
60-70%	2.2	4.7	1.7	8.7	1.6	4.7	1.5	7.8	1.2	4.4	2.5	8.2
70-80%	2.5	5.3	2.5	10.3	2.0	5.7	2.8	10.6	1.3	4.7	3.3	9.3
80-90%	2.3	6.1	2.1	10.5	2.4	6.8	2.3	11.5	1.9	5.7	2.6	10.2
90-100%	2.3	6.7	1.6	10.6	2.1	6.1	1.8	10.1	1.5	5.5	2.0	9.0
100-110%	1.8	6.0	1.0	8.9	1.7	5.5	1.5	8.7	1.6	5.3	1.5	8.3
110-120%	1.4	5.2	0.8	7.4	1.6	5.6	1.1	8.3	1.6	5.2	1.0	7.9
120-130%	1.2	4.8	0.6	6.6	1.2	4.6	0.8	6.6	1.3	4.8	0.9	7.1
130-140%	0.9	4.3	0.5	5.7	0.9	3.9	0.6	5.5	1.1	3.9	0.5	5.5
140-150%	0.6	3.5	0.5	4.6	0.7	3.0	0.5	4.2	0.7	3.2	0.4	4.3
150-200%	1.3	8.7	0.9	10.9	1.6	8.4	1.2	11.1	1.8	8.0	0.9	10.8
>=200%	0.8	4.5	0.7	6.0	0.8	4.2	0.7	5.7	1.1	4.5	0.6	6.1
Total	20.3	66.2	13.6	100.0	19.3	65.1	15.6	100.0	17.5	64.2	18.4	100.0
PL	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.9	2.6	0.1	3.6	0.5	2.0	0.1	2.6	0.2	2.1	0.1	2.5
30-40%	1.0	2.7	0.1	3.8	0.6	2.0	0.2	2.9	0.3	1.9	0.4	2.6
40-50%	1.2	3.4	0.3	4.9	0.9	3.5	0.6	5.0	0.5	2.6	0.7	3.9
50-60%	1.5	4.7	0.6	6.8	1.4	4.1	1.0	6.6	0.9	3.5	1.4	5.8
60-70%	1.7	5.2	1.0	7.8	1.5	5.1	1.2	7.8	1.4	5.0	1.7	8.0
70-80%	1.5	5.3	1.3	8.1	1.5	5.3	1.5	8.2	1.6	5.3	1.9	8.8
80-90%	1.3	4.9	1.3	7.5	1.5	5.6	1.5	8.6	1.7	6.0	1.9	9.6
90-100%	1.2	5.0	1.3	7.5	1.3	5.5	1.4	8.3	1.6	5.4	1.8	8.7
100-110%	1.1	4.3	1.3	6.7	1.1	4.6	1.2	6.8	1.5	5.7	1.6	8.7
110-120%	1.0	4.1	1.1	6.2	0.9	4.7	0.9	6.4	1.0	4.7	1.4	7.1
120-130%	0.8	3.4	0.9	5.1	0.8	4.5	1.0	6.3	1.0	4.3	1.0	6.3
130-140%	0.6	3.2	0.7	4.6	0.7	3.2	0.7	4.6	0.9	3.6	0.8	5.3
140-150%	0.6	2.8	0.6	4.0	0.5	2.8	0.6	3.8	0.7	2.9	0.5	4.1
150-200%	1.7	8.6	1.7	12.1	1.8	9.2	1.4	12.4	1.8	7.7	1.5	11.0
>=200%	1.6	8.7	1.0	11.4	1.4	7.5	0.7	9.6	1.2	5.7	0.6	7.5
Total	17.8	68.9	13.3	100.0	16.4	69.7	14.0	100.0	16.3	66.4	17.3	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.22 Distribution of equivalised income by poverty line and age, PT and RO, 2006–2018 (%)

PT	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.7	2.4	0.5	3.5	0.7	2.6	0.2	3.5	0.5	2.1	0.3	2.9
30-40%	0.6	1.9	0.6	3.1	0.7	2.2	0.3	3.2	0.6	1.8	0.7	3.1
40-50%	0.9	2.7	1.3	4.8	1.0	3.0	0.8	4.8	0.8	3.0	1.0	4.8
50-60%	1.3	3.7	2.2	7.2	0.9	3.5	2.0	6.4	0.9	3.7	1.9	6.5
60-70%	1.1	4.0	2.2	7.2	1.1	3.9	1.6	6.6	1.1	4.3	2.7	8.1
70-80%	1.4	5.0	1.6	8.0	1.6	5.3	2.6	9.5	1.3	4.8	2.1	8.2
80-90%	1.5	5.7	1.5	8.7	1.2	4.7	1.8	7.7	1.2	5.0	1.8	8.0
90-100%	1.3	4.9	1.2	7.4	1.6	5.4	1.3	8.3	1.4	5.4	1.7	8.5
100-110%	1.3	4.8	0.9	7.0	1.1	4.6	1.5	7.2	1.3	5.1	1.5	7.9
110-120%	1.0	4.2	0.7	6.0	0.9	4.2	1.0	6.2	0.9	4.1	1.0	6.0
120-130%	0.7	3.7	0.7	5.1	0.8	3.7	0.9	5.4	0.8	3.8	0.9	5.5
130-140%	0.6	2.9	0.6	4.1	0.6	3.2	0.7	4.5	0.6	3.2	0.7	4.5
140-150%	0.5	2.4	0.5	3.4	0.5	2.5	0.5	3.4	0.6	2.4	0.7	3.6
150-200%	1.3	7.3	1.0	9.6	1.6	7.7	1.8	11.1	1.7	8.3	2.0	12.1
>=200%	2.4	10.7	1.8	14.9	1.5	8.4	2.3	12.2	1.3	6.5	2.7	10.4
Total	16.7	66.2	17.1	100.0	15.8	64.7	19.4	100.0	14.9	63.6	21.5	100.0
RO	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%					1.8	4.9	0.3	7.0	2.1	5.3	0.4	7.8
30-40%					1.0	2.4	0.2	3.7	1.1	2.8	1.0	4.8
40-50%					1.5	3.5	0.8	5.8	0.8	2.6	1.2	4.6
50-60%					1.2	4.0	1.1	6.2	1.3	3.5	1.6	6.3
60-70%					1.3	4.0	1.5	6.8	1.4	3.8	1.5	6.6
70-80%					1.3	4.1	1.2	6.5	0.9	4.0	1.6	6.5
80-90%					1.2	4.5	1.1	6.8	0.9	3.5	1.3	5.7
90-100%					1.3	4.3	1.5	7.1	1.3	4.5	1.8	7.7
100-110%					1.1	4.4	1.1	6.6	0.9	3.4	1.0	5.4
110-120%					0.7	3.6	1.0	5.3	0.7	3.4	1.1	5.2
120-130%					0.9	4.0	0.9	5.8	0.6	3.0	0.9	4.5
130-140%					0.4	3.0	0.7	4.1	0.5	3.0	1.1	4.5
140-150%					0.4	2.2	0.7	3.4	0.5	2.6	0.6	3.7
150-200%					1.2	8.9	2.2	12.4	1.9	10.7	2.1	14.7
>=200%					1.5	9.2	1.7	12.4	1.9	9.2	1.0	12.0
Total					16.9	66.9	16.2	100.0	16.6	65.3	18.1	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.23 Distribution of equivalised income by poverty line and age, SE and SI, 2006–2018 (%)

SE	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.8	2.2	0.1	3.1	0.5	2.2	0.1	2.8	0.4	2.0	0.1	2.5
30-40%	0.4	0.9	0.1	1.4	0.4	1.4	0.2	2.0	0.5	1.2	0.2	1.9
40-50%	0.6	1.6	0.5	2.8	1.0	2.3	0.7	3.9	1.4	3.0	0.6	5.1
50-60%	1.3	2.6	1.1	5.0	1.2	3.4	2.0	6.6	1.4	3.6	2.0	6.9
60-70%	1.8	3.4	2.2	7.4	1.4	4.2	3.3	8.9	1.4	3.4	3.3	8.1
70-80%	2.0	4.5	2.8	9.3	1.5	3.9	2.7	8.0	1.4	3.6	2.8	7.8
80-90%	2.7	5.1	2.1	9.9	1.9	4.7	2.5	9.1	1.9	4.4	2.2	8.5
90-100%	2.7	6.3	2.1	11.1	1.8	5.4	1.5	8.7	2.0	5.2	1.9	9.2
100-110%	2.6	6.4	1.2	10.2	1.7	5.7	1.1	8.5	2.0	5.3	1.3	8.6
110-120%	2.0	5.9	0.9	8.8	1.6	5.8	1.0	8.4	1.5	5.1	1.0	7.6
120-130%	1.5	5.3	0.7	7.6	1.6	5.2	0.7	7.5	1.2	4.6	0.9	6.7
130-140%	1.1	4.6	0.5	6.2	0.9	4.1	0.7	5.7	1.0	4.1	0.8	5.8
140-150%	0.7	3.5	0.4	4.6	0.7	3.3	0.5	4.6	0.7	3.5	0.7	4.8
150-200%	1.3	7.6	0.7	9.5	1.3	8.8	1.2	11.3	1.4	8.9	1.6	11.8
>=200%	0.2	2.7	0.2	3.1	0.4	3.1	0.6	4.1	0.6	3.4	0.6	4.6
<i>Total</i>	21.8	62.7	15.5	100.0	17.8	63.4	18.8	100.0	18.8	61.4	19.8	100.0
SI	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.2	0.8	0.3	1.3	0.2	1.0	0.2	1.4	0.1	0.9	0.1	1.1
30-40%	0.3	1.0	0.3	1.6	0.4	1.4	0.2	2.0	0.2	1.4	0.3	1.9
40-50%	0.5	2.0	1.1	3.7	0.6	2.2	1.3	4.1	0.5	2.1	1.3	3.9
50-60%	0.8	2.9	1.4	5.1	1.1	3.7	1.4	6.1	1.1	3.6	1.6	6.3
60-70%	1.3	4.5	1.7	7.5	1.2	4.7	1.3	7.1	1.4	4.1	1.9	7.4
70-80%	1.6	6.0	1.8	9.4	1.3	5.6	1.7	8.6	1.3	5.1	2.4	8.8
80-90%	1.8	6.9	1.8	10.5	1.8	6.9	1.7	10.4	1.9	6.6	2.2	10.8
90-100%	1.7	7.7	1.6	11.0	1.8	7.0	1.4	10.3	1.8	6.5	1.5	9.7
100-110%	1.7	6.8	1.4	9.8	1.6	6.8	1.2	9.7	1.9	6.9	1.6	10.3
110-120%	1.1	5.9	0.9	8.0	1.6	6.0	1.0	8.6	1.6	5.8	1.2	8.6
120-130%	0.9	5.1	0.8	6.7	1.3	5.0	0.6	6.9	1.3	5.1	0.9	7.2
130-140%	0.9	4.3	0.6	5.8	0.9	4.0	0.6	5.5	0.8	3.8	0.7	5.4
140-150%	0.6	3.6	0.5	4.7	0.6	3.2	0.6	4.5	0.7	3.1	0.6	4.4
150-200%	1.3	7.8	1.1	10.2	1.7	8.0	1.5	11.2	1.7	7.2	1.3	10.1
>=200%	0.6	3.8	0.4	4.9	0.5	2.8	0.5	3.7	0.6	2.7	0.6	4.0
<i>Total</i>	15.4	69.0	15.6	100.0	16.6	68.3	15.1	100.0	17.0	64.9	18.0	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.24 Distribution of equivalised income by poverty line and age, SK and UK, 2006–2018 (%)

SK	2006				2012				2018			
	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.5	1.3	0.0	1.8	0.6	1.5	0.0	2.1	0.7	1.6	0.0	2.3
30-40%	0.5	1.6	0.2	2.3	0.6	1.6	0.0	2.2	0.2	0.7	0.0	1.0
40-50%	0.5	2.0	0.5	3.0	0.7	2.5	0.3	3.5	0.9	1.8	0.3	3.0
50-60%	1.2	3.4	0.6	5.1	1.1	3.7	0.7	5.4	1.5	3.8	0.7	6.0
60-70%	1.3	4.2	1.5	6.9	1.0	4.5	1.6	7.2	0.9	2.5	1.1	4.5
70-80%	1.7	5.4	1.9	9.0	1.4	6.1	3.0	10.5	1.7	4.8	2.3	8.7
80-90%	1.9	7.0	2.5	11.3	1.3	5.7	2.4	9.5	1.8	6.0	2.7	10.5
90-100%	1.7	6.9	1.9	10.5	1.3	6.6	1.7	9.6	2.6	9.2	2.3	14.1
100-110%	1.6	7.3	1.4	10.2	1.0	5.9	1.0	7.9	1.2	5.6	1.4	8.2
110-120%	1.5	6.3	0.8	8.6	1.0	6.3	0.8	8.2	1.4	6.6	1.4	9.4
120-130%	1.0	5.2	0.5	6.7	0.8	5.2	0.6	6.5	1.3	5.8	1.0	8.0
130-140%	0.7	4.4	0.2	5.3	0.7	5.0	0.5	6.3	0.8	5.3	0.8	6.8
140-150%	0.6	3.3	0.2	4.1	0.5	3.3	0.2	4.1	0.4	4.5	0.5	5.4
150-200%	1.0	8.2	0.5	9.6	1.0	10.0	0.6	11.5	1.0	8.4	0.9	10.2
>=200%	0.7	4.5	0.2	5.5	0.5	4.9	0.1	5.5	0.2	1.6	0.1	2.0
<i>Total</i>	16.3	70.7	13.0	100.0	13.6	72.8	13.7	100.0	16.6	68.1	15.3	100.0
UK	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age	0-15	16-64	65+	Total age
<30%	0.6	2.4	0.4	3.4	0.3	2.3	0.3	2.9	0.8	2.8	0.4	4.0
30-40%	0.6	1.7	0.6	2.9	0.4	1.3	0.4	2.1	0.7	1.8	0.6	3.0
40-50%	1.4	2.8	1.4	5.6	0.8	2.5	0.9	4.2	1.2	2.7	1.1	5.0
50-60%	1.9	3.5	1.9	7.3	1.7	3.9	1.2	6.8	1.8	3.6	1.5	6.9
60-70%	1.8	4.1	2.2	8.1	2.1	4.5	1.9	8.6	2.0	4.0	1.8	7.7
70-80%	1.6	4.5	2.0	8.0	2.1	4.9	2.2	9.2	1.8	4.6	2.0	8.3
80-90%	1.6	4.6	1.6	7.7	1.8	4.9	1.7	8.4	1.6	4.8	1.7	8.1
90-100%	1.3	4.2	1.3	6.9	1.6	4.8	1.5	7.9	1.2	4.3	1.4	7.0
100-110%	1.3	4.2	0.9	6.4	1.2	4.3	1.4	7.0	1.2	4.3	1.3	6.8
110-120%	1.2	4.4	0.7	6.2	1.1	4.4	1.1	6.7	0.9	3.6	1.0	5.6
120-130%	1.0	3.9	0.6	5.5	0.9	3.7	0.9	5.4	0.8	3.4	1.0	5.2
130-140%	0.8	3.8	0.5	5.1	0.8	3.4	0.7	4.9	0.8	3.2	0.8	4.8
140-150%	0.6	3.5	0.3	4.5	0.5	2.7	0.6	3.8	0.7	2.7	0.8	4.1
150-200%	1.7	9.7	0.9	12.3	1.5	9.6	1.5	12.6	1.5	8.9	1.9	12.3
>=200%	1.3	8.2	0.5	10.1	1.2	7.5	0.9	9.5	1.6	8.3	1.4	11.3
<i>Total</i>	18.7	65.4	15.9	100.0	18.1	64.7	17.3	100.0	18.6	62.9	18.5	100.0

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: Poverty lines as a percentage of median equivalised income.

Table A.1.25 AROP rate, 50% poverty line, age 0–15, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	6.9	7.6	8.4	9.9	10.7	11.8	9.3	8.9	10.1	9.6	10.9	10.0	11.8	11.4
BE	9.2	8.4	8.7	8.8	10.1	10.5	11.2	9.8	9.7	10.2	9.1	9.1	9.8	11.9
BG		19.8	24.0	20.5	17.9	21.6	22.9	22.5	23.3	27.1	19.1	26.7	22.0	21.1
CY	6.4	4.7	5.3	4.8	5.6	6.0	6.8	8.0	9.1	7.8	10.2	8.8	7.1	11.0
CZ	9.5	8.7	8.9	7.1	7.1	9.5	7.7	7.8	6.4	8.6	10.0	9.8	7.0	6.0
DE	5.5	6.5	8.2	8.1	8.6	9.0	7.9	7.5	6.8	8.4	7.7	7.7	6.7	7.5
DK	5.2	4.5	5.0	5.4	6.4	5.9	6.0	6.3	5.2	3.1	5.8	5.7	5.5	5.5
EE	15.1	13.3	11.8	10.9	11.5	10.8	11.9	10.2	12.6	14.3	13.4	11.9	10.4	9.2
EL	12.0	14.3	14.9	15.4	15.8	14.8	15.4	20.2	22.3	19.5	18.7	18.4	16.9	15.5
ES	17.4	19.0	17.0	19.2	20.0	20.7	19.8	19.9	19.4	22.6	22.6	21.3	21.9	18.5
FI	3.1	3.0	3.7	5.7	5.1	3.2	4.0	4.4	3.5	3.5	3.1	3.4	3.7	3.8
FR	6.3	6.3	7.2	6.8	8.5	9.7	9.4	8.8	8.7	9.1	8.3	9.5	9.7	9.5
HR						12.5	14.6	16.3	14.8	15.0	13.6	13.8	13.7	13.9
HU	11.0	16.4	11.0	9.7	10.2	9.8	12.8	14.2	14.8	16.8	13.3	10.3	6.0	10.5
IE	14.0	11.6	10.9	10.2	8.1	7.9	6.8	8.9	7.4	8.2	8.5	10.4	8.0	6.4
IT	16.7	16.0	15.6	15.3	15.8	17.0	17.3	17.9	17.4	17.3	19.3	18.6	17.2	18.5
LT	19.8	17.1	15.5	17.2	15.3	18.3	15.6	14.0	17.3	13.6	19.7	19.9	18.5	17.2
LU	11.0	11.7	11.5	9.3	11.7	12.0	10.1	10.0	13.0	11.6	9.8	12.1	11.4	13.0
LV	15.1	18.6	13.9	16.8	18.8	20.1	17.3	18.0	15.6	16.4	17.0	11.8	13.4	11.8
MT	8.9	10.3	9.7	11.7	10.4	10.2	11.8	10.0	15.0	14.7	14.2	10.8	13.4	13.4
NL	9.3	7.2	7.5	5.6	6.1	5.4	6.9	6.5	5.8	5.2	6.2	7.5	7.5	7.8
PL	21.4	17.5	16.5	13.7	14.3	13.3	13.1	12.8	14.2	13.7	13.1	13.3	8.1	6.8
PT	15.7	12.2	13.1	15.6	14.0	14.0	14.2	15.5	17.2	18.8	17.7	16.1	14.6	12.8
RO			28.5	25.3	24.7	24.8	25.2	26.2	26.8	31.4	31.3	30.3	25.7	24.2
SE	4.3	8.4	6.0	7.3	8.0	8.9	9.8	10.5	10.7	11.3	11.2	12.5	11.3	12.1
SI	6.3	6.4	6.2	5.7	6.3	7.3	8.4	7.2	8.3	9.9	8.2	6.3	6.5	5.0
SK	11.7	9.4	9.4	10.0	11.2	13.3	13.2	13.5	13.6	13.6	14.9	14.8	13.1	11.1
UK	13.6	14.5	13.3	13.7	12.2	9.9	9.5	8.2	8.8	9.7	9.2	9.9	10.9	13.2
EU	11.6	11.6	12.3	12.1	12.4	12.5	12.3	12.2	12.3	13.1	12.9	13.0	12.1	12.2

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.26 AROP rate, 50% poverty line, age 16–64, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	6.1	6.0	6.0	8.0	7.6	8.3	7.3	8.2	8.0	7.8	8.0	8.1	8.7	8.4
BE	6.8	7.1	7.3	6.8	7.3	7.1	7.6	8.1	8.5	8.7	8.1	9.1	8.7	9.1
BG		11.7	15.1	12.1	11.7	12.0	13.6	12.8	12.9	14.6	13.5	15.5	13.9	13.5
CY	6.1	5.6	5.6	5.1	5.8	6.5	6.8	6.9	7.9	7.6	9.2	8.2	6.7	7.6
CZ	5.4	4.8	4.8	4.8	4.7	5.1	5.3	5.4	4.5	5.2	5.1	5.1	4.4	4.0
DE	7.0	7.6	10.1	10.0	10.1	9.9	10.8	10.4	10.4	11.4	11.2	10.3	10.1	10.4
DK	6.4	6.8	6.7	7.2	8.1	9.2	7.8	7.7	8.3	8.7	9.2	8.8	9.5	9.0
EE	11.4	10.7	10.5	10.2	9.8	10.5	12.5	12.7	11.8	14.1	12.8	12.4	11.4	10.9
EL	11.4	12.4	12.4	12.2	11.9	12.7	13.8	17.4	18.3	17.4	16.6	17.3	16.5	14.6
ES	11.2	11.4	11.8	11.2	11.8	12.8	13.2	14.8	14.5	17.1	17.1	16.7	16.3	15.2
FI	5.5	5.7	5.8	6.6	6.8	6.3	6.7	6.6	6.1	6.6	6.7	6.1	6.0	6.3
FR	6.1	6.9	6.7	6.2	6.6	7.5	7.2	7.2	7.3	7.0	7.0	7.3	7.1	7.3
HR						12.1	12.8	12.9	13.0	12.7	12.7	12.3	11.8	11.7
HU	7.7	9.5	7.2	6.6	6.1	6.2	7.8	8.5	9.8	9.3	9.6	8.4	7.6	8.6
IE	10.5	8.9	8.4	7.7	7.1	6.9	8.3	10.1	8.6	9.3	9.2	9.3	8.9	7.9
IT	11.5	11.6	11.5	11.2	11.0	12.2	13.3	12.9	13.6	13.9	14.3	15.5	14.5	14.6
LT	14.5	13.0	11.2	13.2	12.4	16.5	14.7	12.3	13.4	11.7	13.9	15.1	14.6	13.3
LU	7.1	7.8	7.1	6.8	7.8	7.9	6.7	7.3	8.1	8.3	8.7	9.7	10.3	10.7
LV	13.3	15.3	13.0	14.3	15.6	15.5	15.0	14.6	14.2	13.4	13.7	12.5	12.9	13.3
MT	6.0	6.1	6.8	7.0	6.0	7.1	7.2	6.5	7.6	7.4	7.4	6.7	7.2	7.8
NL	6.0	5.0	4.8	5.0	5.8	5.4	5.3	5.4	5.7	6.8	6.7	7.3	7.8	7.8
PL	14.8	12.6	11.3	10.4	10.2	10.6	10.5	10.8	11.0	11.1	11.2	11.7	10.5	10.0
PT	11.3	10.4	10.6	11.0	10.5	11.0	11.1	11.8	13.4	14.2	14.3	13.3	13.3	11.0
RO			16.3	14.7	14.4	14.3	15.7	16.2	16.4	18.5	19.0	18.6	16.9	16.3
SE	5.7	7.7	6.7	7.8	8.5	9.6	9.1	9.3	9.7	10.2	10.3	10.0	10.1	10.2
SI	5.9	5.6	5.3	5.8	5.4	6.4	6.6	6.8	7.9	8.9	8.2	8.2	7.5	6.7
SK	8.2	6.4	5.6	5.4	6.3	7.7	7.9	7.7	7.8	8.6	8.2	7.9	7.7	6.1
UK	10.8	10.4	9.6	9.6	9.3	9.3	8.5	9.4	9.1	9.4	9.9	9.8	9.8	10.6
EU	9.2	9.3	9.8	9.5	9.5	10.0	10.3	10.6	10.7	11.3	11.4	11.4	11.0	10.9

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.27 AROP rate, 50% poverty line, age 65+, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	3.6	4.9	3.8	10.5	9.2	9.8	9.7	8.9	9.8	8.4	7.2	6.6	6.7	8.0
BE	9.5	12.2	10.1	8.8	7.6	7.8	7.9	7.5	5.8	6.5	5.3	6.2	5.4	5.7
BG		9.3	12.9	18.3	25.5	22.1	20.2	17.4	16.5	11.9	19.2	12.0	18.3	17.1
CY	30.5	33.7	34.1	24.9	24.7	21.8	19.0	13.7	7.9	8.8	6.4	8.6	9.1	9.1
CZ	1.3	1.2	1.6	1.6	1.5	1.3	1.7	1.4	1.4	1.8	1.8	1.6	2.5	4.3
DE	6.6	6.3	8.7	7.5	7.5	7.0	7.3	8.4	8.0	9.1	9.0	9.4	9.2	9.7
DK	3.4	3.1	3.6	3.0	4.6	5.5	2.5	3.0	3.8	2.8	1.6	1.4	1.5	1.2
EE	6.6	8.4	12.3	17.2	10.6	3.7	3.7	4.3	5.1	8.0	10.7	16.5	20.8	28.1
EL	17.7	16.5	14.7	12.3	10.2	9.6	14.5	7.8	6.5	7.8	7.1	6.9	7.0	6.3
ES	16.9	16.5	15.1	15.1	12.2	11.0	10.2	7.2	6.3	5.3	5.8	6.0	8.1	9.2
FI	5.3	6.9	5.7	6.9	6.3	4.7	5.5	5.5	5.0	3.8	2.8	2.4	2.5	3.9
FR	7.9	9.1	6.9	2.5	5.3	3.8	4.0	3.8	3.4	2.9	2.9	2.3	1.8	2.3
HR						19.2	17.8	16.5	14.4	14.3	16.3	17.2	18.9	19.9
HU	2.2	4.8	2.2	1.5	1.8	1.4	1.7	2.3	1.6	1.9	2.2	3.0	4.1	3.9
IE	10.2	5.6	7.6	6.2	6.8	6.0	7.3	8.2	7.2	7.4	5.8	6.4	5.1	4.6
IT	11.8	11.5	12.2	11.5	10.3	7.9	7.7	6.9	6.8	6.1	6.8	7.5	7.8	7.6
LT	6.5	9.2	13.5	14.5	9.9	3.7	4.6	5.1	8.4	8.3	12.1	15.2	19.3	22.6
LU	3.0	4.2	2.9	2.2	1.9	3.1	1.9	2.4	2.8	2.7	3.3	6.5	7.6	7.3
LV	7.7	15.3	20.6	37.2	30.6	6.1	4.6	5.5	6.5	10.1	16.4	22.9	25.0	29.4
MT	11.5	11.6	10.6	12.4	9.2	9.5	9.7	9.0	6.8	5.8	8.4	8.9	9.3	8.3
NL	2.3	1.9	3.4	4.3	3.2	2.1	2.7	2.6	2.2	2.8	2.2	3.0	3.0	3.6
PL	3.6	3.3	3.3	5.2	6.6	6.8	7.0	6.5	6.2	5.5	5.7	6.3	6.5	7.2
PT	14.1	13.4	13.3	11.7	9.1	10.1	8.2	6.6	6.3	8.7	9.1	9.7	8.0	8.7
RO			20.4	16.2	13.6	9.8	8.3	7.9	7.5	9.2	11.7	11.0	12.8	14.0
SE	3.6	4.6	3.8	4.9	5.7	4.1	6.2	5.1	5.4	3.8	4.6	4.9	4.8	4.8
SI	12.7	11.3	10.8	12.4	11.9	11.4	12.0	10.8	11.4	9.1	9.5	10.4	8.9	9.5
SK	3.5	4.0	3.4	2.9	4.8	2.2	1.6	2.8	1.2	1.8	1.6	1.5	2.2	2.1
UK	13.7	14.0	15.0	15.3	11.7	12.1	12.4	9.3	9.0	9.8	9.8	10.0	8.4	11.9
EU	9.3	9.5	10.2	9.5	8.9	7.9	7.9	7.0	6.6	6.7	7.0	7.1	7.3	8.1

Source: Eurostat database (variable ilc_lii02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.28 AROP rate, 60% poverty line, age 0–15, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	15.8	14.8	15.0	19.0	17.9	19.8	18.7	18.3	19.8	18.8	18.3	17.3	20.1	19.5
BE	17.9	15.0	16.8	16.7	16.4	18.5	18.5	17.3	16.8	17.9	17.4	17.0	17.8	19.9
BG		25.7	29.8	25.6	24.4	26.4	28.3	28.5	28.3	31.5	25.0	32.2	29.1	26.8
CY	12.5	11.0	12.1	13.6	12.6	12.8	12.7	14.3	15.5	13.3	17.2	17.1	16.0	17.1
CZ	17.7	16.8	16.1	12.3	12.8	13.6	14.4	13.6	10.8	14.5	14.7	14.5	11.5	10.7
DE	11.6	12.0	13.9	14.7	14.6	17.2	15.5	14.9	14.4	14.6	14.6	14.9	15.1	14.4
DK	10.1	9.9	9.4	9.3	10.6	10.7	10.5	10.2	9.3	9.5	9.9	9.9	10.2	11.3
EE	21.3	19.8	17.3	17.1	20.4	16.3	19.4	16.2	17.6	19.5	19.2	18.3	16.0	15.0
EL	19.3	21.5	22.8	22.7	23.4	22.3	23.3	26.5	28.7	25.3	26.1	25.6	24.0	21.7
ES	25.7	27.0	25.5	26.8	28.9	28.8	27.2	26.9	26.7	30.1	28.8	28.9	28.1	26.2
FI	9.7	9.1	10.4	11.9	11.9	11.2	12.0	11.2	9.0	10.7	9.8	9.5	9.9	10.5
FR	14.2	13.5	15.0	15.6	16.2	18.1	18.6	18.8	17.4	17.5	18.5	18.8	18.9	19.4
HR							18.9	21.0	23.1	21.7	20.8	20.3	19.4	21.2
HU	19.7	25.1	18.7	19.5	20.7	20.1	23.4	22.5	23.8	25.1	21.6	19.6	14.5	12.9
IE	22.1	21.2	19.1	17.9	17.8	19.2	16.5	17.8	17.7	17.0	16.8	18.0	15.6	14.8
IT	24.5	24.0	24.3	24.0	23.7	24.7	25.6	26.1	24.9	25.0	26.8	26.3	26.0	26.3
LT	27.1	24.1	21.5	22.8	23.5	23.8	24.5	19.5	26.4	23.0	28.1	25.7	25.3	23.9
LU	21.0	19.1	19.9	19.9	21.7	21.5	19.8	22.3	23.3	24.8	21.0	20.5	18.8	22.2
LV	20.9	25.2	18.6	23.3	25.4	26.1	24.3	23.9	22.1	23.7	22.4	17.8	17.9	16.2
MT	17.6	17.8	19.7	20.8	21.2	21.8	22.6	23.0	25.2	24.2	22.8	20.7	20.8	21.2
NL	15.7	13.6	14.4	13.3	15.4	13.5	15.7	13.6	12.6	13.8	14.0	14.5	14.1	13.0
PL	29.0	26.1	23.9	22.1	22.7	22.1	21.3	21.1	22.5	21.6	21.6	20.3	13.2	12.4
PT	22.9	19.8	20.8	22.7	21.8	20.9	21.5	21.1	23.8	25.3	24.1	21.5	19.1	18.5
RO			33.9	32.9	31.9	32.2	32.6	33.4	34.4	38.7	37.3	37.2	31.5	31.8
SE	9.2	14.5	11.4	14.6	15.2	16.3	16.9	17.0	18.2	17.7	17.6	18.0	17.5	19.4
SI	12.1	11.8	11.7	11.4	11.2	12.6	14.8	13.7	14.7	14.7	14.0	11.4	13.0	11.9
SK	18.5	16.6	16.1	16.3	17.0	18.5	21.3	21.5	19.8	19.1	20.8	21.4	19.7	20.2
UK	23.3	24.5	23.2	24.4	20.6	20.0	17.6	17.6	18.1	19.1	19.5	18.1	21.1	23.2
EU	19.2	19.2	19.9	20.2	20.0	20.7	20.4	20.3	20.1	20.8	20.9	20.5	19.9	19.9

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.29 AROP rate, 60% poverty line, age 16–64, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	11.5	11.1	10.8	13.3	13.0	12.9	13.1	13.3	12.8	13.0	13.1	13.5	13.5	13.2
BE	12.3	12.5	12.8	12.6	12.3	12.3	13.2	13.7	13.7	14.6	14.1	15.2	15.4	15.4
BG		16.4	19.8	17.3	16.7	16.5	18.5	17.6	17.4	19.3	18.3	20.3	19.3	18.4
CY	11.3	10.8	10.3	11.1	11.1	11.9	11.5	12.1	14.4	13.3	15.8	15.2	14.4	13.6
CZ	9.7	9.1	9.0	8.7	7.9	8.5	9.5	9.6	8.8	9.3	9.2	8.9	8.1	7.9
DE	12.0	12.7	15.2	15.5	15.9	15.8	16.4	16.7	16.9	17.3	17.2	16.5	16.0	15.7
DK	11.0	10.9	10.9	11.1	12.1	12.9	12.0	12.3	13.1	13.5	13.8	13.6	14.1	14.3
EE	17.1	16.2	16.5	15.1	16.0	15.9	18.1	17.9	17.4	19.5	18.2	17.3	16.4	16.4
EL	17.4	18.8	19.0	19.0	18.3	19.3	20.3	24.0	24.3	23.6	22.7	23.0	22.0	20.2
ES	16.8	16.7	16.9	16.9	17.5	18.6	19.3	20.9	20.8	23.2	23.2	23.3	21.9	22.1
FI	10.6	11.3	11.6	11.8	12.3	12.3	12.7	12.3	11.3	12.4	12.7	12.1	11.6	12.0
FR	11.8	12.3	12.5	11.8	12.1	12.9	13.8	14.0	13.9	13.4	13.7	13.6	13.1	13.2
HR						18.4	18.7	18.3	18.0	18.1	18.2	17.6	17.1	16.6
HU	13.5	14.8	11.9	12.3	12.2	12.3	14.1	14.3	15.4	15.2	15.9	15.2	14.3	13.6
IE	16.7	16.2	14.8	13.7	13.9	14.8	15.5	16.5	16.0	17.2	16.5	16.5	15.8	13.8
IT	17.0	17.4	17.5	17.1	16.8	17.9	19.3	19.0	19.3	19.9	20.1	21.2	20.6	20.7
LT	19.5	18.4	16.0	17.8	18.6	22.5	20.5	18.4	19.5	17.9	20.0	19.3	19.2	18.1
LU	12.8	13.8	12.9	13.2	14.6	14.2	13.5	14.9	15.5	16.3	15.2	15.8	16.7	16.8
LV	18.7	21.3	18.1	19.6	21.0	20.7	20.5	19.6	19.3	18.7	18.9	17.9	17.6	18.1
MT	11.7	11.4	12.9	12.2	12.5	13.5	13.5	12.7	13.7	13.5	13.9	13.6	13.5	13.5
NL	10.3	9.4	9.0	9.9	10.5	10.3	10.6	10.1	11.0	12.5	12.5	13.3	13.9	14.0
PL	20.9	19.5	17.5	16.6	16.4	17.2	17.4	16.8	17.1	17.0	18.0	17.6	15.8	15.3
PT	16.4	16.1	15.5	16.5	16.3	16.3	16.7	17.3	18.8	19.4	19.1	18.6	18.6	16.8
RO			21.0	20.5	19.8	19.9	21.5	22.3	22.2	24.1	24.0	23.9	22.5	21.6
SE	9.5	11.8	10.4	12.7	13.7	14.5	14.8	14.6	15.7	15.6	16.0	15.5	15.3	16.1
SI	10.4	9.7	9.8	10.5	9.3	11.0	11.7	12.1	13.0	13.8	13.7	13.5	12.5	12.2
SK	13.2	11.1	9.9	10.0	9.8	11.5	12.7	12.7	12.5	12.5	11.6	12.2	11.8	11.6
UK	16.3	15.7	15.4	15.0	15.1	15.3	14.4	15.5	15.1	15.9	15.9	14.9	15.8	16.6
EU	14.6	14.7	15.1	15.0	15.1	15.6	16.2	16.6	16.7	17.3	17.4	17.2	16.8	16.6

Source: Eurostat database (variable ilc_lii02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.30 AROP rate, 60% poverty line, age 65+, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	13.9	16.2	14.0	18.9	17.4	16.8	16.2	15.1	15.4	14.2	13.2	13.2	12.9	13.9
BE	21.4	23.2	23.0	21.2	21.6	19.4	20.2	19.4	18.4	16.1	15.2	15.3	15.8	16.6
BG		19.9	23.9	33.8	39.3	32.2	31.2	28.2	27.9	22.6	31.7	24.3	32.0	29.2
CY	50.3	51.9	50.6	46.3	46.4	39.9	35.5	29.3	20.1	22.4	17.3	19.5	21.6	21.4
CZ	5.3	5.9	5.5	7.4	7.2	6.8	6.6	6.0	5.8	7.0	7.4	8.1	10.7	14.2
DE	13.4	12.5	16.2	14.9	15.0	14.1	14.2	15.0	14.9	16.3	16.5	17.6	17.0	18.2
DK	17.6	17.4	17.7	18.1	20.1	17.7	13.9	12.8	10.1	9.8	9.1	8.5	8.8	8.9
EE	20.3	25.1	33.2	39.0	33.9	15.1	13.1	17.2	24.4	32.6	35.8	40.2	41.2	46.3
EL	27.9	25.6	22.9	22.3	21.4	21.3	23.6	17.2	15.1	14.9	13.7	12.4	12.4	11.6
ES	28.8	29.3	26.1	25.5	23.8	21.8	19.8	14.8	12.7	11.4	12.3	13.0	14.8	15.6
FI	18.7	21.8	21.6	22.5	22.1	18.3	18.9	18.4	16.1	16.0	13.8	12.3	12.3	13.2
FR	16.4	16.1	13.1	11.9	11.9	9.4	9.7	9.4	9.1	8.6	8.0	8.2	7.9	8.3
HR						30.5	29.4	25.6	23.4	23.1	26.3	26.5	28.6	28.1
HU	6.5	9.4	6.1	4.3	4.6	4.1	4.9	6.3	4.6	4.5	4.6	6.8	9.1	9.8
IE	32.8	26.9	28.3	21.1	16.2	9.9	11.0	12.8	10.6	11.4	13.5	16.6	14.8	20.2
IT	22.7	21.7	22.2	20.9	19.6	16.7	17.0	16.1	15.0	14.2	14.7	15.3	15.6	15.3
LT	17.0	22.0	29.8	31.0	23.9	9.6	9.7	18.7	19.4	20.1	25.0	27.7	33.4	37.7
LU	7.8	7.9	7.2	5.4	6.0	5.9	4.7	6.1	6.2	6.3	7.9	8.7	11.7	9.9
LV	21.1	30.4	35.6	52.0	47.6	17.2	9.1	13.9	17.6	27.6	34.6	38.1	39.9	45.7
MT	23.3	23.5	20.3	24.3	19.7	18.2	17.6	17.3	14.9	17.0	21.3	23.9	24.9	25.4
NL	5.4	5.8	9.5	9.4	7.7	5.9	6.5	5.5	5.5	5.9	5.6	9.0	10.0	10.8
PL	7.3	7.8	7.8	11.7	14.4	14.2	14.7	14.0	12.3	11.7	12.1	12.8	13.8	15.5
PT	27.6	26.1	25.5	22.3	20.1	21.0	20.0	17.4	14.6	15.1	17.0	18.3	17.0	17.7
RO			29.4	26.5	21.4	17.6	14.8	14.4	14.5	15.7	19.4	19.1	20.0	22.8
SE	10.1	11.3	9.9	15.3	16.2	14.2	15.9	15.9	15.0	13.6	15.9	16.8	15.8	14.6
SI	20.3	19.9	19.4	21.3	20.0	20.2	20.9	19.6	20.5	17.1	17.2	17.6	16.4	18.3
SK	7.1	8.5	8.5	9.9	10.8	7.7	6.3	7.8	6.0	6.2	5.6	5.7	6.9	6.4
UK	24.8	26.1	26.5	27.3	22.3	21.3	21.8	16.4	16.6	17.7	16.5	17.1	16.9	20.4
EU	18.3	18.4	19.1	18.9	17.9	16.0	15.9	14.5	13.7	13.7	14.1	14.6	15.0	16.1

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.31 AROP rate, 70% poverty line, age 0–15, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	26.4	25.2	26.0	28.9	28.2	30.2	29.4	28.2	30.0	28.5	29.7	31.8	29.8	30.7
BE	26.6	23.2	25.1	25.1	25.8	26.5	26.1	25.2	25.9	26.9	25.8	24.9	26.9	26.5
BG		34.1	36.4	32.0	29.6	33.2	34.9	34.8	35.5	37.3	31.4	38.3	35.6	33.6
CY	21.5	20.1	20.3	21.6	23.3	20.9	21.2	21.4	24.3	22.8	26.9	25.7	25.5	27.7
CZ	25.6	27.2	24.3	20.0	20.2	20.5	21.9	21.8	19.1	22.5	20.9	20.7	19.2	16.0
DE	20.2	20.5	23.5	23.5	22.9	26.1	26.5	24.7	23.2	23.1	25.2	24.9	24.2	23.4
DK	15.9	16.5	16.0	14.5	16.2	18.2	19.1	16.6	16.3	18.0	17.2	16.7	16.8	18.3
EE	27.7	27.0	24.3	24.4	27.5	23.5	24.7	22.9	24.0	23.4	25.0	24.0	22.4	23.3
EL	25.9	28.7	31.6	29.8	29.9	29.5	30.5	34.8	39.2	32.9	35.4	34.9	31.2	31.8
ES	34.8	35.6	34.2	35.6	37.4	35.3	35.6	35.5	36.0	37.5	36.2	35.4	36.0	33.0
FI	18.2	18.3	19.8	20.2	19.6	19.7	19.9	19.4	17.2	20.6	18.3	19.1	18.2	19.6
FR	25.2	22.6	24.4	27.0	27.4	29.3	27.7	27.4	27.7	28.0	27.6	28.5	28.4	29.1
HR						26.6	28.1	31.2	28.9	30.2	28.5	28.4	29.6	27.2
HU	29.5	34.6	28.1	30.1	30.8	31.3	32.9	31.8	32.7	33.7	31.6	30.7	28.3	28.7
IE	30.7	29.9	27.7	28.6	26.8	30.2	24.5	26.4	27.2	26.5	26.4	27.2	25.7	26.7
IT	33.9	33.7	33.4	32.5	33.7	34.6	34.9	36.0	35.3	33.5	35.0	35.3	35.7	36.6
LT	34.2	31.3	27.6	30.4	29.0	30.8	32.1	29.0	33.6	30.6	33.9	32.1	34.6	31.5
LU	28.1	27.5	29.1	29.2	32.4	35.0	32.6	36.2	37.8	35.1	31.7	29.2	29.8	32.1
LV	27.3	30.6	26.3	30.2	32.2	33.6	31.5	31.0	29.9	31.2	29.4	24.5	26.1	22.3
MT	31.0	29.9	30.0	33.7	33.8	30.8	32.5	35.5	35.7	33.8	32.2	29.5	27.5	28.1
NL	25.9	24.7	24.4	22.3	24.1	23.4	23.5	22.1	22.3	22.1	22.8	22.0	21.2	20.0
PL	37.4	35.4	33.2	31.8	31.0	31.4	30.7	30.5	30.9	30.5	28.5	29.5	20.9	20.7
PT	30.0	26.8	27.9	32.1	29.7	28.3	28.9	28.7	30.6	31.2	30.0	28.3	24.8	26.0
RO			41.7	39.9	39.7	39.2	40.6	40.8	44.3	44.3	44.2	41.9	38.5	40.1
SE	18.0	23.0	18.8	21.8	23.6	23.8	23.4	24.6	23.6	25.5	23.7	25.0	26.5	26.7
SI	19.3	20.0	19.9	17.8	19.0	19.9	21.8	20.6	21.0	21.6	20.3	19.1	20.0	20.1
SK	26.3	24.2	23.7	24.9	23.9	27.8	27.3	29.1	27.1	28.6	30.5	29.9	26.9	25.8
UK	32.6	34.8	33.1	34.0	31.5	30.3	28.3	29.3	30.4	32.5	31.6	29.0	32.5	34.0
EU	28.3	28.3	28.9	29.3	29.2	29.9	29.6	29.5	29.7	30.0	29.8	29.5	28.9	28.9

Source: Eurostat database (variable ilc_lii02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.32 AROP rate, 70% poverty line, age 16–64, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	18.3	17.2	16.8	19.3	18.7	19.0	19.9	19.5	19.0	19.4	20.0	21.3	20.3	20.2
BE	20.1	19.4	19.6	19.7	19.0	19.8	20.1	20.6	21.0	21.9	21.4	22.2	22.7	22.4
BG		23.6	25.7	23.5	22.2	23.3	24.4	23.3	22.5	24.2	23.7	25.5	24.3	24.3
CY	17.9	17.6	17.4	16.9	18.8	18.3	18.5	20.2	22.0	21.6	23.9	22.9	22.1	21.6
CZ	15.5	15.8	15.0	14.6	14.1	14.1	15.3	15.4	14.8	15.0	15.0	14.4	14.3	13.2
DE	18.8	19.1	21.5	21.8	21.7	22.4	23.3	23.1	23.1	23.5	23.8	23.2	22.6	22.2
DK	16.1	16.1	15.8	16.5	16.8	18.2	17.4	18.0	18.8	19.1	19.0	18.9	19.6	19.6
EE	23.0	22.4	22.2	21.4	22.0	22.3	24.6	24.3	23.0	24.8	23.4	22.9	21.8	22.1
EL	23.3	25.9	25.7	25.2	23.3	25.9	26.6	31.3	32.6	30.2	28.8	29.7	27.8	27.5
ES	23.2	22.9	24.1	23.5	24.2	24.7	26.0	28.0	28.1	29.8	29.3	30.3	28.6	28.4
FI	17.6	18.3	18.1	17.9	17.9	18.8	18.9	18.8	18.0	20.0	20.1	19.3	18.4	19.2
FR	19.7	19.6	19.2	18.9	20.4	20.1	20.4	20.7	21.5	21.3	21.4	20.9	20.2	20.1
HR							24.2	24.8	24.4	23.5	24.6	24.2	24.1	24.0
HU	20.8	22.2	19.3	20.3	19.2	19.3	21.6	21.7	22.5	22.8	23.5	22.4	22.1	22.8
IE	23.2	23.4	22.2	22.4	22.0	23.1	22.4	24.0	23.6	23.6	24.5	24.4	23.4	21.0
IT	23.7	24.3	24.6	23.8	24.1	24.7	25.9	25.9	27.0	26.4	27.2	28.7	27.6	28.2
LT	25.7	25.3	21.6	24.2	23.7	28.6	28.0	24.9	25.6	23.5	26.1	25.0	25.6	24.6
LU	18.7	20.2	21.3	20.6	22.0	23.1	22.8	23.9	24.8	24.2	24.0	22.9	24.7	24.9
LV	24.3	27.5	24.9	25.4	26.5	26.8	26.8	26.6	25.7	24.9	25.0	23.6	23.7	24.1
MT	19.3	18.4	19.6	20.6	19.8	20.2	20.0	20.5	21.1	21.3	21.4	20.5	19.0	19.9
NL	17.2	16.5	16.7	16.4	16.8	17.7	16.8	17.3	18.2	19.4	21.0	20.6	20.9	20.9
PL	28.3	27.0	25.0	23.9	23.4	24.4	24.7	24.1	24.4	24.6	24.9	24.8	22.8	22.8
PT	22.9	22.2	21.8	23.5	22.4	23.0	23.4	23.7	24.8	26.0	26.1	25.1	24.5	23.6
RO			27.7	26.4	25.7	25.7	27.7	28.1	29.0	29.6	29.9	29.0	27.9	27.4
SE	15.1	17.4	16.2	18.7	19.5	20.3	21.0	21.2	21.3	22.1	22.3	21.2	21.4	21.7
SI	16.5	16.3	16.4	16.2	15.5	17.6	17.9	19.0	19.5	20.4	20.1	20.6	19.6	18.6
SK	18.8	16.9	16.2	15.7	14.6	17.8	18.1	18.9	18.4	18.8	17.2	18.4	16.7	15.3
UK	22.4	22.3	21.2	21.8	21.6	22.2	21.1	22.5	22.7	23.0	22.5	22.3	23.4	23.2
EU	21.4	21.4	21.8	21.7	21.7	22.4	22.9	23.3	23.7	24.1	24.2	24.2	23.5	23.4

Source: Eurostat database (variable ilc_li02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

Table A.1.33 AROP rate, 70% poverty line, age 65+, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	22.4	26.6	23.0	27.8	26.8	26.9	26.0	23.7	23.7	21.6	21.7	21.3	20.4	22.4
BE	37.7	40.4	37.2	38.8	38.7	37.2	37.5	37.9	35.1	34.0	30.7	33.1	33.3	35.7
BG		35.1	35.2	47.6	53.5	43.2	43.4	40.6	39.1	33.8	43.4	36.2	43.9	40.7
CY	61.8	60.9	59.8	58.7	57.0	54.4	52.4	47.1	36.2	40.8	33.0	34.2	37.1	39.0
CZ	16.7	18.5	17.1	21.8	21.3	16.9	17.1	16.8	16.7	19.4	21.1	22.4	24.0	31.3
DE	22.0	21.8	26.4	25.6	25.2	23.7	22.8	24.4	24.0	25.0	26.1	27.7	26.5	28.6
DK	39.2	38.4	38.9	39.7	40.5	38.5	34.4	33.0	29.1	27.6	28.5	28.3	26.8	26.7
EE	37.4	41.3	49.1	56.3	49.5	37.0	34.2	39.8	43.9	49.3	51.5	56.0	58.9	62.8
EL	35.4	34.6	33.7	31.0	29.2	30.1	34.0	23.8	21.4	21.6	19.8	18.4	19.1	19.4
ES	39.0	41.4	38.0	35.2	32.9	29.7	29.3	26.1	23.6	22.0	22.4	23.8	25.6	27.3
FI	36.3	39.8	38.7	41.2	41.0	33.3	33.5	34.7	31.7	30.7	27.9	24.9	26.0	26.8
FR	27.2	26.6	23.1	23.3	23.5	18.1	17.9	18.7	16.8	17.4	15.7	16.0	15.4	16.3
HR						39.2	37.6	35.6	33.2	33.0	35.1	35.5	37.1	37.0
HU	12.5	17.6	13.4	10.5	10.6	9.7	12.1	13.6	10.5	10.2	12.3	13.6	16.5	19.2
IE	52.3	45.6	48.2	38.6	34.2	24.8	20.4	22.8	23.6	24.3	27.8	30.4	28.3	34.2
IT	32.3	30.5	31.0	29.6	27.6	25.7	25.7	24.6	23.4	22.3	22.7	22.5	22.7	23.1
LT	30.5	37.5	43.7	44.2	37.2	19.6	21.0	32.8	31.3	34.0	40.0	41.5	44.9	49.6
LU	15.5	15.2	13.7	13.1	13.3	13.5	13.0	12.9	12.0	11.6	12.9	12.0	17.1	13.1
LV	35.0	48.1	51.2	58.6	56.8	33.7	21.3	31.8	35.0	42.1	49.4	51.4	54.1	56.6
MT	40.0	35.2	34.4	41.1	35.4	31.8	31.2	30.7	31.9	35.5	38.2	41.3	41.8	42.4
NL	17.2	18.2	24.3	21.6	19.9	18.2	17.7	15.2	16.6	15.3	15.4	22.7	24.0	24.6
PL	13.8	15.0	16.5	21.6	24.8	23.8	24.5	22.5	20.4	19.7	20.9	22.0	22.6	25.1
PT	40.4	39.0	38.0	36.5	33.7	34.8	30.4	26.0	23.8	27.7	27.7	29.0	28.6	30.1
RO			40.7	35.7	30.3	26.6	24.8	23.9	23.6	23.7	25.8	26.1	28.6	30.9
SE	25.0	25.7	28.4	35.6	36.5	32.8	34.6	33.4	30.7	26.8	33.5	33.9	32.7	31.2
SI	29.8	30.9	28.4	31.1	29.3	29.0	29.7	28.4	30.0	26.5	26.7	26.8	26.2	28.5
SK	18.8	20.9	21.1	23.2	17.2	16.5	13.5	19.8	14.3	13.7	12.9	13.1	15.9	13.5
UK	38.5	40.4	39.6	40.0	34.6	33.0	33.1	27.5	27.3	27.6	27.1	28.2	26.9	30.2
EU	28.9	29.4	30.3	30.2	28.7	26.2	25.9	24.7	23.4	23.3	23.8	24.6	24.7	26.4

Source: Eurostat database (variable ilc_lii02; extracted on 2.2.2021).

Notes: EU includes member countries at the time. AROP – at risk of poverty.

1.2 At risk of poverty or social exclusion

At-risk-of-poverty-or-social-exclusion (AROPE) is a composite indicator monitored according to the definition adopted for the Europe 2020 strategy, which aimed to lift at least 20 million people in the EU out of poverty or social exclusion. Between 2008 and 2018, the AROPE rate fell only from 24% to 22% at the EU level, representing roughly 8 million people positively impacted and, thus, not fulfilling the goal. The indicator includes three dimensions of poverty. The first dimension, AROP – the relative income poverty measure, is the main focus of this book. However, as it is a dimension of the composite AROPE indicator, we introduce the other two dimensions – severe material deprivation and very low work intensity – and provide statistics on them in addition to the statistics of the composite AROPE in this chapter.

The second dimension, material deprivation, is conceived as the inability to afford goods and services which are considered to be standard in EU society. In general, material deprivation can be also understood more broadly as the inability to participate in activities that are perceived as ordinary in the society (Fusco et al., 2010). Townsend's (1979, 1987) concept of material deprivation also includes individuals who do not have access to various types of activities (including employment). The measurement of material deprivation underwent several changes in the EU concept. Originally, it was called a *material deprivation* index and was based on a list of nine items of goods and services. Households were asked if they could afford the goods and services on the list. The threshold distinguishing the households and their members as being materially deprived or non-deprived was set to a lack of at least three of the nine items on the list. In 2010, the threshold was set to at least four items, and used the same list, and the indicator was titled *severe material deprivation*. With the abbreviation MD, we mean severe material deprivation defined by the threshold of four items. Nevertheless, later it was recognised that the list of items does not accurately capture the common needs of current EU society, and so the list has been changed and extended, and the indicator renamed *material and social deprivation*, which we abbreviate as MSD. The new MSD indicator includes a lack of social participation and so is again closer to the Townsend concept of poverty. The list of items included in both MD and MSD indicators is described in more detail in the following subchapter.

The third dimension, the *very low work intensity* indicator, expresses a household's lack of access to employment. In simplified terms, it calculates the utilised work capacity of prime-aged household members and quantifies members of *quasi-jobless households*. Overall, the AROPE indicator captures more than monetary and material deprivation; more in line with the Townsend

view of poverty and deprivation, it considers broader standards of living including activities and social participation.

We consider that all three dimensions of the composite AROPE indicator – the at-risk-of poverty indicator, the material deprivation, and the very low work intensity indices – are burdened by complicated methodological steps which can make them difficult to understand clearly. In order to illuminate them, we introduce the material (and social) deprivation and low work intensity dimensions of the AROPE measure and present the relevant statistics for the V4 in more detail in the following subchapters.

1.2.1 Material deprivation

The material deprivation index has undergone several modifications since its introduction. Originally, nine *deprivation items* were designated at the household level in EU-SILC. An enforced lack of three or more of the nine items determined all household members, including children, to be materially deprived. In 2009, this index was changed to **severe material deprivation** (MD), and the threshold was re-set to an enforced lack of four of the same nine items.

Table 1.10 List of items linked to severe material deprivation and material and social deprivation

	Level	MD	MSD
Avoiding being in arrears on mortgage and rental payments, utility bills, and loan payments	household	✓	✓
Ability to handle unexpected financial expenses	household	✓	✓
Ability to afford one week annual holiday away from home	household	✓	✓
Ability to afford a meal with meat every second day	household	✓	✓
Ability to keep home adequately warm	household	✓	✓
Having a washing machine	household	✓	X
Having a colour TV	household	✓	X
Having a telephone (including mobile phone)	household	✓	X
Having a car for private use	household	✓	✓
Ability to replace worn-out furniture	household		✓
Having an internet connection	individual		✓
Replacing worn-out clothes with new ones	individual		✓
Having two pairs of properly fitting shoes	individual		✓
Spending a small amount of money each week on him/herself	individual		✓
Having regular leisure activities	individual		✓
Getting together with friends/family for a drink/meal at least monthly	individual		✓

Notes: MD – severe material deprivation, MSD – material and social deprivation.

The list of items (Table 1.10) measured in the severe material deprivation index includes the following variables.

(1) Avoiding being in arrears covers three sub-indicators of arrears: mortgage or rental payments; utility bills; and hire purchase instalments or other loan payments. Households are asked whether they experienced arrears due to financial difficulties during the prior year. Being in arrears in one or more of the three areas is sufficient to consider a household deprived of this item. (2) Unexpected expenses up to a certain amount should be payable from the household's own resources, i.e., without requiring outside assistance or borrowing; the household members are considered deprived of this item otherwise.¹⁴ (3) The ability to afford a one week annual holiday away from home, including stays in a second dwelling or with friends/relatives, and such a holiday should be affordable for all household members, otherwise the household members are considered to be deprived in this item.

(4) Ability to afford a meal with meat, chicken, or fish every second day, including a vegetarian equivalent, measures the affordability, regardless of whether the household wishes to have such meals. (5) Ability to keep the home adequately warm again questions whether heating is affordable, regardless of whether the household actually desires to keep it warm. (6)–(9) Further, the MD index does not measure the possession of goods (a washing machine, a colour TV, a phone, and a car¹⁵) but only their enforced lack, therefore, in addition to yes (can afford) or no (cannot afford), the respondents could opt to answer “no, do not have for other reasons”, and the “cannot afford” option is the only answer classified as deprivation.

In the overall EU, the severe material deprivation rate gradually decreased from 8.5% in 2008 to 5.9% in 2018 (see Table A.1.34). Though the 2008 MD rates were substantial in some countries (41.2% in BG, followed by 32.7% in RO), the indicator failed to differentiate between deprived and non-deprived populations in others (0.7% in LU, 1.5% in NL). Because the rates were generally decreasing over time, it may be that some of the items – washing machine, TV, phone – became *outdated* in the sense that even poor households now mostly have these items and the indicator has lost its information value. Indeed, the specification of a colour TV, and the fact that even schoolchildren commonly possess mobile phones today suggests that these items do not capture the needs of the current EU society. Mysíková and Želinský (2022) show on the Social Consequences of Transition household survey data from 1995 that a

¹⁴ The amount differs across countries and corresponds to the monthly at-risk-of poverty threshold obtained from EU-SILC data collected two years before (Eurostat, 2018).

¹⁵ A car can be may be rented, leased, provided on loan, or shared with other households. Also, a company car which is available to the household for private use counts as possessing the item (Eurostat, 2018).

(landline) phone was lacked by 26% (CZ) to 47% (PL) of the V4 population in 1995. By 2005, however, no more than 4% of the V4 population lacked a phone, as evidenced by the first EU-SILC data.

For this reason, an updated version of the material deprivation index was proposed, to reflect enforced lack in the current society more accurately (Guio et al., 2016). EU-SILC 2009 and 2014 data were supplemented with an ad hoc module on material deprivation. New, more up-to-date items were included in the questionnaires and tested. The new indicator was introduced by Guio et al. (2012) and then further analysed (Guio et al., 2017). In 2017, the EU adopted the **material and social deprivation** (MSD) indicator. Three of the outdated items were dropped (washing machine, TV, phone) and one new household-level item was added. The new household-level variable asks households if they can replace furniture when it becomes worn or damaged (second-hand furniture can be taken into account, Eurostat, 2018). Six individual-level items were added to the household level items (see Table 1.10). Again, the questions on affordability of the new items allowed three options: yes, no (cannot afford signals deprivation), and “no – other reason”.

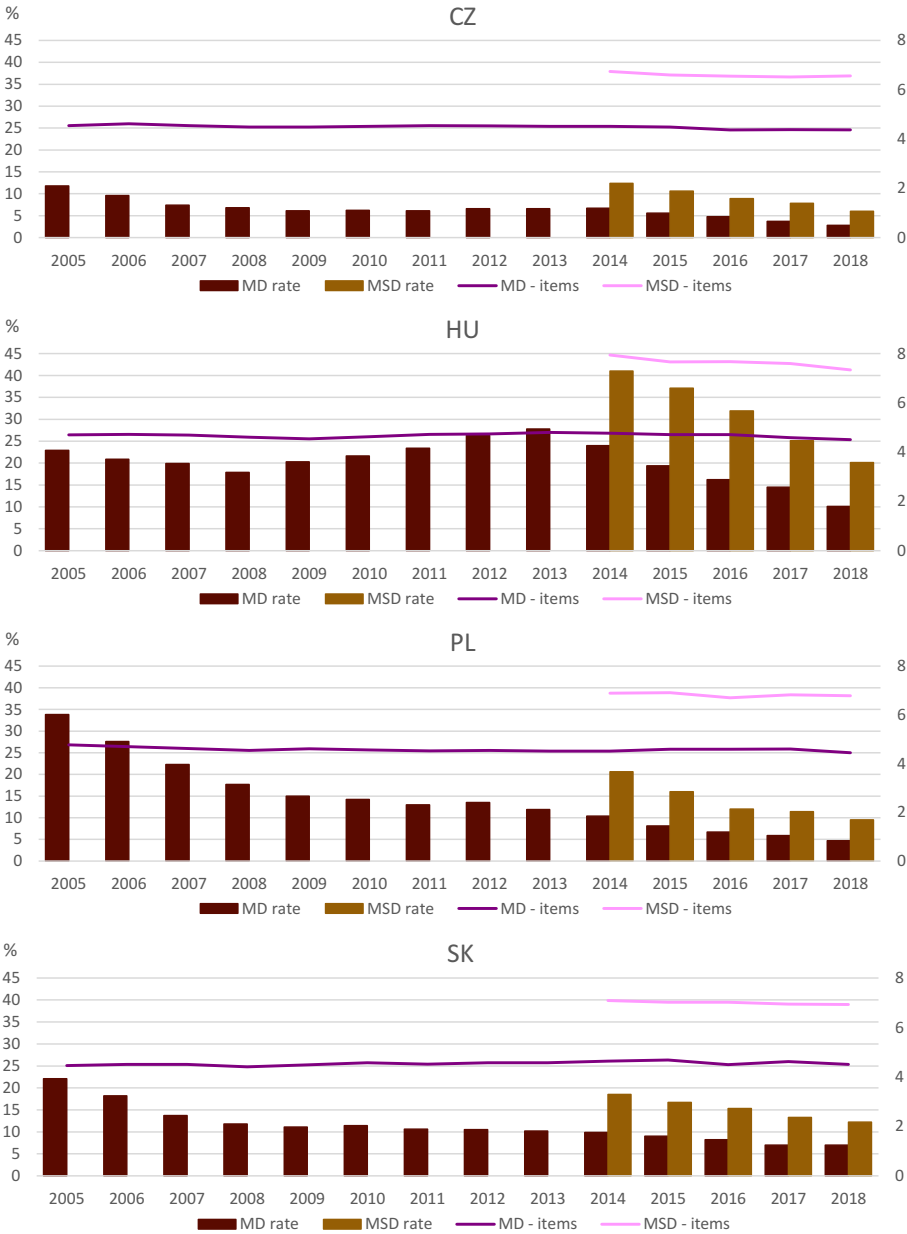
The new individual-level items include questions on leisure activities and the ability to get together with friends/family for a drink/meal, hence, components of social deprivation. The new material and social deprivation index is thus closer to Townsend’s (1987) concept of material deprivation. The threshold was set as a lack of five of thirteen items (Guio et al., 2017). Applying a methodology based on the Youden (1950) index, Želinský et al. (2020) came to the same conclusion, also suggesting an optimal threshold of five items lacking.

Individual-level questions are asked of household members aged 16+ in EU-SILC (see Chapter 2.1 for more details on EU-SILC data), but the indicator needs to be able to describe the whole population, so the deprivation of children must be derived. A methodology is described by Guio et al. (2017, p. 51): *“if at least half the number of adults for which the information is available in the household lack an item, then the children living in that household are considered as deprived from that item”*. The threshold of five items of thirteen also holds for children, but one additional condition for child deprivation must be fulfilled: at least three of the items lacking must be household-level (there are seven household-level deprivation items on the MSD list). This rule was imposed to avoid a high sensitivity of child deprivation to adult deprivation. For instance, if a household lacked holidays and car, and only one parent lacked new clothes, two pairs of shoes, and leisure activities, the child is not deprived, though the first parent is, and the second is not. The authors of the MSD consider that the index provides information on children living in a *deprivation context*. A child-specific deprivation index is currently being developed (Eurostat, 2012, Guio et al., 2018).

The MSD rate in the EU is double the MD rate (12.8% vs 5.9%: Tables A.1.36 and A.1.34). Assuming that policymakers agree that the MSD items accurately reflect the baseline standard of living in a given country, then the MSD indicator would seem to calculate the unfulfilled needs of current societies more accurately than the MD indicator, and differentiates between deprived and non-deprived populations in greater detail. The MD and MSD rates in the V4 are shown in Figure 1.13 (left axes), where the higher values of MSD are confirmed. HU experienced the highest material (and social) deprivation rates, and HU is also the only V4 country in which a decreasing trend in the MD rate was interrupted after 2008 and resumed only after 2013.

The idea that the MD indicator has less information value can be further supported by the average number of items lacking among those deemed severely materially deprived (right axes of Figure 1.13). In the V4 countries, the mean MD items lacking ranges between 4.4 and 4.8, which suggests that people mostly lack exactly four items, i.e., they are frequently at the threshold. Within the EU, the average exceeded five items only in BG and RO (see Table A.1.35). In contrast, the average number of items lacking among those who were materially and socially deprived ranged between 6.5 and 7.9 in the V4, with the highest figures in HU (Table A.1.36 for EU countries). This signals that the MSD measures fall less often near the five-items threshold, which is further reason to believe that the MSD indicator has higher information value.

Figure 1.13 MD and MSD rates and the mean numbers of items lacked by those designated as deprived, V4 (% and mean)



Source: Eurostat database for MD and MSD rates (variables ilc_mddd11 and ilc_mdspd02; extracted on 20.10.2020); EU-SILC 2005–2018 for the number of items lacked, author's computations.

Notes: MD – severe material deprivation (4 of 9 items), MSD – material and social deprivation (5 of 13 items). MD and MSD rates – left axes; mean numbers of items lacked – right axes). Since 2016, information on the three items dropped (washing machine, TV, phone) has been collected on a voluntary basis. Therefore, in countries where data on deprivation of these items is no longer collected, we consider households and their members not to be materially deprived of these items.

1.2.2 Work intensity

The indicator of very low work intensity is calculated as the share of persons living in households in which members of working age worked less than 20% of their total potential during the income reference period (i.e., the previous calendar year in the majority of EU-SILC countries). Precisely, work intensity is the ratio of the total number of months that all working-age household members: i) did work during the year and ii) could have worked in that year. For instance, in a working age couple with one partner working half the year and the other working the whole year (regardless of whether it was full/part time or as an employee or self-employed), the work intensity of the household is $6+12$ divided by 2×12 , which equals 0.75. The binary indicator of very low work intensity (WI) captures persons from households in which this ratio is less than 0.2.

Of course, not all household members are assumed to work and the indicator must take this into account. Only household members aged 18–59, excluding students aged 18–24, enter the calculation of the ratio of work intensity. Students and youth up to 17 years are assigned the ratio of the *working-age* household members. Household members aged 60+ are excluded from the computation altogether, and very low work intensity can never be assigned to them.¹⁶ For an extreme example, consider a three-person, three-generation household composed of a 60-year old grandmother working the whole year, a 40-year old mother who only worked for two months, and a 17-year old daughter who worked the whole year. Only the mother enters the calculation, and the work intensity ratio yields $2/12 = 0.17$. In this household, both mother and daughter are assigned a value *one* in the binary indicator of very low WI, while the grandmother has a *zero* or *not applicable* value. For obvious reasons, this indicator has been criticised for assuming that the distinction between working part-time or full-time is irrelevant, and for its definition of *working-age* (as the retirement age is usually higher),¹⁷ its treatment of students, and the threshold definition (Ward and Ozdemir, 2013). Despite the drawbacks, the indicator has been utilised in empirical analyses in relation to social policies (Cantillon et al., 2012), income poverty (Mysíková et al., 2015), and in-work poverty (Frazer and Marlier, 2010).

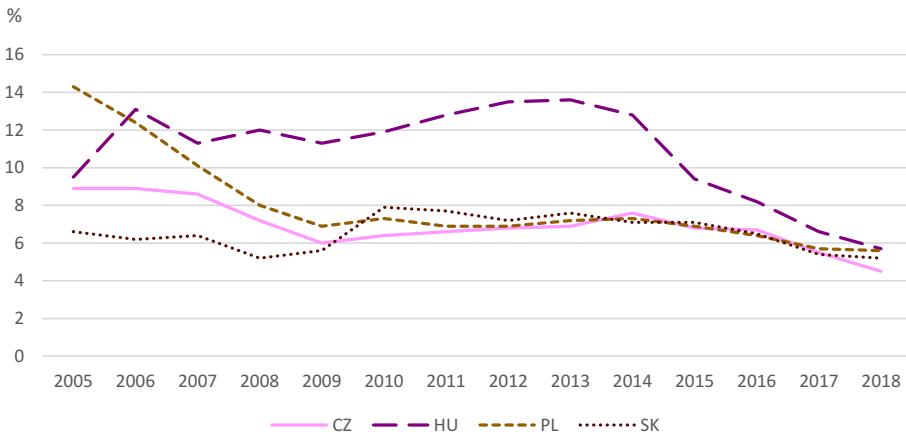
The very low work intensity indicator appears in Figure 1.14 (see Table A.1.37 for EU countries). The trend is generally decreasing, reaching around 5% in 2018 in all V4 countries. In HU, the values were substantially higher, around 14% up to 2014, and dropped significantly only later. This might be related to

¹⁶ Households that consist only of children (0–17) and students younger than 25 and/or people aged 60+ are completely excluded from the indicator calculation.

¹⁷ The upper age limit will be changed from 59 to 64 in upcoming years (Moench, 2021).

the overall growth in the employment rate in HU, which increased from 63% in 2013 to 74% in 2018 (see also Branyiczki et al., 2019).¹⁸ Similarly, in PL, the sharply decreasing trend of very low work intensity index between 2005 and 2009 was accompanied by an increase in the employment rate from 57% in 2004 to 65% in 2008.

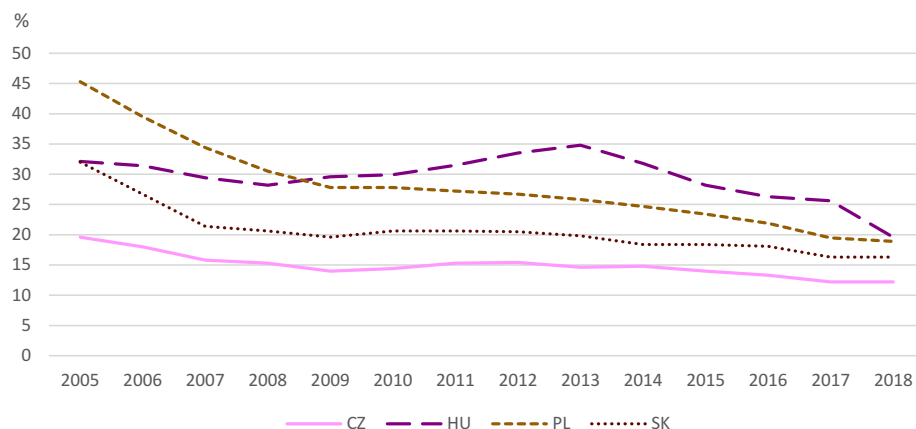
Figure 1.14 Very low work intensity, V4 (% of population aged 0–59)



Source: Eurostat database (variable ilc_lvhl11; extracted on 3.11.2020).

1.2.3 The composite AROPE indicator

The *at-risk-of-poverty-or-social-exclusion* (AROPE) rate is defined as the share of a population living in at least one of three conditions: *at risk of income poverty* (AROP), in a situation of *severe material deprivation* (MD), and living in a household with *very low work intensity* (WI). These three dimensions are described in detail in previous chapters. Figure 1.15 shows the trends in V4 countries, where AROPE rates have gradually declined, with the exception of HU. The peak in 2013 in HU coincides with the peak of severe MD, high rates of very low WI until 2013, and ultimately, the AROP rate also peaking in 2013/2014. CZ consistently has the lowest AROPE rates among the V4 and EU countries (see Table A.1.38), mostly due to its low AROP rate.

Figure 1.15 AROPE rate, V4 (%)

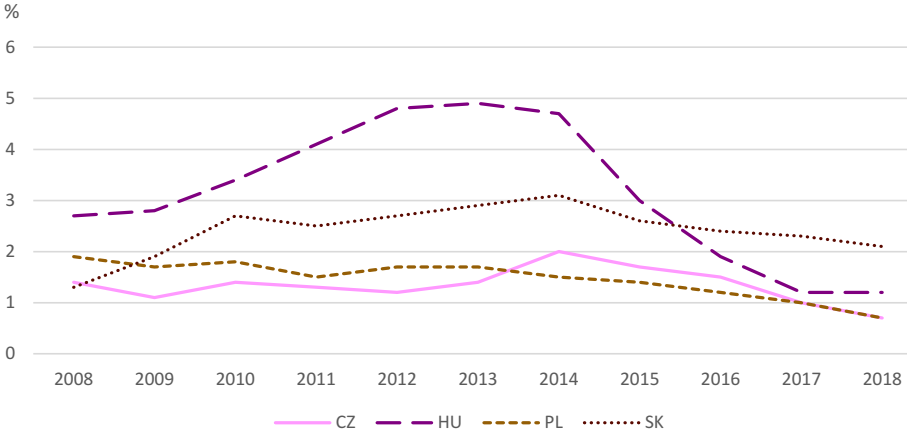
Source: Eurostat database (variable ilc_peps01; extracted on 3.11.2020).

Notes: AROPE – at risk of poverty or social exclusion.

The population at risk of all three dimensions of AROPE should be the main focus of national social and active labour market policies. These are small shares of the population, ranging between 0.3% (in LU) to 3.2% (in BG) in 2018 (see Table A.1.39). Within the V4, the population share at risk of all three dimensions was high in the past – close to 5% – in HU between 2012 and 2014, again, due to high rates of all three dimensions. After 2014, the shares of population at risk according to all three dimensions steadily decreased in HU as it did in the other V4 countries. In CZ and PL, these shares did not exceed 2% through the whole period (Figure 1.16).

The low overlaps occur because the three dimensions of AROPE capture relatively different aspects of poverty (e.g., Večerník and Mysíková, 2016, 2020, for CZ). Boarini and d’Ercole (2006) comment that the overlap between income poverty and material deprivation, regardless of the approach applied, is commonly incomplete. According to Fusco et al. (2010), the numbers of materially deprived people who are not at risk of income poverty at the same time tend to be higher in *new* EU member states. The level and the type of work attachment of household members have strong effects on income poverty and/or material deprivation, and somewhat weaker effects on being materially deprived but not at risk of income poverty. Kis and Gábos (2016) confirm that the probability of being both at risk of income poverty and materially deprived is related to low work intensity.

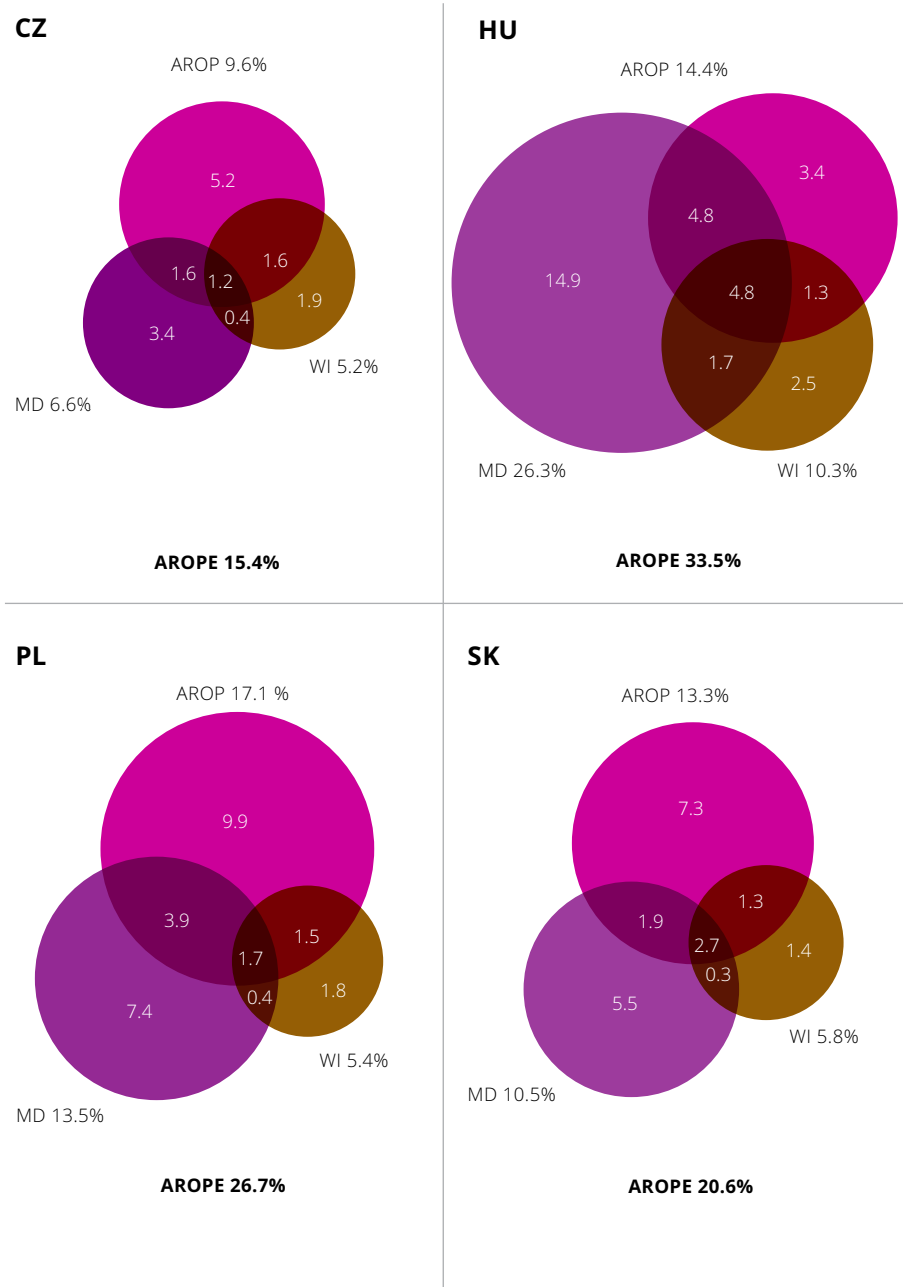
Figure 1.16 AROPE – the overlap of all three indicators, V4 (%)



Source: Eurostat database (variable *ilc_pees01*; extracted on 3.11.2020; data before 2007 not provided); EU-SILC 2016 for CZ, author’s computation (missing in Eurostat database).
 Notes: AROPE – at risk of poverty or social exclusion.

Figure 1.17 displays all possible overlaps of the three dimensions of AROPE in 2012, when the AROPE rate was around its peak in HU. The common feature (except in HU) is that people were deprived only financially most frequently (AROP only). The second most frequent combination was being severely materially deprived (MD only). HU, with the highest AROPE rate in 2012, experienced a very high *sole* severe material deprivation at 14.9%.

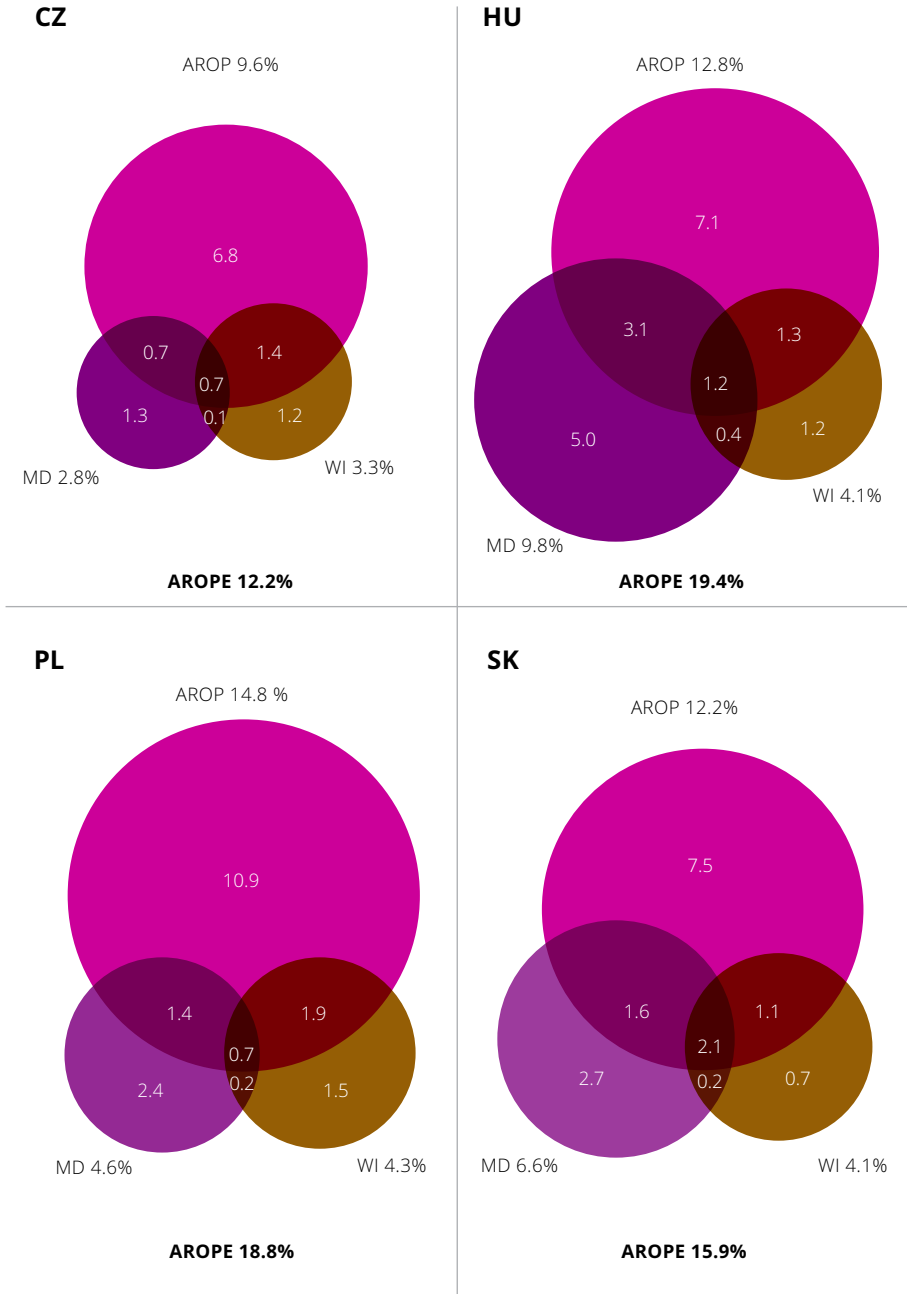
However, HU experienced a sharp decrease in its AROPE rate after 2013, and reached a value closer to the other V4 countries in 2018 (Figure 1.15). The main reason seems to be that the share of the HU population classified as MD (solely) dropped from 14.9% in 2012 to 5.0% in 2018 (Figure 1.18). In all four countries, the shares of populations at risk of income poverty alone (6.8% in CZ to 10.9% in PL) are higher than those at sole risk of material deprivation (1.3% in CZ to 5.0% in HU) or very low work intensity (0.7% in SK to 1.5% in PL). The composite AROPE indicator is thus mostly informed by the income poverty rate.

Figure 1.17 AROPE – detailed overlaps, V4, 2012 (%)

Source: EU-SILC 2012. Author's computations.

Notes: These computed AROPE rates differ slightly from official statistics, mainly due to missing values in the microdata files used in this study. AROP – at-risk-of poverty, MD – severe material deprivation, WI – very low work intensity, AROPE – at risk of poverty or social exclusion.

Figure 1.18 AROPE – detailed overlaps, V4, 2018 (%)

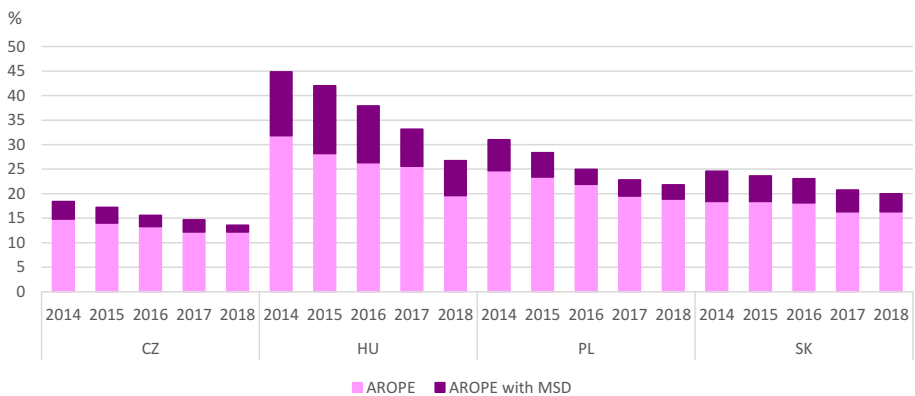


Source: EU-SILC 2018. Author's computations.

Notes: These computed AROPE rates differ slightly from official statistics, mainly due to missing values in the microdata files used in this study. AROP – at-risk-of poverty, MD – severe material deprivation, WI – very low work intensity, AROPE – at risk of poverty or social exclusion.

Clearly, the MD indicator no longer yields adequate information value in many countries, while the material and social deprivation (MSD) indicator, which signals far more persons lacking both material and social basic items (Subchapter 1.2.1), seems to produce more relevant information about the current society. MSD will be used instead of the MD in the EU statistics of AROPE in upcoming years (Moench, 2021). Therefore, we replicate the previous statistics of the AROPE rates and its overlapping dimensions, substituting material and social deprivation for severe material deprivation. Figure 1.19 shows how the *new* AROPE indicator increased when MSD is used. The highest increase occurs in HU, where the new AROPE would have been 1.5 times higher than the official AROPE in 2015. The difference between the hypothetical and official AROPE rates declines over time in all V4 countries, given the decrease in MSD rates (Figure 1.13). In 2018, the hypothetical AROPE would range between 13.6% in CZ to 26.7% in HU. CZ would still have the lowest rate in the EU (see Table A.1.38 for EU in 2018).

Figure 1.19 AROPE rate with MSD, V4, 2014–2018 (%)

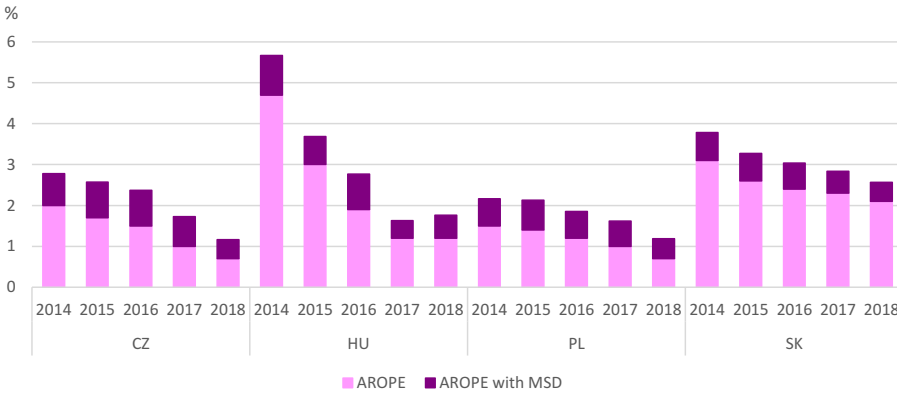


Source: EU-SILC 2014–2018. Author's computations.

Notes: Values in PL may be undervalued due to missing data (7.4% in 2014 to 15.4% in 2018). The share of missing values is negligible in other countries (HU – max. 2.5% in 2015; SK – max. 2.0% in 2014). AROPE – at risk or social exclusion, MSD – material and social deprivation.

If the hypothetical AROPE is considered, the shares of populations at risk of all three dimensions would inevitably increase as well (Figure 1.20). In 2014, the highest overlap of all three dimensions would have been experienced in HU (5.7%), with a sharp decrease in 2018 (1.8%). In 2018, the highest value (2.6%) would have occurred in SK. Within the EU, the lowest share of population at risk of all three dimensions would be in CZ, PL, and SI (1.2%), and the highest in BE (4.4%), BG (4.3%), and EL (4.2%) (see Table A.1.39 for EU countries in 2018).

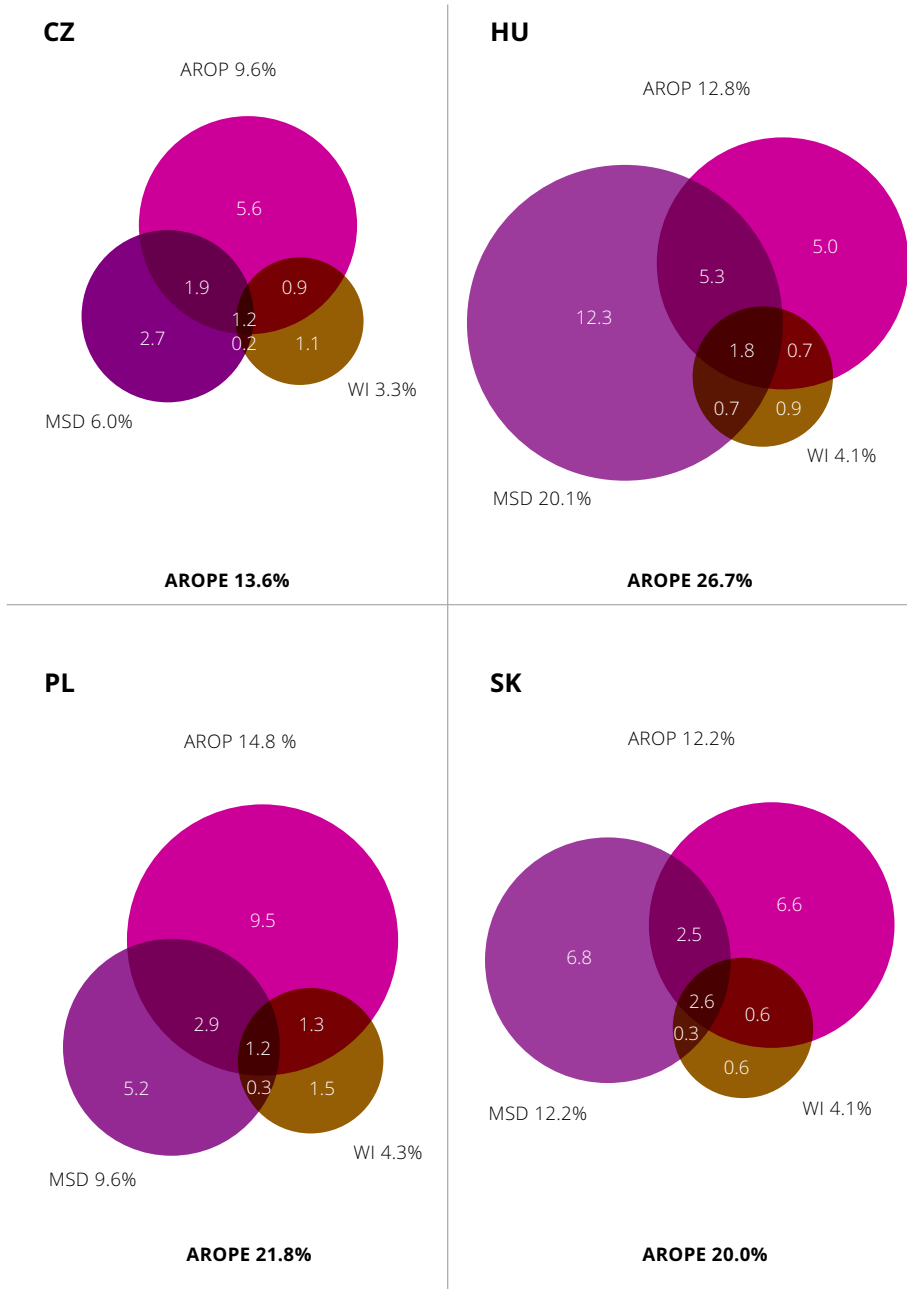
Figure 1.20 AROPE with MSD – overlap of all three indicators, V4, 2014–2018 (%)



Source: EU-SILC 2014–2018. Author's computations.

Notes: Values in PL may be undervalued due to missing data (7.4% in 2014 to 15.4% in 2018). The share of missing values is negligible in other countries (HU – max. 2.5% in 2015; SK – max. 2.0% in 2014). AROPE – at risk of poverty or social exclusion, MSD – material and social deprivation.

Despite a large drop in MSD in HU (Figure 1.13), MSD represents most of the hypothetical AROPE in 2018: 12.3% of the population would be solely materially and socially deprived (Figure 1.21). In SK, the shares of populations solely at risk of income poverty and solely materially and socially deprived are about the same, while sole risk of income poverty prevails in CZ and PL. However, the MSD indicator overlaps with the AROPE and very low WI indices to a higher degree than does the MD indicator (compare Figures 1.21 and 1.18).

Figure 1.21 AROPE with MSD – detailed overlaps, V4, 2018 (%)

Source: EU-SILC 2018. Author's computations.

Notes: AROP – at-risk of poverty, MSD – material and social deprivation, WI – very low work intensity, AROPE – at risk of income or social exclusion. Values in PL may be undervalued due to missing data (15.4%).

European Appendix

Table A.1.34 Severe material deprivation rate, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	3.5	3.6	3.3	5.9	4.6	4.3	4.0	4.0	4.2	4.0	3.6	3.0	3.7	2.8
BE	6.5	6.4	5.7	5.6	5.2	5.9	5.7	6.3	5.1	5.9	5.8	5.5	5.2	5.0
BG		57.7	57.6	41.2	41.9	45.7	43.6	44.1	43.0	33.1	34.2	31.9	30.0	20.9
CY	12.2	12.6	13.3	9.1	9.5	11.2	11.7	15.0	16.1	15.3	15.4	13.6	11.5	10.2
CZ	11.8	9.6	7.4	6.8	6.1	6.2	6.1	6.6	6.6	6.7	5.6	4.8	3.7	2.8
DE	4.6	5.1	4.8	5.5	5.4	4.5	5.3	4.9	5.4	5.0	4.4	3.7	3.4	3.1
DK	3.2	3.1	3.3	2.0	2.3	2.7	2.3	2.7	3.6	3.2	3.7	2.6	3.1	3.4
EE	12.4	7.0	5.6	4.9	6.2	9.0	8.7	9.4	7.6	6.2	4.5	4.7	4.1	3.8
EL	12.8	11.5	11.5	11.2	11.0	11.6	15.2	19.5	20.3	21.5	22.2	22.4	21.1	16.7
ES	4.1	4.1	3.5	3.6	4.5	4.9	4.5	5.8	6.2	7.1	6.4	5.8	5.1	5.4
FI	3.8	3.3	3.6	3.5	2.8	2.8	3.2	2.9	2.5	2.8	2.2	2.2	2.1	2.8
FR	5.3	5.0	4.7	5.4	5.6	5.8	5.2	5.3	4.9	4.8	4.5	4.4	4.1	4.7
HR						14.3	15.2	15.9	14.7	13.9	13.7	12.5	10.3	8.6
HU	22.9	20.9	19.9	17.9	20.3	21.6	23.4	26.3	27.8	24.0	19.4	16.2	14.5	10.1
IE	5.1	4.8	4.5	5.5	6.1	5.7	7.8	9.9	9.9	8.4	8.5	6.7	5.2	4.9
IT	6.8	6.4	7.0	7.5	7.3	7.4	11.1	14.5	12.3	11.6	11.5	12.1	10.1	8.5
LT	32.6	25.3	16.6	12.5	15.6	19.9	19.0	19.8	16.0	13.6	13.9	13.5	12.4	11.1
LU	1.8	1.1	0.8	0.7	1.1	0.5	1.2	1.3	1.8	1.4	2.0	1.6	1.2	1.3
LV	39.3	31.3	24.0	19.3	22.1	27.6	31.0	25.6	24.0	19.2	16.4	12.8	11.3	9.5
MT	5.4	3.9	4.4	4.3	5.0	6.5	6.6	9.2	10.2	10.3	8.5	4.4	3.3	3.0
NL	2.5	2.3	1.7	1.5	1.4	2.2	2.5	2.3	2.5	3.2	2.6	2.6	2.6	2.4
PL	33.8	27.6	22.3	17.7	15.0	14.2	13.0	13.5	11.9	10.4	8.1	6.7	5.9	4.7
PT	9.3	9.1	9.6	9.7	9.1	9.0	8.3	8.6	10.9	10.6	9.6	8.4	6.9	6.0
RO			38.0	32.7	32.1	30.5	29.5	31.1	29.8	25.9	22.7	23.8	19.7	16.8
SE	2.3	2.1	2.2	1.8	2.0	1.9	1.7	1.8	1.9	1.0	1.1	0.8	1.1	1.6
SI	5.1	5.1	5.1	6.7	6.1	5.9	6.1	6.6	6.7	6.6	5.8	5.4	4.6	3.7
SK	22.1	18.2	13.7	11.8	11.1	11.4	10.6	10.5	10.2	9.9	9.0	8.2	7.0	7.0
UK	5.3	4.5	4.2	4.5	3.3	4.8	5.1	7.8	8.3	7.4	6.1	5.2	4.1	4.6
EU				8.5	8.2	8.4	8.8	9.9	9.6	8.9	8.1	7.5	6.6	5.9

Source: Eurostat database (variable ilc_mddd11; extracted on 20.10.2020).

Notes: EU includes member countries at the time.

Table A.1.35 Mean number of deprivation items among MD, EU (mean)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	4.3	4.3	4.5	4.5	4.4	4.5	4.4	4.4	4.5	4.3	4.4	4.6	4.4	4.3
BE	4.6	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.6	4.5	4.6	4.6	4.5	4.7
BG			5.4	5.2	5.2	5.1	5.0	5.0	5.1	5.2	5.2	5.2	5.1	4.7
CY	4.2	4.2	4.3	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.2	4.2	4.3	4.1
CZ	4.5	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.4	4.4	4.4
DE	4.4	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.4	4.4	4.4	4.3	4.2	4.3
DK	4.4	4.5	4.6	4.5	4.4	4.3	4.4	4.3	4.4	4.4	4.5	4.5	4.6	4.4
EE	4.6	4.5	4.7	4.5	4.6	4.5	4.6	4.5	4.5	4.4	4.4	4.5	4.5	4.3
EL	4.6	4.7	4.7	4.5	4.4	4.5	4.5	4.6	4.7	4.7	4.5	4.7	4.6	4.5
ES	4.4	4.4	4.4	4.3	4.4	4.3	4.3	4.3	4.3	4.4	4.4	4.5	4.4	4.4
FI	4.4	4.4	4.4	4.3	4.4	4.4	4.4	4.4	4.2	4.2	4.3	4.2	4.2	4.4
FR	4.5	4.5	4.4	4.4	4.5	4.4	4.4	4.4	4.5	4.4	4.4	4.3	4.4	4.3
HR					4.5	4.6	4.6	4.6	4.7	4.6	4.5	4.6	4.5	4.5
HU	4.7	4.7	4.7	4.6	4.5	4.6	4.7	4.7	4.8	4.8	4.7	4.7	4.6	4.5
IE	4.6	4.6	4.5	4.4	4.4		4.5	4.4	4.5	4.4	4.4	4.3	4.3	4.3
IT	4.6	4.5	4.6	4.6	4.5	4.6	4.4	4.4	4.4	4.4	4.4	4.5	4.4	4.3
LT	4.9	4.8	4.7	4.7	4.7	4.7	4.7	4.6	4.6	4.5	4.5	4.5	4.5	4.5
LU	4.2	4.2	4.4	4.3	4.2	4.3	4.2	4.2	4.3	4.5	4.4	4.5	4.3	
LV	5.1	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.7	4.7	4.6	4.7	4.5
MT			4.4	4.3	4.3	4.3	4.4	4.5	4.5	4.5	4.5	4.4	4.4	4.4
NL	4.3	4.3	4.2	4.2	4.3	4.3	4.2	4.3	4.4	4.3	4.4	4.4	4.3	4.3
PL	4.8	4.7	4.6	4.5	4.6	4.6	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.4
PT	4.7	4.6	4.6	4.5	4.6	4.5	4.5	4.4	4.4	4.5	4.5	4.5	4.5	4.3
RO			5.2	5.1	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.9	4.7	4.5
SE	4.3	4.4	4.3	4.3	4.3	4.3	4.2	4.4	4.3	4.3	4.2	4.3	4.3	4.3
SI	4.5	4.4	4.5	4.4	4.4	4.4	4.4	4.5	4.4	4.4	4.4	4.4	4.4	4.3
SK	4.5	4.5	4.5	4.4	4.5	4.6	4.5	4.6	4.6	4.6	4.7	4.5	4.6	4.5
UK	4.3	4.3	4.3	4.4		4.4	4.4						4.4	4.3

Source: EU-SILC 2005–2018. Author's computations.

Notes: MD – severe material deprivation (4 of 9 items). The mean number of items lacked is not calculated in countries with high shares (>10%) of missing values.

Table A.1.36 Material and social deprivation rate and mean number of deprivation items among the MSD, EU (% , mean)

	Material and social deprivation rate					Mean number of items lacked				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
AT	9.0	6.8	7.0	6.7	5.6	6.6	6.6	6.8	6.9	6.7
BE	12.4	12.3	13.4	11.8	11.2	7.4	7.2	7.3	7.3	7.3
BG	52.4	50.6	47.9	44.4	34.3	8.7	8.5	8.3	8.1	7.9
CY	27.7	22.8	21.0	17.5	15.5	6.5	6.3	6.2	6.4	6.0
CZ	12.4	10.6	8.9	7.8	6.0	6.7	6.6	6.6	6.5	6.6
DE	12.0	10.9	9.4	8.1	7.5	7.0	7.0	6.8	6.7	6.7
DK	6.6	7.5	6.1	7.3	7.9					
EE	13.3	9.9	7.7	10.0	8.4	6.6	6.4	6.1	6.5	6.4
EL	37.4	37.7	35.6	35.1	33.9	6.8	6.7	7.0	7.0	6.8
ES	20.3	16.2	17.4	14.7	15.1	7.1	6.7	6.9	7.3	7.3
FI	4.4	3.5	4.2	5.3	5.3					
FR	13.7	12.5	12.7	12.2	12.5	7.1	7.1	7.0	7.0	7.1
HR	22.3	19.2	16.1	14.7	12.3	7.0	6.8	6.8	7.0	7.0
HU	41.0	37.1	31.9	25.1	20.1	7.9	7.7	7.7	7.6	7.3
IE	19.8	19.6	16.3	14.1	11.9				6.9	7.0
IT	22.8	21.6	17.2	12.5	12.6	7.5	7.3	7.5	7.2	7.1
LT	29.9	28.4	28.9	26.2	24.0	7.1	6.9	7.0	7.2	7.0
LU	5.9	5.7	4.8	3.9	4.5	6.6	6.6	6.6	6.6	
LV	34.3	28.7	24.8	25.2	20.6	7.3	7.2	7.1	7.0	7.0
MT	23.0	15.6	10.7	8.3	9.3	7.4	7.1	6.9	7.0	7.0
NL	8.3	7.2	6.5	6.3	4.5					
PL	20.6	16.0	12.0	11.4	9.5	6.9	6.9	6.7	6.8	6.8
PT	26.6	22.1	18.9	16.8	14.5	7.1	6.9	6.8	6.8	6.7
RO	54.2	49.6	50.6	47.7	42.6	8.2	8.1	8.2	7.9	7.8
SE	3.8	3.0	2.9	2.8	3.3					
SI	14.9	12.0	10.0	10.5	8.7	6.5	6.4	6.5	6.6	6.4
SK	18.5	16.7	15.3	13.3	12.2	7.1	7.0	7.0	6.9	6.9
UK	16.5	14.1	13.0	10.5	9.6	7.1	6.9	7.0	6.7	6.7
EU	19.3	17.2	15.8	13.8	12.8					

Source: Eurostat database for rates (variable ilc_mdsd02; extracted on 20.10.2020); EU-SILC 2014–2018 for number of items lacked, author's computations.

Notes: EU includes member countries at the time. MSD – material and social deprivation (5 of 13 items). The mean number of items lacked is not calculated for countries using registers (see Subchapter 2.1.1) or countries with high share of missing values. The condition for children being deprived of at least 3 household items is not applied here.

Table A.1.37 Very low work intensity, EU (% of population aged 0–59)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	7.3	8.1	8.2	7.4	7.1	7.8	8.6	7.7	7.8	9.1	8.2	8.1	8.3	7.3
BE	15.1	14.3	13.8	11.7	12.3	12.7	13.8	13.9	14.0	14.6	14.9	14.9	13.9	12.6
BG		14.7	16.0	8.1	6.9	8.0	11.0	12.5	13.0	12.1	11.6	11.9	11.1	9.0
CY	4.4	3.8	3.7	4.5	4.0	4.9	4.9	6.5	7.9	9.7	10.9	10.6	9.4	8.6
CZ	8.9	8.9	8.6	7.2	6.0	6.4	6.6	6.8	6.9	7.6	6.8	6.7	5.5	4.5
DE	12.0	13.6	11.5	11.7	10.9	11.2	11.2	9.9	9.9	10.0	9.8	9.6	8.7	8.1
DK	10.1	9.6	10.1	8.5	8.8	10.6	10.5	10.2	11.9	12.2	11.6	10.7	10.0	9.8
EE	9.5	7.1	6.2	5.3	5.6	9.0	10.0	9.1	8.4	7.6	6.6	5.8	5.8	5.2
EL	7.6	8.1	8.1	7.5	6.6	7.6	12.0	14.2	18.2	17.2	16.8	17.2	15.6	14.6
ES	6.9	6.4	6.8	6.6	7.6	10.8	13.4	14.3	15.7	17.1	15.4	14.9	12.8	10.7
FI	10.0	9.1	8.8	7.5	8.4	9.3	10.0	9.3	9.0	10.0	10.8	11.4	10.7	10.8
FR	8.7	9.1	9.6	8.8	8.4	9.9	9.4	8.4	8.1	9.6	8.6	8.4	8.1	8.0
HR						13.9	15.9	16.8	14.8	14.7	14.4	13.0	12.2	11.2
HU	9.5	13.1	11.3	12.0	11.3	11.9	12.8	13.5	13.6	12.8	9.4	8.2	6.6	5.7
IE	14.7	12.9	14.3	13.7	20.0	22.9	24.2	23.4	23.9	21.0	18.7	17.8	16.2	13.0
IT	11.0	11.3	10.2	10.4	9.2	10.6	10.5	10.6	11.3	12.1	11.7	12.8	11.8	11.3
LT	9.6	8.3	6.4	6.1	7.2	9.5	12.7	11.4	11.0	8.8	9.2	10.2	9.7	9.0
LU	5.7	5.2	5.0	4.7	6.3	5.5	5.8	6.1	6.6	6.1	5.7	6.6	6.9	8.3
LV	8.3	7.1	6.2	5.4	7.4	12.6	12.6	11.7	10.0	9.6	7.8	7.2	7.8	7.6
MT	9.6	9.7	9.6	8.6	9.2	9.2	8.9	9.0	9.1	9.9	9.2	7.3	7.1	5.5
NL	9.8	10.9	9.7	8.2	8.5	8.4	8.9	8.9	9.3	10.2	10.2	9.7	9.5	8.6
PL	14.3	12.4	10.1	8.0	6.9	7.3	6.9	6.9	7.2	7.3	6.9	6.4	5.7	5.6
PT	6.0	6.6	7.2	6.3	7.0	8.6	8.3	10.1	12.2	12.2	10.9	9.1	8.0	7.2
RO			9.9	8.5	8.1	7.7	7.3	7.9	7.6	7.2	7.9	8.2	6.9	7.4
SE	7.6	6.8	6.0	7.0	8.5	8.5	9.4	8.1	9.4	9.0	8.7	8.5	8.8	9.1
SI	8.6	6.9	7.3	6.7	5.6	7.0	7.6	7.5	8.0	8.7	7.4	7.4	6.2	5.4
SK	6.6	6.2	6.4	5.2	5.6	7.9	7.7	7.2	7.6	7.1	7.1	6.5	5.4	5.2
UK	12.9	12.0	10.4	10.4	12.7	13.2	11.5	13.0	13.2	12.3	11.9	11.3	10.1	8.6
EU				9.2	9.2	10.3	10.5	10.6	11.0	11.3	10.7	10.5	9.5	8.8

Source: Eurostat database (variable ilc_lvhl11; extracted on 3.11.2020).

Notes: EU includes member countries at the time.

Table A.1.38 AROPE (ARPE with MSD in 2018), EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	ARPE with MSD 2018
AT	17.4	17.8	16.7	20.6	19.1	18.9	19.2	18.5	18.8	19.2	18.3	18.0	18.1	17.5	18.2
BE	22.6	21.5	21.6	20.8	20.2	20.8	21.0	21.6	20.8	21.2	21.1	20.9	20.6	20.0	22.6
BG		61.3	60.7	44.8	46.2	49.2	49.1	49.3	48.0	40.1	41.3	40.4	38.9	32.8	41.5
CY	25.3	25.4	25.2	23.3	23.5	24.6	24.6	27.1	27.8	27.4	28.9	27.7	25.2	23.9	26.8
CZ	19.6	18.0	15.8	15.3	14.0	14.4	15.3	15.4	14.6	14.8	14.0	13.3	12.2	12.2	13.6
DE	18.4	20.2	20.6	20.1	20.0	19.7	19.9	19.6	20.3	20.6	20.0	19.7	19.0	18.7	19.7
DK	17.2	16.7	16.8	16.3	17.6	18.3	17.6	17.5	18.3	17.9	17.7	16.8	17.2	17.0	
EE	25.9	22.0	22.0	21.8	23.4	21.7	23.1	23.4	23.5	26.0	24.2	24.4	23.4	24.4	26.4
EL	29.4	29.3	28.3	28.1	27.6	27.7	31.0	34.6	35.7	36.0	35.7	35.6	34.8	31.8	43.2
ES	24.3	24.0	23.3	23.8	24.7	26.1	26.7	27.2	27.3	29.2	28.6	27.9	26.6	26.1	30.4
FI	17.2	17.1	17.4	17.4	16.9	16.9	17.9	17.2	16.0	17.3	16.8	16.6	15.7	16.5	
FR	18.9	18.8	19.0	18.5	18.5	19.2	19.3	19.1	18.1	18.5	17.7	18.2	17.0	17.4	21.7
HR						31.1	32.6	32.6	29.9	29.3	29.1	27.9	26.4	24.8	26.3
HU	32.1	31.4	29.4	28.2	29.6	29.9	31.5	33.5	34.8	31.8	28.2	26.3	25.6	19.6	26.7
IE	25.0	23.3	23.1	23.7	25.7	27.3	29.4	30.1	29.9	27.7	26.2	24.4	22.7	21.1	25.7
IT	25.6	25.9	26.0	25.5	24.9	25.0	28.1	29.9	28.5	28.3	28.7	30.0	28.9	27.3	29.2
LT	41.0	35.9	28.7	28.3	29.6	34.0	33.1	32.5	30.8	27.3	29.3	30.1	29.6	28.3	36.1
LU	17.3	16.5	15.9	15.5	17.8	17.1	16.8	18.4	19.0	19.0	18.5	19.1	19.4	20.7	
LV	46.3	42.2	35.1	34.2	37.9	38.2	40.1	36.2	35.1	32.7	30.9	28.5	28.2	28.4	34.6
MT	20.5	19.5	19.7	20.1	20.3	21.2	22.1	23.1	24.6	23.9	23.0	20.3	19.3	19.0	22.1
NL	16.7	16.0	15.7	14.9	15.1	15.1	15.7	15.0	15.9	16.5	16.4	16.7	17.0	16.7	
PL	45.3	39.5	34.4	30.5	27.8	27.8	27.2	26.7	25.8	24.7	23.4	21.9	19.5	18.9	21.8
PT	26.1	25.0	25.0	26.0	24.9	25.3	24.4	25.3	27.5	27.5	26.6	25.1	23.3	21.6	26.4
RO			47.0	44.2	43.0	41.5	40.9	43.2	41.9	40.3	37.4	38.8	35.7	32.5	49.3
SE	14.4	16.3	13.9	16.7	17.8	17.7	18.5	17.7	18.3	18.2	18.6	18.3	17.7	18.0	
SI	18.5	17.1	17.1	18.5	17.1	18.3	19.3	19.6	20.4	20.4	19.2	18.4	17.1	16.2	19.2
SK	32.0	26.7	21.4	20.6	19.6	20.6	20.6	20.5	19.8	18.4	18.4	18.1	16.3	16.3	20.0
UK	24.8	23.7	22.6	23.2	22.0	23.2	22.7	24.1	24.8	24.1	23.5	22.2	22.0	23.1	25.2
EU				23.7	23.3	23.8	24.3	24.8	24.6	24.4	23.8	23.5	22.4	21.8	

Source: Eurostat database (variable ilc_peps01; extracted on 3.11.2020); EU-SILC 2018 for the last column, author's computations.

Notes: EU includes member countries at the time. The last column – AROPE when MSD instead of MD is applied. MSD – material and social deprivation (5 out of 13 items). AROPE with MSD is not calculated for countries using registers (see Subchapter 2.1.1) or countries with a high share of missing values. Figures in the last column may be undervalued due to missing data (15.4% in PL, 4.8 % in UK, 3.6 in FR, 3.5 % in LV, 3.3% in DE, less than 2% in other countries).

Table A.1.39 AROPE – the overlap of three dimensions (AROEPE with MSD in 2018), EU (%)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	AROEPE with MSD 2018
AT	1.2	1.1	1.1	1.1	0.9	1.2	1.0	0.8	1.0	1.3	0.9	1.7
BE	2.0	2.1	2.2	2.2	2.6	2.1	2.7	2.6	2.6	2.6	2.8	4.4
BG	4.5	3.7	4.3	5.8	5.8	6.3	5.2	5.9	5.5	5.2	3.2	4.3
CY	0.7	0.7	0.5	0.5	0.9	2.0	1.9	2.0	1.9	2.2	2.2	2.6
CZ	1.4	1.1	1.4	1.3	1.2	1.4	2.0	1.7		1.0	0.7	1.2
DE	1.7	1.8	1.6	1.9	1.6	1.5	1.6	1.6	1.3	1.1	1.0	1.9
DK	0.3	0.5	0.8	0.3	0.6	0.9	0.9	0.8	0.6	0.7	0.8	
EE	1.1	1.4	1.9	2.4	2.4	1.8	1.5	1.0	1.0	0.8	0.6	1.3
EL	1.1	0.8	1.0	2.8	3.6	5.2	4.4	4.6	5.0	3.9	3.1	4.2
ES	0.5	0.9	1.0	1.4	1.9	1.9	2.3	2.2	2.1	1.7	1.4	3.2
FI	0.8	1.1	0.9	0.9	0.8	0.6	0.8	0.6	0.5	0.5	0.8	
FR	1.2	1.2	1.5	1.3	1.3	1.2	1.2	1.2	0.9	1.0	1.0	2.2
HR			3.3	3.5	4.2	3.6	3.4	3.4	2.7	2.5	2.0	2.9
HU	2.7	2.8	3.4	4.1	4.8	4.9	4.7	3.0	1.9	1.2	1.2	1.8
IE	1.6	1.9	2.1	2.1	2.3	2.4	2.5	2.3	2.5	1.9	1.2	3.2
IT	1.4	1.2	1.6	1.7	2.1	2.1	2.3	2.2	2.3	1.5	1.6	2.2
LT	1.5	2.2	2.6	3.2	3.5	2.6	2.2	2.4	2.6	3.1	2.6	3.6
LU	0.2	0.3	0.1	0.1	0.2	0.3	0.4	0.2	0.4	0.5	0.3	
LV	2.2	2.9	4.9	4.6	4.2	3.3	2.9	2.8	2.0	2.1	1.8	2.9
MT	1.3	1.3	1.6	1.3	1.9	2.0	2.5	2.3	1.3	1.2	0.7	1.7
NL	0.5	0.3	0.6	0.9	0.4	0.4	0.7	0.7	0.7	0.9	0.6	
PL	1.9	1.7	1.8	1.5	1.7	1.7	1.5	1.4	1.2	1.0	0.7	1.2
PT	1.1	1.2	1.7	1.3	1.6	2.2	2.4	1.9	1.4	1.3	1.1	2.0
RO	2.4	1.9	1.5	1.5	2.0	2.2	2.2	2.6	2.8	1.6	2.1	3.4
SE	0.4	0.6	0.7	0.6	0.7	0.8	0.3	0.3	0.3	0.4	0.8	
SI	1.1	0.9	1.1	1.2	1.3	1.5	1.4	1.5	1.2	1.1	0.7	1.2
SK	1.3	1.9	2.7	2.5	2.7	2.9	3.1	2.6	2.4	2.3	2.1	2.6
UK	1.2	1.1	1.4	1.2	1.9	1.8	2.1	1.5	1.3	1.2	1.2	1.8
EU	1.4	1.4	1.6	1.7	1.9	1.9	2.0	1.8	1.7	1.4	1.3	

Source: Eurostat database (variable ilc_pees01; extracted on 3.11.2020); EU-SILC 2018 for the last column, author's computations.

Notes: EU includes member countries at the time. The last column – AROPE when MSD instead of MD is applied. MSD – material and social deprivation (5 of 13 items). AROPE with MSD is not calculated for countries using registers (see Subchapter 2.1.1) or countries with a high share of missing values. Figures in the last column may be undervalued due to missing data (15.4% in PL, 4.8 % in UK, 3.6 in FR, 3.5 % in LV, 3.3% in DE, less than 2% in other countries).

Chapter 2: Data

Measuring poverty requires data from household surveys, which provide information about household members and the household as a whole. Although information on total household income and the age structure of household members is sufficient to derive the commonly used income poverty indicator, the at-risk-of-poverty (AROP), a range of additional individual and household variables are needed to identify and assess relevant characteristics, conditions, and circumstances of poor households and individuals. Research producing broader views of the causes and consequences of being at risk of poverty should be available to policy makers, so that social policies can be better targeted.

Statistics on Income and Living Conditions (EU-SILC) is a household survey harmonised by Eurostat which has been conducted annually since 2005 (since 2003 or 2004 in several countries). The survey is compulsory for all EU member countries, and some additional countries have joined the survey on a voluntary basis and, thus, can be included in comparative European statistics.¹⁹ EU-SILC was patterned after a previous household survey on living conditions, the European Community Household Panel (ECHP), conducted annually between 1994 and 2001. ECHP included then-current member states of the EU; none of the Central and Eastern European countries that joined the EU in 2004 or later participated. The availability of comparable data is obviously a reason for the richer research produced in Western European countries.

Another set of microdata gathered by Eurostat and provided to researchers stems from the Household Budget Survey (HBS). The degree of harmonisation by Eurostat is lower than in EU-SILC. Eurostat collects data from national surveys focusing mainly on consumption expenditures in all EU member countries every five years (2005, 2010, 2015). The primary aim of the survey, especially at the national level, is to construct weights for the Consumer Price Index. Therefore, most countries conducted the survey decades before Eurostat began to collect and publish them at the European level. As opposed to EU-SILC data collected on a legal basis, the HBS is conducted based on a gentlemen's agreement, meaning that each EU country decides the frequency of data collection, the methodology, and the main objectives independently. Though steps towards harmonisation have been recommended, differences across countries remain.

This chapter describes the EU-SILC and HBS surveys and datasets. It focuses on methodological details that can affect measurements of income poverty and on their cross-country specifics. It overviews relevant survey questions

¹⁹ Non-EU country microdata available for research purposes: Iceland, Norway, Switzerland, and more recently, Serbia. The UK is considered an EU member throughout this study as the period analysed is 2005–2018.

and the variables used and/or transformed in model estimations in the following chapters. We apply HBS survey data to estimate expenditure-based equivalence scales in Chapter 3.2 only, while we apply EU-SILC data to analyse the sensitivity of the AROP rates to equivalence scale (Chapters 3.1 and 3.4), estimations of subjective equivalence scales (Chapter 3.3), and explorations of subjective poverty (Chapter 4).

2.1 EU-SILC

The information value of an income poverty indicator depends on the data quality, the data collection procedure, and how the final data files are processed. Greater harmonisation of the steps taken in the survey across countries results in greater international comparability. Nevertheless, full harmonisation of all processes is practically impossible. EU-SILC, the household survey which collects data for official indicators of poverty in the EU, is harmonised *ex post* by Eurostat. This means that all countries, i.e., the responsible national statistical offices, have guidelines and recommendations for every target variable to be collected, but countries have a certain degree of freedom to design the survey questions. Regarding income, each country has different tax and social policies and so the national questionnaires vary according to national specificities. Each country can form customized income questions in order to construct their target income variables as precisely and reliably as possible. Eurostat recommends that variables that are sensitive to the wording of the question should be asked in the same way across all countries.

2.1.1 Data collection

EU-SILC has been collected annually in all EU member states since 2005, though it was launched on a *gentlemen's agreement* basis in 2003 with a derogation for about half of the current EU member countries until 2005. The survey provides two types of data: cross-sectional and four-year longitudinal components. Both are provided annually, as the longitudinal data is commonly designed as a four-year rotational panel (we do not utilise the longitudinal data in this study; for more details, see Eurostat, 2018). The longitudinal data are applied in statistics and research focused on the persistence or state dependence of poverty measures (Ayllón and Gábos, 2017, Papadopoulos and Tsakloglou, 2015, Večerník and Mysíková, 2016, 2020).

Information is collected both at household (on living and housing conditions) and individual levels (on demographic characteristics, education, labour, health, and etc. for persons in the household aged 16+). The survey population includes private households and their current members residing in the territory of the EU at the time of data collection. People living in collective households and institutions (old people's homes, prisons, etc.), and those who are homeless are not included. This clearly may represent a drawback in cases when the main purpose of the data collection is analyses of poverty and social exclusion. However, from a more general point of view, the welfare of such persons is not fully comparable with those living in private households. For instance, elderly people living in collective households or institutions live there specifically in order to be provided with basic needs, care, and social inclusion. Prisoners' well-being is limited by their enforced lack of freedom and restricted social inclusion. While some prisoners work for pay, they are provided with basic survival needs by the state. Homeless people represent a specific group which often obviously lacks basic survival needs. However, their numbers, were they included in the random sample selection, would not be representative, hence, specific surveys focused directly on the needs of homeless subpopulations are more useful.

Another issue in terms of possible underrepresentation of poverty measurements is the low coverage of ethnic minorities in the national samples. For instance, the numbers of households of Roma ethnic minorities are not negligible within the V4 region, and the literature shows that they are among the most vulnerable groups in European societies (FRA, 2014). EU-SILC samples should generally include the households of ethnic minorities, however, it presumably involves Roma families integrated within the majority populations, while the segregated settlements are typically not surveyed. Moreover, data on ethnicity is not collected in the survey, so it is unable to identify Roma families or to assess their representativeness in the national samples (see also Bernát and Messing, 2016). A special survey focused on ethnicity minorities would be required for poverty analyses (e.g., Želinský, 2021, uses a Slovak-specific survey focused on marginalised Roma households).

EU-SILC regulations oblige national statistical offices to base the data *"on a nationally representative probability sample of the population residing in private households within the country, irrespective of language, nationality or legal residence status."* (Eurostat, 2018, p. 23). The minimum effective sample sizes are defined by Eurostat. The national sample sizes actually selected must be larger, so that in spite of the design effects and all types of non-responses, the final effective sample sizes reach the required minimum and assure that the data are nationally representative. For the cross-sectional data files, a minimum

effective sample size of around 135 thousand EU households is recommended, which should ensure representativeness of both national and whole-EU cross-sectional samples. The minimum effective cross-sectional sample sizes should be 4,720 households (10,000 persons 16+) in CZ, 4,750 households (10,250 persons 16+) in HU, 6,000 households (15,000 persons 16+) in PL, and 4,250 households (11,000 persons 16+) in SK (Eurostat, 2018, p. 28). However, the actual sample sizes are typically much larger: 8,600 households responded in 2018 in CZ; 7,500 in HU; 15,200 in PL; and 5,700 in SK.

The target variables of EU-SILC can be collected from other microdata sources (e.g., national income and/or tax registers, and administrative sources; all of these are termed *registers*). None of the V4 countries utilises data from registers; all use a survey approach. Even countries which are allowed to use registers (typically Scandinavian countries) are required to collect responses to subjective questions (the minimum income question, ability to make ends meet, health, etc.) that are not recorded in registers. *Register* countries thus often combine data from registers with survey information. They survey a representative sample of persons, not households or dwellings, who respond to all questions raised at the household level, while some variables (e.g., health) are collected for *selected respondents* only, avoiding the need to interview all household members. The microdata from personal and household files must be linkable.

Each wave of data is divided into four files: household register (D-file), household data (H-file), personal register (R-file), and personal data (P-file). The register files include various technical but informative variables. The mode of data collection, among other things, affects the data quality. Personal interviews are highly preferred in the EU-SILC. In 2005, the majority of interviews were carried out as PAPI (Pen and Paper Interview or Paper Assisted Personal Interview). Leaving questionnaires for unavailable household members to complete later occurred in negligible numbers of cases in CZ and SK (Table 2.1). Another option when a household member is not available is a proxy interview, meaning that another household member answers the questions on her/his behalf (this option is not applied for subjective questions such as those on health).

As the technical possibilities have progressed over time, most countries have switched to CAPI (Computer Assisted Personal Interview) or to a combination of PAPI and CAPI for the majority of interviews. Unfortunately, CZ applies proxy interviews relatively often (in roughly one third of personal interviews), and PL also used them frequently in 2018. Though this option may often provide reliable answers on *objective* questions, it undermines the representativeness of subjective personal questions (such as health), which are not allowed to be

proxied by other household members. HU was the only country in the V4 which applied CAWI (Computer Assisted Web Interview) in 2018 in 5% of personal interviews (both personal and proxy). CAPI provides more reliable possibilities for interviews than PAPI. In addition to avoiding occasional human error in completing the PAPI questionnaires, CAPI allows statistical offices to incorporate logical checks in the computer software, which enables the interviewer to re-ask a question immediately if the answer seems inconsistent with previous answers. A change from PAPI to CAPI in most countries could lead to higher reliability and quality of the data in future.

Table 2.1 Mode of EU-SILC data collection, V4, 2005 and 2018 (%)

2005	CZ	HU	PL	SK
Face to face interview PAPI	89.9	89.6	80.7	93.4
Self-administered by respondent	0.8			0.6
Proxy interview	9.3	10.4	19.3	5.9
Total	100.0	100.0	100.0	100.0
2018	CZ	HU	PL	SK
Face to face interview PAPI	35.9		12.5	84.8
Face to face interview CAPI	30.6	84.1	60.0	
Self-administered by respondent				0.4
Computer assisted web interviewing CAWI		4.6		
Face to face interview PAPI with proxy	15.8		4.2	14.7
Face to face interview CAPI with proxy	17.6	10.8	23.3	
Computer assisted web interviewing CAWI with proxy		0.5		
Total	100.0	100.0	100.0	100.0

Source: EU-SILC 2005 and 2018. Author's data processing.

Most of the interviews are conducted during the spring season in EU countries; in 2005, the V4 countries collected the data in the 2nd quarter. While PL and SK interviewed respondents in the 2nd quarter in 2018, the interviews were conducted across the 1st and 2nd quarters in CZ and HU. Collecting the data earlier in the calendar year can aid respondents in recalling information that relates to the prior year, a reference point for income.

EU-SILC distinguishes several reference periods. Most questions are related to the time of the survey (including subjective questions on minimum income needed and ability to make ends meet). However, income variables are related to the previous calendar year (excepting in IE, which refers to the twelve months preceding the interview, and in the UK, where the income reference period is the year of the survey; see Mack and Lange, 2015). The data are supplemented

with information on the respondent's economic activity in each month of the previous calendar year. Therefore, a possible inconsistency between the reference periods of *current* variables and income exists. For instance, AROP rates dated 2018 are in fact related to income received in the 2017 calendar year, though they are defined as *current* variables and often related to *actual* current variables, e.g., demographic and economic status. Despite this, the income reference period is generally considered to provide the best approximation of current income, as suggested by Eurostat (2010), and it is also used in this manner in official statistics.

Though national statistical offices collect the income variables in national currencies, Eurostat transforms them into Euros (see Table 2.2 for applied exchange rates; Table A.2.1 for the non-euro EU countries). Note that in the three non-euro V4 countries, the exchange rate experienced a hike in 2010 in response to the economic crises. This is referred to in following chapters, because while a hike in 2010 is observed in time series presented in euros, it is not present when the series are stated in national currencies.

Table 2.2 Exchange rates in EU-SILC data, V4 (national currency/EUR)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
CZ	31.89	29.78	28.34	27.77	24.95	26.44	25.28	24.59	25.15	25.98	27.54	27.28	27.03	26.33
HU	251.66	248.05	264.26	251.35	251.51	280.33	275.48	279.37	289.25	296.87	308.71	310.00	311.44	309.19
PL	4.53	4.02	3.90	3.78	3.51	4.33	3.99	4.12	4.18	4.20	4.18	4.18	4.36	4.26
SK	40.02	38.60	37.23	33.78	1	1	1	1	1	1	1	1	1	1

Source: EU-SILC 2005-2018. Author's data processing.

Throughout this study, we apply personal (or household) cross-sectional weights. In a simplified way, the weights express the number of persons (households) the particular surveyed individual (household) represents in a population. The weighting procedure is a complicated process, where: "*Weighting factors shall be calculated as required to take into account the units' probability of selection, non-response and, as appropriate, to adjust the sample to external data relating to the distribution of households and persons in the target population, such as by sex, age (five-year age groups), household size and composition and region (NUTS II level), or relating to income data from other national sources where the Member States concerned consider such external data to be sufficiently reliable.*" (Eurostat, 2018, p. 33). When regression models are estimated at the household level, household cross-sectional weights are applied. However, when we derive poverty rates, we use personal cross-sectional weights, because poverty rates express the share of persons, not households, below the poverty line.

2.1.2 Variables

The most important variables in this study are disposable household income (used to derive the official AROP rate), and responses to two subjective questions collected at the household level: ability to make ends meet (MEM) and the lowest monthly income required to make ends meet, generally known as the Minimum Income Question (MIQ). It is well known that income data collected in interviews in household surveys tend to show lower values than those obtained from records in companies or institutions (or registers). The understatement of income usually grows with the amount of the actual income. Večerník and Mysíková (2016) shows that the EU-SILC average wage comprised 90% of the average wage obtained from a company survey (Average Earnings Information System) in CZ in 2013, this underestimation being 94% at the 1st decile and 88% at the 9th decile. However, the underestimation decreased over time (Večerník and Mysíková, 2020). Further, pension levels from EU-SILC and the Czech Social Security Administration seem to be at very similar levels. We therefore believe that EU-SILC provides highly representative income data for measurements of income poverty.

Total disposable household income includes net income from all sources received or collected either at the household or at the individual level by any household member. Individual income sources include variables: employee cash or near-cash income, cash benefits or losses from self-employment, the imputed value of the use of a company car, pensions received from individual private plans (since 2011), unemployment benefits, retirement benefits, survivor' benefits, sickness benefits, disability benefits, and education-related allowances. At the household level, it includes variables: income from rental of property or land, family/children related allowances, social exclusion not elsewhere classified, housing allowances, regular inter-household cash transfers received (minus any paid), interest, dividends, profits from capital investments in unincorporated businesses, and income received by members under 16. The total disposable household income comprises the individual income of all household members as well as the household-level income, and is net of taxes on income and social insurance contributions and regular taxes on wealth. Imputed rent is not considered. All income variables in the datasets are annual and in euros.

The income variables in the data files include both gross and net versions. Statistical offices have the freedom to decide whether to collect net or gross (or both) income values from the respondents, and to impute the converse version if necessary (the datasets include information on how a particular income value was obtained). Since 2007, countries have been obliged to report gross versions of income sources at the individual level; some also opt to report on net income,

while net values are missing for others. Before 2007, some countries reported net income version only.

The variable of *ability to make ends meet*, utilised in Chapter 4.1, is elicited as “A household may have different sources of income and more than one household member may contribute to it. Thinking of your household’s total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?”, with a 6-point scale of possible answers: (1) with great difficulty, (2) with difficulty, (3) with some difficulty, (4) fairly easily, (5) easily, and (6) very easily. This question is related to the current period, in which the survey is being taken.

The regression models applied in Chapters 3.3 and 4.2 estimate the minimum income needed as a function of actual disposable household income for the purposes of estimating either subjective equivalence scales or subjective poverty lines and rates. The Minimum Income Question as the dependent variable is framed as: “In your opinion, what is the very lowest net monthly income that your household would have to have in order to make ends meet, that is, to pay its usual necessary expenses? Please answer in relation to the present circumstances of your household, and what you consider to be usual necessary expenses (to make ends meet).” The minimum income thus represents monthly net income related to the current period and is transformed into its natural logarithm form in the models.

As shown in Subchapter 3.3.1, minimum income is estimated as a function of actual income. A twelfth of the annual disposable household income is included in a logarithmic form as a key explanatory variable. Only households with positive (and non-missing) minimum and actual income are included in the samples for regression models. Another key explanatory variable is household size. The regression models include separate sets of dummy variables for adult household members 16 and up, and children up to 15 (for the reasoning behind using dummies for household size, see Subchapter 3.3.1).

Four dummies for adults are defined, for two, three, four, and five and more adults (one-adult households being the reference group). The top category (5+) includes about 1–2% of households (in weighted samples) in CZ and HU, and about 6% in PL and SK. Three dummies for households with one, two, and three and more children are considered (childless households represent the reference group). The children top dummy (3+) includes roughly 2% of the weighted samples in all V4 countries.

All the regression models in this book are estimated at the household level, where several individual characteristics and their household composition are relevant: economic activity, gender, education, and age. In order to reflect the household level, these characteristics are computed as their share within adult household members. In similar research, household-level regression analyses

have typically included individual characteristics of the household head (van der Gaag and Smolensky, 1982) or the reference person (de Vos and Garner, 1991) as control variables. We consider the concept of a definition of head of household unsustainable. Formerly, men were automatically regarded as household heads in nuclear families. With changing female labour market participation and changing gender roles in recent decades, such a definition has become less universally plausible. Further, reference persons (persons responding to the household questionnaire) in EU-SILC tend to be overrepresented by women. We generally aim to avoid assigning one household member's characteristics to the whole household, and thereby constructing an artificial status of the household (see Večerník and Mysíková, 2019, on the discussion of the difficulty of establishing a household's status).

Share of workers captures the proportion of adults currently (self-) employed and working part-time or full-time, *share of females* denotes the proportion of adult female household members, and *share of tertiary educated* represents the proportion of adult household members who have attained tertiary education. Finally, *share of young* expresses the proportion of adult household members aged 16 to 30. These individual-level characteristics typically affect both individual and household income, as well as income expectations and aspirations and therefore influence the minimum household income needed.

Other control variables depict household living conditions. The type of ownership of dwelling affects household financial needs. Two dummy variables are defined: *outright owners* (including free accommodation, e.g., at the home of relatives), and *owners paying a mortgage*, with *tenants* paying either full market or reduced rent representing the reference group. However, outright owners and owners paying a mortgage have been distinguished in EU-SILC data only since 2011. For the 2005–2010 survey waves, owners paying a mortgage were distinguished by using a question on mortgage interest repayments. However, this variable was missing in the early years in several countries, where outright owners and owners paying a mortgage were merged into the same category. This concerns EE in 2005; AT, CY, EL, ES, LU, LV, and PL in 2005–2006; and DE, IT, and PT in 2006. Of the V4 countries of our interest, only PL in 2005–2006 is affected.

The number of habitable rooms in the household's flat/house is included to further control for housing costs. This variable has been missing in DE since 2015. Degree of urbanisation is included to capture different living conditions in densely, medium, and thinly (reference group) populated areas. These dummies are distinguished based on the population size and density of the municipality (the definition changed slightly in 2012).²⁰ For the sake of data anonymization, some countries do not provide this information, thus, the dummies are not

included in the models for NL and SI throughout the whole period, for the UK in 2005, MT in 2007–2008, and for DE in since 2015. Some countries distinguish only two categories (e.g., EE, LV, MT).

The information on *household ability to make ends meet* is recoded into dummies from its original six-point scale, ranging from *with great difficulty* to *very easily* (reference group). Finally, a dummy variable capturing *severe material household deprivation* is included. While this binary indicator has been directly included in the data files since 2008, deprivation in individual items had to be used to construct the final severe material deprivation index in 2005–2007 (see Subchapter 1.2.1 for the details of this index).

Naturally, some control variables include missing values. While households with missing values are included in models without controls, they are excluded in models with control variables. The share of missing control variables is mostly negligible, not exceeding 5% at the national level, except for education, which is missing for at least one adult household member in more than 5% of households in PT in 2005–2013 (8.5–12.2%), in the UK in 2012–2013 (5.3–5.4%), and in BE in 2007 (5.5%).

2.2 Household Budget Survey

As opposed to EU-SILC, no EU regulations exist for HBS, as the survey is conducted based on a gentlemen's agreement. Countries decide on the methodology, main objectives and the frequency of data collection. The main objective in all countries is usually the construction of the Consumer Price Index, though some countries also utilise HBS for data on living conditions of private households and analyses of expenditure or income poverty issues. Most countries have collected the data since the 1960s, and Eurostat has collated them from national statistical offices at five-year intervals since the end of the 1880s. However, only the international HBS 2010 microdata are currently available for research purposes.

²⁰ Up to 2011: Densely populated area – a contiguous set of local areas, each of which has a density greater than 500 inhabitants per 1 km², where the total population for the set is at least 50,000 inhabitants; intermediate area – a contiguous set of local areas, not belonging to a densely-populated area, each of which has a density greater than 100 inhabitants per 1 km², and either with a total population for the set of at least 50,000 inhabitants or adjacent to a densely-populated area.

Since 2012: Densely populated area – contiguous grid cells of 1 km² with a density of at least 1,500 inhabitants per km² and a minimum population of 50,000; intermediate area – clusters of contiguous grid cells of 1 km² with a density of at least 300 inhabitants per km² and a minimum population of 5,000.

2.2.1 Data collection

Due to differences across countries, and as the HBS data are utilised here as a secondary data source for estimating the equivalence scale only, we describe the survey briefly. Its sampling design varies from two stage stratified random samples to simple random samples. CZ and DE apply quota sampling. Sample sizes vary across countries, and include different shares of the population of the V4 countries (2,932 households in CZ, 9,937 in HU, 3,7412 in PL, 6,143 in SK). The datasets include demographic and basic characteristics at both individual and household levels, household income, household consumption expenditures, and household consumption in quantities. The data are collected in one or more interviews and households or their members maintain diaries or logs, usually on a daily basis.

2.2.2 Variables

Income and consumption expenditures are recorded in annual values in euros, though the national statistical offices collect the data in national currencies (the exchange rate is not stated in the data; the rates stated in Tables 2.2 and A.2.1 and applied in EU-SILC could be used). The core variables in HBS are consumption expenditures. For our purposes of estimating equivalence scales (Chapter 3.2), we distinguish twelve main COICOP (Classification of Individual Consumption by Purpose) categories as described in Table 2.3.

Table 2.3 COICOP categories, V4 (%)

	CZ	HU	PL	SK
CP01 Food and non-alcoholic beverages	20.3	23.0	26.5	25.5
CP02 Alcoholic beverages, tobacco and narcotics	2.9	3.2	2.9	3.5
CP03 Clothing and footwear	5.2	3.9	5.6	6.1
CP04 Housing, water, electricity, gas and other fuels	22.7	25.3	21.5	23.5
CP05 Furnishings, household equipment and routine maintenance of the house	6.6	3.9	5.5	4.6
CP06 Health	2.9	4.9	5.1	3.5
CP07 Transport	11.2	11.0	10.2	8.3
CP08 Communications	4.8	6.0	4.7	6.1
CP09 Recreation and culture	10.5	7.7	8.6	8.2
CP10 Education	0.7	0.9	1.4	0.4
CP11 Restaurants and hotels	5.3	3.9	2.5	5.6
CP12 Miscellaneous goods and services	6.9	6.4	5.6	4.7
Total	100	100	100	100

Source: HBS 2010. Author's computations.

Notes: Imputed rents for housing excluded from CP04. COICOP – Classification of Individual Consumption by Purpose.

The highest shares of consumption expenditures are on *Food* (CP01) and *Housing* (CP04), each accounting for 20–25% of households' budgets (Table 2.3). An important methodological issue affecting the consumption expenditure structure is imputed rent. Owners of their dwellings are financially advantaged in terms of housing costs compared to those paying rent. The concept of imputed rent for owners is then applied to compensate this advantage in order to achieve better comparability of costs and well-being across households. Imputing rentals is a methodologically complex issue (imputed rent can be also considered a part of household income, see Eurostat, 2013, for methodological issues), different methods are suitable across countries, and some statistical offices do not provide this estimated variable (CZ, MT, UK). Table A.2.2 provides the consumption expenditure structure for all EU countries, where imputed rental costs for housing are included in CP04 (where available), in the same way as the consumption expenditure structure data is provided by Eurostat in its database. In contrast, we excluded rentals from the *housing costs* in Table 2.3 for V4 countries. Imputed rent increases the *Housing* consumption expenditure by 14.0, 11.2, and 10.3 percentage points in HU, PL, and SK, respectively, and changes the structure correspondingly. The structure in CZ remains the same, as imputed rent is not constructed there.

The key variables for our estimations are again *total household income* and *household size and structure*. Net household income includes total monetary income from all sources and income in kind from employment and non-salaried activities. The datasets include imputed rents for owners, included in both income and housing expenditures. CZ (similarly to UK and MT) did not provide estimates of imputed rent, therefore, we exclude it from the other data for the sake of comparability. Households with non-positive total net income were excluded from the sample (these shares were rather negligible within V4 countries; 0.9% of the sample was excluded in PL and 0.1% of the sample in HU). The dummies for the number of adult (16+) and child (0–15) household members are defined in the same way as in the EU-SILC in Subchapter 2.1.2.

In order to sustain the highest comparability of our regression models based on EU-SILC and HBS data, we try to define the control variables in the most similar way to EU-SILC (see Subchapter 2.1.2). Due to anonymization of the microdata, HBS data do not provide the exact ages of household members, but offer age bands in the personal dataset (0–4, 5–9, 10–14, 15–19, 20–24, ..., 80–84, 85+) and a set of variables expressing the number of household members in various age categories (0–4, 5–13, 14–15, 16–24, 25–64, 65+). Unfortunately, the age bands in the personal and household files are not the same. Therefore, for the individual-based control variables, individuals aged 20+ are considered

to be adults (compared to 16+ in EU-SILC), the rest being defined in the same way as in EU-SILC.

These variables describe the household structure in terms of economic activity, gender, education, and age. *Share of workers* captures the proportion of adults (20+) currently working. *Share of females* is the proportion of adult female household members. *Share of tertiary educated* represents the proportion of adult household members who attained tertiary education. *Share of young* expresses the proportion of adult household members aged 20 to 29 in HBS data (compared to 16 to 30 in EU-SILC data).

The household-level control variables are limited in HBS. Distinguishing outright owners from those paying a mortgage is not possible. We only define a dummy variable for *tenants* according to the amount of actual rent payments for housing. In some countries, CZ in particular, small positive values were recorded in many households. Defining tenants as all households which recorded positive actual rentals would indicate that 56% of Czech households pay rent. However, this share was only 18% in the 2010 EU-SILC. Therefore, we define tenants as households with actual rentals higher than the median of positive values. This adjustment leads to shares of tenants similar to those in EU-SILC data.

The number of rooms in a flat or house is also not available in HBS data, and ability to make ends meet and living with material deprivation are not collected. Finally, we apply the population density of the place of residence, recoded into dummies of *densely*, *medium*, and *thinly* (reference group) *populated areas*.²¹

²¹ At least 500 inhabitants/km², 100–499 inhabitants/km², and fewer than 100 inhabitants/km², respectively.

European Appendix

Table A.2.1 Exchange rates in EU-SILC data, EU (national currency/EUR)

	BG	CY	CZ	DK	EE	HR	HU	LT	LV	PL	RO	SE	SI	SK	UK
2005		0.58	31.89	7.44	15.65		251.66	3.45	0.67	4.53		9.12	239.09	40.02	0.68
2006		0.58	29.78	7.45	15.65		248.05	3.45	0.70	4.02		9.28	239.57	38.60	0.68
2007	1.96	0.58	28.34	7.46	15.65		264.26	3.45	---	3.90	3.53	9.25	1	37.23	0.68
2008	1.96	0.58	27.77	7.45	1		251.35	3.45	0.70	3.78	3.34	9.25	1	33.78	0.80
2009	1.96	1	24.95	7.46	1		251.51	3.45	0.70	3.51	3.68	9.62	1	1	0.89
2010	1.96	1	26.44	7.45	1	7.34	280.33	3.45	0.71	4.33	4.24	10.62	1	1	0.86
2011	1.96	1	25.28	7.45	1	7.29	275.48	3.45	1	3.99	4.21	9.54	1	1	0.87
2012	1.96	1	24.59	7.45	1	7.44	279.37	3.45	1	4.12	4.24	9.03	1	1	0.81
2013	1.96	1	25.15	7.44	1	7.52	289.25	3.45	1	4.18	4.46	8.70	1	1	0.85
2014	1.96	1	25.98	7.46	1	7.58	296.87	3.45	1	4.20	4.42	8.65	1	1	0.81
2015	1.96	1	27.54	7.45	1	7.63	308.71	1	1	4.18	4.44	9.10	1	1	0.81
2016	1.96	1	27.28	7.46	1	7.61	310.00	1	1	4.18	4.45	9.35	1	1	0.82
2017	1.96	1	27.03	7.45	1	7.53	311.44	1	1	4.36	4.49	9.47	1	1	0.88
2018	1.96	1	26.33	7.44	1	7.46	309.19	1	1	4.26	4.57	9.64	1	1	0.88

Source: EU-SILC 2005-2018. Author's data processing.

Table A.2.2 COICOP categories, EU, 2010 (%)

	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12	Total
AT	12.1	2.4	5.7	23.8	6.9	3.5	15.0	1.7	12.8	1.0	5.7	9.3	100.0
BE	13.2	2.1	4.5	26.7	6.3	4.7	13.0	2.6	9.1	0.5	6.4	11.0	100.0
BG	29.3	4.0	2.5	37.2	2.8	4.8	5.3	4.1	2.6	0.3	4.1	3.1	100.0
CY	12.3	1.3	6.8	26.6	5.7	5.3	13.9	3.5	5.4	3.4	8.5	7.2	100.0
CZ	20.3	2.9	5.2	22.7	6.6	2.9	11.2	4.8	10.7	0.7	5.3	6.9	100.0
DE	11.6	1.6	4.4	30.3	4.7	3.9	14.0	2.7	10.5	0.8	4.7	10.8	100.0
DK	11.8	2.8	5.2	31.2	5.6	2.7	12.3	2.4	11.5	0.6	5.0	9.0	100.0
EE	23.3	3.1	4.0	29.4	5.5	3.2	9.7	5.2	8.4	1.1	2.6	4.6	100.0
EL	16.0	3.0	6.0	27.5	5.6	5.3	10.5	3.4	3.9	2.8	9.6	6.4	100.0
ES	14.4	2.1	5.6	30.0	4.9	3.2	12.4	3.1	6.6	1.0	9.1	7.6	100.0
FI	13.0	2.3	3.4	26.6	4.8	3.2	17.5	2.6	10.4	0.2	4.2	11.9	100.0
FR	15.8	2.6	4.0	26.8	4.9	1.5	14.1	2.9	7.7	0.5	5.5	13.7	100.0
HR	25.6	3.0	5.1	32.3	3.9	2.6	9.5	4.2	4.4	0.7	1.9	6.8	100.0
HU	18.6	2.6	3.2	39.3	3.2	4.0	8.9	4.8	6.3	0.7	3.2	5.2	100.0
IE	12.2	3.2	5.4	27.7	3.7	2.9	12.8	3.5	8.9	2.0	7.9	9.9	100.0
IT	18.6	1.7	6.4	32.3	5.1	3.8	11.6	2.0	5.6	0.8	4.9	7.1	100.0
LT	28.5	3.2	7.0	28.5	4.1	4.0	8.0	3.8	3.9	0.5	4.5	4.1	100.0
LU	8.8	1.4	6.2	33.7	6.3	2.5	14.5	2.1	7.3	0.4	7.6	9.3	100.0
LV	26.1	3.1	5.4	23.5	3.8	5.4	11.0	4.6	6.5	1.7	3.7	5.3	100.0
MT	22.2	2.4	7.1	8.1	8.8	6.3	13.8	4.0	8.4	1.7	7.0	10.3	100.0
NL	10.0	1.8	5.1	28.6	5.7	1.4	11.5	3.0	10.5	1.1	6.1	15.1	100.0
PL	22.7	2.5	4.8	32.7	4.7	4.4	8.8	4.0	7.4	1.2	2.1	4.8	100.0
PT	13.3	1.9	3.7	29.2	4.2	5.8	14.5	3.3	5.3	2.2	10.4	6.3	100.0
RO	31.4	5.9	4.2	35.9	3.1	3.5	4.6	3.8	3.1	0.6	1.0	2.9	100.0
SE	12.7	2.0	4.7	33.1	6.1	2.2	12.3	2.9	14.1	0.0	3.8	6.1	100.0
SI	14.5	1.9	5.9	29.9	5.8	2.0	13.2	4.1	9.0	0.8	3.6	9.2	100.0
SK	22.0	3.0	5.3	33.8	4.0	3.0	7.2	5.2	7.2	0.4	4.8	4.0	100.0
UK	12.6	2.8	5.6	18.0	7.5	1.2	15.4	3.1	13.6	2.4	9.3	8.5	100.0

Source: HBS 2010. Eurostat database (variable hbs_str_t211; extracted on 27.11.2020).

Notes: COICOP – Classification of Individual Consumption by Purpose. CP01 Food and non-alcoholic beverages, CP02 Alcoholic beverages, tobacco and narcotics, CP03 Clothing and footwear, CP04 Housing, water, electricity, gas and other fuels, CP05 Furnishings, household equipment and routine maintenance of the house, CP06 Health, CP07 Transport, CP08 Communications, CP09 Recreation and culture, CP10 Education, CP11 Restaurants and hotels, CP12 Miscellaneous goods and services. Imputed rents for housing included in CP04 where available (most countries except CZ, MT, and UK).

Chapter 3: Methodological issues around measuring income poverty

The official indicator of relative income poverty, the at-risk-of-poverty (AROP) rate, is commonly defined in the EU as the share of people with equivalised disposable income below 60% of the national median equivalised disposable income. Two steps in the methodology of the construction that determines the indicator affect the poverty line and the resulting poverty rate have been criticised as rather arbitrary (Hagenaars et al., 1994, Teekens and Zaidi, 1990).

This chapter is devoted to the first step, which is to transform the total disposable household income into equivalised income (see also Chapter 1.1). The second crucial step is setting the poverty line at 60% of median. It is obvious that a lower poverty line, e.g., 50% of median, will result in lower poverty rates, while a higher poverty line, e.g., 70% of median, will increase poverty rates. The magnitude of the effect will differ across countries depending on national income distribution. The most substantial changes in poverty rates would occur in countries in which the equivalised income of a high share of the population is located around the current poverty line. The sensitivity of income poverty rates to the poverty line is described in Subchapter 1.1.2.

The range of the possible equivalence scale used to adjust the total disposable household income to household size is wide, and may or may not distinguish between adult and child household members (McClements, 1977). The commonly applied scales include a per capita scale, the square root of family size, and the OECD scales. The OECD-type scales assign specific weights to second and next adult household members and to children. The per capita scale could be considered a specific scale of the OECD-type in which adult and child members are assigned an equal weight of one. Constructing the equivalent income thus requires less information, i.e., household size without distinguishing the members by age.

The OECD-modified scale (with weights corresponding to 1.0; 0.5; and 0.3) was adopted in the 1990s as a modification of the previous OECD-scale (with weights corresponding to 1.0; 0.7; and 0.5) from the 1980s. Hagenaars et al. (1994) concluded in their recommendations for further research: "*The main results of this report are obtained using the modified OECD-scale. Admittedly, this is a pragmatic choice and should be considered as arbitrary as the choice of the original OECD scale.*" (p. 194). Further, Hagenaars et al. (1998) added: "*The choice of this scale [OECD-modified] was mainly made for pragmatic reasons: it is about half way along the original OECD scale and subjective scales...*" (p. 39).

This evidences that there has never been a general consensus about an optimal equivalence scale, and equivalence scales applied across the world differ. Ultimately, Ravallion (2016) argued that: *“setting equivalence scales remains one of the most difficult steps in applied welfare measurement”* (p. 172). The EU concept applies the OECD-modified scale uniformly to all member countries. Nevertheless, economies of scale can be highly country specific, as they depend on the structure of household consumption expenditures. Further, various types of goods exhibit different economies of scale. For instance, housing costs typically have substantially higher economies of scale than expenditures on food. Housing costs change little when a second person moves in, while food expenditures would almost double. Housing and food are the categories on which households spend the greatest shares of their total consumption expenditures (Mysíková and Želinský, 2019). Clearly, economies of scale are not uniform across countries with significantly different consumption structures. Further, economies of scale can evolve within a single country over time, as the consumption structure evolves. Applying a uniform equivalence scale in all EU countries thus ignores the country-specificity of economies of scale.

Another point is that the scale used in the EU has not been updated since the 1990s. Dennis and Guio (2004) argued that the change of the original OECD scale to the OECD-modified scale in the EU in the 1990s resulted from a decreased share of food consumption expenditures, however, the consumption structure did not remain static, but continued to evolve. The research at that time considered conditions that have likely changed since. Further, the research was mainly driven by Western consumption expenditure data, with Central and Eastern European countries simply adopting the OECD-modified scale when they joined the EU. There is little reason to expect that the OECD-modified equivalence scale fits today's conditions in all EU countries well.

The consequences of applying what may well be inaccurate equivalence scales can be severe. Higher weights assigned by the scale to second and further household members (the lower economies of scale assumed) decrease the resulting equivalised income of all household members, and *vice versa*. The larger the household, the greater the effect. From the international perspective, higher weights disfavour countries with large households. The resulting poverty rate data can be highly sensitive to equivalence scales. Moreover, the sensitivity can differ across countries, for instance, in accordance with national household structures and family sizes. If the income poverty rate changes considerably in response to a minor change in the equivalence scale, the explanatory power of the income poverty rate is very low and cannot be reliably used to inform social policy. Moreover, if the equivalence scale applied is far from what would be true in a highly sensitive country, the resulting income poverty rate data can

be misleading. Chapter 3.1 analyses the sensitivity of the income poverty rate to equivalence scales. Countries with high sensitivity to adult and/or child weights should consider establishing their own country-specific equivalence scales.

For these reasons we devote Chapter 3.2 to estimations of equivalence scales based on expenditures. The notion of using the same methodology for all countries but allowing for differing equivalence scales across countries was raised in the 1990s: *"...more research efforts should be devoted to the choice of equivalence scales which can be used for cross-country comparisons. One principal issue to be resolved is whether in the cross-country comparisons we should use a single equivalence scale for all the Member States, or whether a single methodology should be applied to estimate equivalence scales which can be different across different countries."* (Hagenaars et al., 1994, p. 194).

Expenditure or consumption data has been used to estimate equivalence scales in much of the existing literature (Engel, 1895, Muellbauer, 1980, Merz et al., 1994, Phipps and Garner, 1994, Lazear and Michael, 1998, Daley et al., 2020). However, there is an alternative approach which has recently re-attracted interest: utilising data on subjective perceptions of economic well-being. A subjective approach can be based on income evaluation and/or minimum income questions (Goedhart et al., 1977, Kapteyn et al., 1988, Hagenaars et al., 1994, De Vos and Garner, 1991, Flik and Van Praag, 1991, Garner and De Vos, 1995, Bishop et al., 2014, Martin, 2017, Mysíková et al., 2019a), minimum spending questions (Garner and Short, 2003, 2004), and/or questions on satisfaction with income (Bütikofer and Gerfin, 2009). Chapter 3.3 follows the literature stream based on the minimum income question available in the EU-SILC data.

Sensitivity of the poverty rate to any of the steps of its construction is an undesirable feature which degrades its informative value for government and social policies. While increasing (decreasing) the poverty line, *ceteris paribus*, simply adds additional (removes some) persons to the pool of poor, a change in equivalence scales can mix the pool of poor, as not only is the equivalised income of each person changed according to her/his household composition, but the median and poverty lines also shift. The impacts of the estimated expenditure-based and subjective equivalence scales on the poverty rate and the composition of poor populations are shown in Chapter 3.4.

3.1 Sensitivity of income poverty rates to equivalence scales

The literature on the sensitivity of income poverty (and inequality) measures to equivalence scales was relatively rich up to two decades ago (Aaberge and Melby, 1998, Buhmann et al., 1988, Burkhauser et al., 1996, Cutler and Katz, 1992, De Vos and Zaidi, 1997, Lanjouw and Ravallion, 1995, Phipps, 1993), and has recently sparked new interest (Batana et al., 2013, Newhouse et al., 2017, Ravallion, 2015, Tóth and Medgyesi, 2011). Even debates can be traced back in the literature, for instance, Coulter et al. (1992) provided theoretical results on the relationship between inequality and poverty measures and the equivalence scale relativities with empirical illustrations, Banks and Johnson (1994) questioned the stability of their results, and Jenkins and Cowell (1994) disproved the criticism.

Recent research has focused more on alternative approaches to estimation of equivalence scales, such as the subjective equivalence scale, in which the resulting income poverty rates have been compared with the official AROP rates (e.g., Bishop et al., 2014, Mysíková et al., 2019a, Mysíková et al., 2021, Fialová and Mysíková, 2021). Other studies have focused on specific subgroups; for instance, Cheung and Chou (2018) assessed the robustness of child poverty rates in Hong Kong, and Posel et al. (2016) analysed gender differences in income in South Africa in relation to equivalence scales.

While studies often did not find much sensitivity of the overall poverty rate or could not conclude that different equivalence scales substantially changed country rankings in poverty rates (Mysíková et al., 2019a), they have generally found stronger impacts on the income poverty of vulnerable population subgroups, such as single older people and households with children (Burkhauser et al., 1996, in Germany on data from 1980s; De Vos and Zaidi, 1997, in Western European countries on data from the late 1980s). In this subchapter, we evaluate the sensitivity of the AROP rate to the weights assigned by the OECD-modified scale in general and devote more space to population subgroups later in Chapter 3.4, where we apply the scales estimated in the following subchapters to demonstrate the impact on the income poverty rates of vulnerable population subgroups.

The overall sensitivity of the AROP rate to the equivalence scale gives an idea of the robustness of the rate. If the AROP rate is highly sensitive to the definition of equivalised income, its information value is limited and the rate should not ideally be used to inform social policies about the situation of the *poor*. National trends in the AROP rate can be misleading, especially if an

inappropriate equivalence scale is applied. Countries with AROP rates which are highly sensitive to a scale should be cautious about the equivalence scales they apply, especially for national social policies.

We derive AROP rates for all possible combinations of adult and child weights. Income poverty rates are calculated on a grid with adult and child weights ranging from 0 to 1 by 0.01 unit, i.e., we allow the adult and child weights to take the values {0, 0.01, 0.02, ..., 1}, generating a grid of 10,201 different combinations. Figure 3.1 shows the results for V4 countries in 2006. The top right corners of the graphs correspond to an equivalence scale of (1; 1; 1), meaning that the first adult household member is assigned a weight of 1.0; as always in this type of scale, the second and next adults are also assigned a weight of 1.0, as is each child. The equivalised household size equals the number of household members, the equivalised income corresponds to income per capita, and no economies of scale from living together are assumed.

This scale, sometimes also called a *naïve* scale, is applied, for instance, by the World Bank's income poverty measure.²² From the international perspective, this concept disfavors countries with large households, as zero economies of scale lower equivalised income. Further, the per capita income may be convenient for measuring extreme poverty intended to capture basic food needs (see Gustafsson and Yue, 2012, for a discussion), because food consumption is assumed to experience very low economies of scale. However, the European concept of income poverty goes beyond basic food subsistence.

The opposite extreme of economies of scale being at their maximum is depicted in the bottom left corners of the graphs with the corresponding equivalence scale (1; 0; 0). The equivalised household size is always one, economies of scale are maximal, and the equivalised income equals total household income. Though the concept of total household income is sometimes applied in specific European statistics, it has been acknowledged that it is inappropriate for income poverty measures, and the relevance of household size was recognized as early as the 1980s, when a stream of literature on equivalence scales boomed (Buhmann et al. 1988, among others).

The European concept of measuring income poverty concurs on the relevance of economies of scale. Therefore, the extreme corner-scales, and the combinations on the borders (signalling either adult or child weights equal to zero or one), would probably never be applied in real income poverty statistics

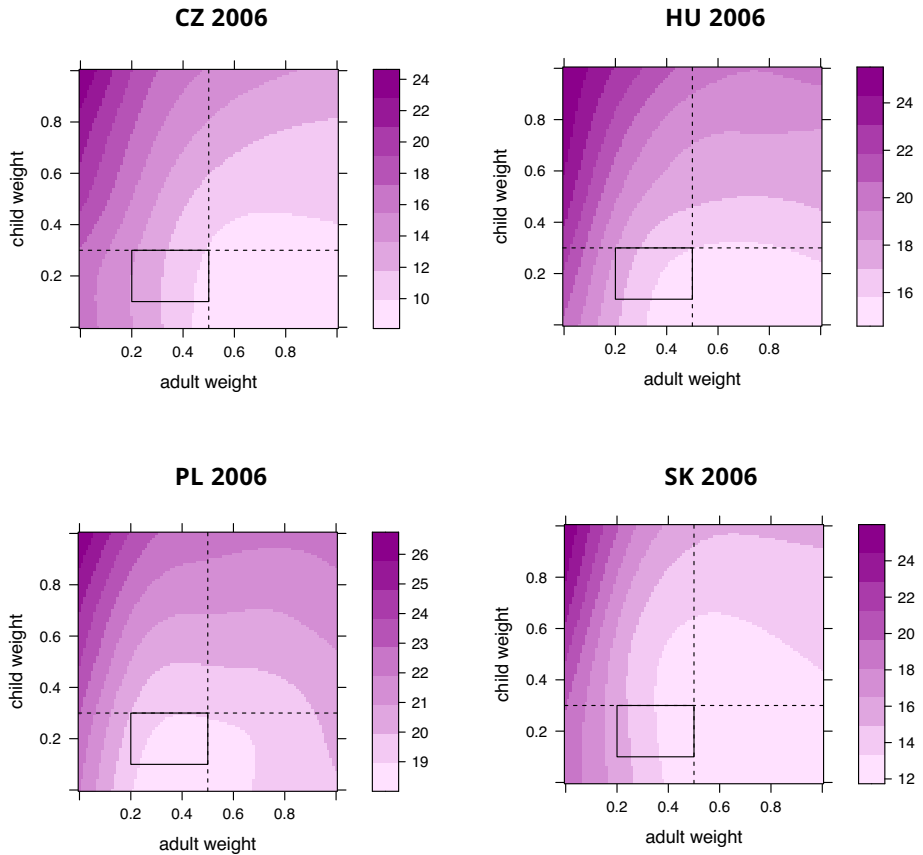
²² The World Bank's extreme poverty calculation is an example of the absolute income poverty approach, which sets a threshold common to all countries (1.9 USD per day, 2011 PPP). It is usually applied to developing countries. The extreme poverty line would produce very low income poverty rates in the EU region (the highest rates by this standard were 3.1% in Romania and 1.4% in Bulgaria in 2017; see the World Bank database, World Development Indicators). Therefore, the European Commission (2011, p. 24, 29) considered absolute poverty lines to have little relevance in European countries.

in the EU. Nevertheless, the whole range of adult and child weights depicted by the graphs in Figure 3.1 provide a picture of the overall sensitivity of the AROP rate in a country. The intersection of the dashed lines then locates the OECD-modified scale currently applied (1; 0.5; 0.3).

We aim to revise and re-estimate the equivalence scale and to question the suitability of the OECD-modified scale for income poverty measurements in contemporary EU countries. In the following chapters, we apply various approaches to estimate the equivalence scales, and our estimates of the weight of the second and next adult roughly fall into the range of (0.2; 0.5) and the estimates of child weight into the range of (0.1; 0.3); the rectangles in the graphs bound the areas that include the combinations within these ranges of adult and child weights, with the OECD-modified scale representing the upper bounds. Therefore, we suggest that the equivalence scales for V4 countries are likely to be located inside the rectangles, while the outside combinations are less realistic. In addition to the graphical visualisation of the sensitivity of the AROP rate, we provide basic AROP statistics in Tables 3.1 to 3.4, where we also separate the statistics for the *rectangles*.

The visualisation in Figure 3.1 aids in assessment of the sensitivity of basic features of the AROP. If the colour layers create vertical stripes as, for instance, within the rectangle in CZ in 2006 (Figure 3.1), this indicates a high sensitivity to the adult weight and very low sensitivity to the child weight. Consider the OECD-modified scale (the intersection of the dashed lines) as a starting point. If we move left (holding the child weight fixed at 0.3), the AROP rate increases as the adult weight decreases. The AROP rate increase in CZ is not negligible: it increases by roughly 4 pp within the range of the rectangle. If we move downwards from the starting point (holding the adult weight fixed at 0.5), the AROP rate does not substantially change as the child weight decreases. Therefore, the visualisation indicates a high AROP sensitivity to the adult weight but almost no sensitivity to the child weight in CZ in 2006.

On the other hand, were the colour stripes horizontal, the AROP rate would be sensitive to the child weight and insensitive to the adult weight. This occurs rarely (upper right parts of the graphs in HU and PL in 2006 are close examples; see Figure 3.1). A frequent result of the visualisation is sloping coloured stripes, meaning that the AROP rate is sensitive to both adult and child weights. However, the direction of the slope matters. For instance, in HU in 2012 (Figure 3.2), the stripes within the rectangle go from South-West to North-East. This slope means that the AROP rate is sensitive to both weights: with the OECD-modified scale as a starting point, lower adult weight increases the AROP rate, while lower child weight decreases the AROP rate. However, if both weights change at the same time,

Figure 3.1 AROP rate by adult and child weights, V4, 2006 (%)

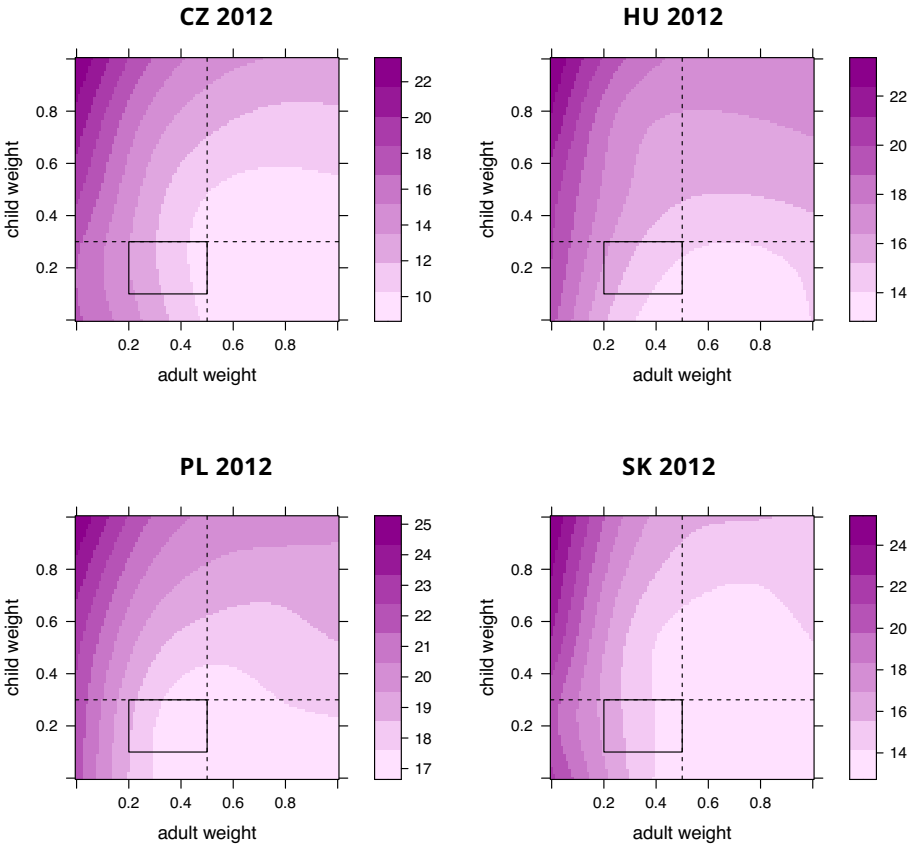
Source: EU-SILC 2006. Author and Tomáš Želinský's computations.

Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries. AROP – at risk of poverty.

their effects will be counter-balanced and the AROP rate would remain almost the same. On the contrary, the slope from South-East to North-West, as in the rectangle in DK in 2006 (see Figure A.3.2), also indicates a sensitivity to both weights. Moreover, lowering both weights at the same time intensifies the increasing AROP rate.

The sensitivity is not necessarily stable over time and depends not only on the trend of household income levels, but also on changes in the structure of household size structure within a country. Figures 3.1 to 3.3 visualise the sensitivity of AROP rates in V4 countries in three time periods: 2006, 2012,

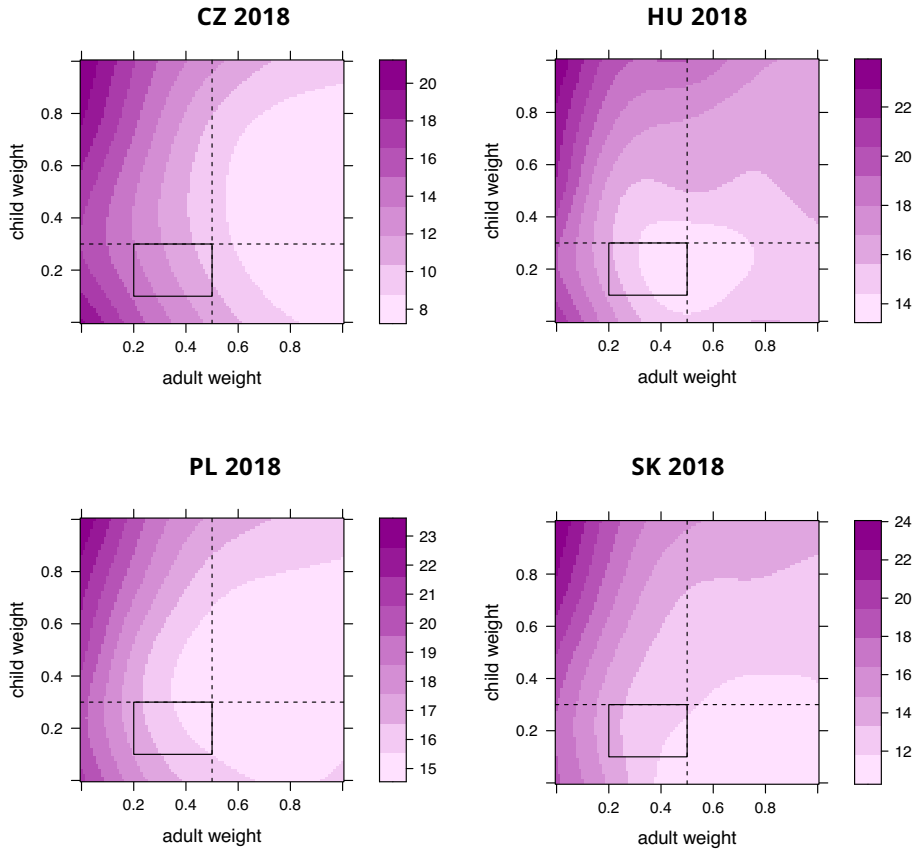
Figure 3.2 AROP rate by adult and child weights, V4, 2012 (%)



Source: EU-SILC 2012. Author and Tomáš Želinský's computations.

Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries. AROP – at risk of poverty.

and 2018 (for EU countries, see Figures A.3.1 to A.3.7). Note that the units of colour scale differ across graphs. The visualisation typically resembles a dip with the lowest point usually located outside the scope of the graphs. In CZ and PL, the dip moved over time, so that the colour stripes in the rectangle, the area of our interest, changed direction from a vertical to a North-West slope between 2012 and 2018. As a consequence, besides its sensitivity to the adult weight, the AROP rate became more sensitive to the child weight in CZ and PL in 2018 (lower child weight would increase the AROP rate). In SK, the change from vertical stripes in both 2006 and 2012 moved to higher sensitivity to child weight in 2018 as well, however, in the opposite direction: lower child weight may decrease the AROP rate. In HU, the 2018 picture also changes, though

Figure 3.3 AROP rate by adult and child weights, V4, 2018 (%)

Source: EU-SILC 2018. Author and Tomáš Želinský's computations.

Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries. AROP – at risk of poverty.

preserving its sensitivity to both adult and child weights. While the effects of lower adult and child weights in 2006 and 2012 could counter-balance, they increased the HU AROP rate in 2018.

While the visualisation offers a helpful view and nicely indicates the direction of the AROP changes, it falls short in precision. Tables 3.1 to 3.4 thus quantify the basic characteristics of the sensitivity of the AROP rate, both for the full range of adult and child weights and for the more realistic values bounded by the rectangle. The basic statistics provide minimum and maximum AROP rates and the coefficient of variation for the whole possible scope of adult and child weights, as well as for the limited range depicted by the rectangle in the graphs. The coefficient of variation (CV) serves as a measure of the overall sensitivity

of the AROP rate to the weights; the higher the values, the more sensitive the rate is to the weights. Further, we assess the impact of adult and child weights separately to determine whether the AROP rate is more sensitive to one or the other, or whether it is equally sensitive to both weights (see also Mysíková and Želinský, 2019). We derive a separate set of the coefficients of the variation of the AROP rate for the adult weight ranging from 0 to 1, while keeping the child weight constant (repeatedly for each value of the child weight), and report the mean coefficient of variation – for the limited range of weights (bounded by the rectangle), see the penultimate column in Tables 3.1 to 3.4. In the same way, we also compute the mean coefficient of variation of the AROP rate with respect to child household member weight, while keeping the adult weight constant – for the limited range, see the last column in Tables 3.1 to 3.4.

We focus our interest on the coefficients of variation in the limited range. The highest overall sensitivity (CV in the limited range) is observed in CZ. Interestingly, the overall sensitivity is the highest in CZ among all EU countries. At the same time, the AROP rate is steadily lowest in CZ. In Tables A.3.1 to A.3.3 for 2006, 2012, and 2018, there is a high negative correlation between the overall sensitivity and the AROP rate within the EU countries. The strong negative correlation holds in all periods analysed and for both the whole scope and the limited range of weights. It especially holds for the adult weight, while the negative correlation is much weaker for the child weight. Overall, the lower the official AROP rate in a country, the more careful national statisticians should be when choosing an equivalence scale, as its AROP rate is likely to be highly sensitive to the equivalence scale. Within the V4, this concerns primarily CZ and SK, though more recently HU has been impacted also, as the AROP rate has been decreasing and the sensitivity somewhat increasing in recent years.

Within the limited range of weights, SK is the only country in the V4 where we observe a steadily decreasing trend of the overall sensitivity, due primarily to decreasing sensitivity to the adult weight (while the sensitivity to the child weight was slightly increasing over time, it is still too low). In contrast, the overall sensitivity in PL has been increasing somewhat, though it remains relatively low. With rare exceptions (e.g., in IT in 2018, see Table A.3.3), the AROP rate is more sensitive to the adult weight than to the child weight.

Table 3.1 AROP rate characteristics by adult and child weights, CZ (% and CV)

	Actual AROP [0.5;0.3]	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
		MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
2005	10.4	9.2	25.4	0.256	0.216	0.134	9.8	14.6	0.109	0.110	0.015
2006	9.9	8.0	24.3	0.263	0.224	0.146	9.3	14.1	0.116	0.117	0.016
2007	9.6	8.6	24.1	0.271	0.235	0.129	9.3	13.6	0.111	0.112	0.008
2008	9.0	7.9	23.1	0.287	0.268	0.105	9.0	14.0	0.121	0.121	0.022
2009	8.6	7.8	22.4	0.282	0.260	0.104	8.6	13.2	0.116	0.117	0.019
2010	9.0	8.1	23.0	0.274	0.246	0.111	8.9	13.0	0.106	0.106	0.024
2011	9.8	8.6	23.4	0.247	0.214	0.122	9.4	13.5	0.107	0.108	0.010
2012	9.6	8.6	23.1	0.249	0.221	0.124	9.4	13.9	0.112	0.113	0.013
2013	8.6	7.8	23.1	0.272	0.237	0.136	8.5	12.7	0.110	0.109	0.027
2014	9.7	8.4	24.1	0.264	0.238	0.116	9.4	13.8	0.114	0.116	0.012
2015	9.7	8.6	23.1	0.261	0.249	0.078	9.7	14.6	0.113	0.112	0.023
2016	9.7	8.2	22.9	0.276	0.262	0.090	9.6	14.5	0.106	0.107	0.017
2017	9.1	7.5	22.7	0.294	0.282	0.087	9.1	14.2	0.115	0.116	0.020
2018	9.6	7.2	21.1	0.301	0.292	0.078	9.6	14.8	0.105	0.102	0.030

Source: EU-SILC 2005–2018. Author and Tomáš Želinský's computations.

Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

Table 3.2 AROP rate characteristics by adult and child weights, HU (% and CV)

	Actual AROP [0.5;0.3]	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
		MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
2005	13.5	12.3	25.6	0.163	0.113	0.116	12.4	15.4	0.053	0.051	0.019
2006	15.9	14.5	26.0	0.135	0.103	0.090	14.9	18.4	0.052	0.049	0.020
2007	12.3	11.5	24.9	0.175	0.131	0.114	11.6	15.0	0.066	0.065	0.017
2008	12.4	11.1	25.2	0.174	0.119	0.125	11.2	13.8	0.051	0.044	0.027
2009	12.4	10.5	23.9	0.189	0.129	0.141	10.9	14.7	0.073	0.057	0.047
2010	12.3	10.9	23.7	0.174	0.106	0.139	11.3	14.3	0.050	0.041	0.030
2011	14.1	12.4	25.4	0.150	0.112	0.100	12.7	16.4	0.060	0.054	0.029
2012	14.3	12.8	23.8	0.125	0.101	0.076	13.5	17.0	0.054	0.049	0.024
2013	15.0	12.7	25.1	0.131	0.087	0.102	13.4	17.1	0.055	0.042	0.037
2014	15.0	13.4	25.0	0.120	0.083	0.088	14.0	16.7	0.044	0.041	0.019
2015	14.9	14.3	22.8	0.100	0.070	0.074	14.5	16.9	0.039	0.039	0.008
2016	14.5	13.3	24.3	0.130	0.093	0.094	13.4	17.0	0.068	0.063	0.029
2017	13.4	12.4	24.4	0.162	0.109	0.126	12.6	16.1	0.058	0.059	0.012
2018	12.8	12.6	24.2	0.121	0.098	0.074	12.6	16.8	0.071	0.069	0.023

Source: EU-SILC 2005–2018. Author and Tomáš Želinský's computations.

Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

Table 3.3 AROP rate characteristics by adult and child weights, PL (% and CV)

	Actual AROP	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
	[0.5;0.3]	MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
2005	20.5	19.3	27.3	0.065	0.040	0.052	19.5	21.4	0.018	0.013	0.013
2006	19.1	18.0	26.8	0.075	0.049	0.058	18.2	20.1	0.021	0.017	0.013
2007	17.3	16.9	26.0	0.086	0.065	0.056	17.1	19.2	0.031	0.030	0.009
2008	16.9	16.3	26.3	0.101	0.079	0.061	16.3	18.8	0.034	0.032	0.011
2009	17.1	16.4	25.2	0.096	0.085	0.044	16.8	19.3	0.034	0.034	0.007
2010	17.6	16.9	25.3	0.084	0.072	0.044	17.3	19.5	0.028	0.027	0.008
2011	17.7	17.3	26.1	0.090	0.076	0.047	17.4	19.3	0.024	0.024	0.007
2012	17.1	16.5	25.3	0.090	0.071	0.056	16.5	19.2	0.034	0.034	0.008
2013	17.3	16.9	26.0	0.092	0.067	0.060	16.9	18.7	0.022	0.020	0.011
2014	17.0	16.4	25.5	0.091	0.073	0.053	16.7	19.0	0.031	0.029	0.010
2015	17.6	16.8	25.6	0.083	0.065	0.049	17.0	18.7	0.022	0.019	0.012
2016	17.3	16.3	25.7	0.097	0.078	0.059	16.6	19.3	0.035	0.035	0.009
2017	15.0	14.9	23.1	0.099	0.095	0.031	15.0	17.9	0.042	0.040	0.015
2018	14.8	14.4	23.8	0.116	0.107	0.044	14.8	17.3	0.038	0.037	0.013

Source: EU-SILC 2005–2018. Author and Tomáš Želinský's computations.

Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

Table 3.4 AROP rate characteristics by adult and child weights, SK (% and CV)

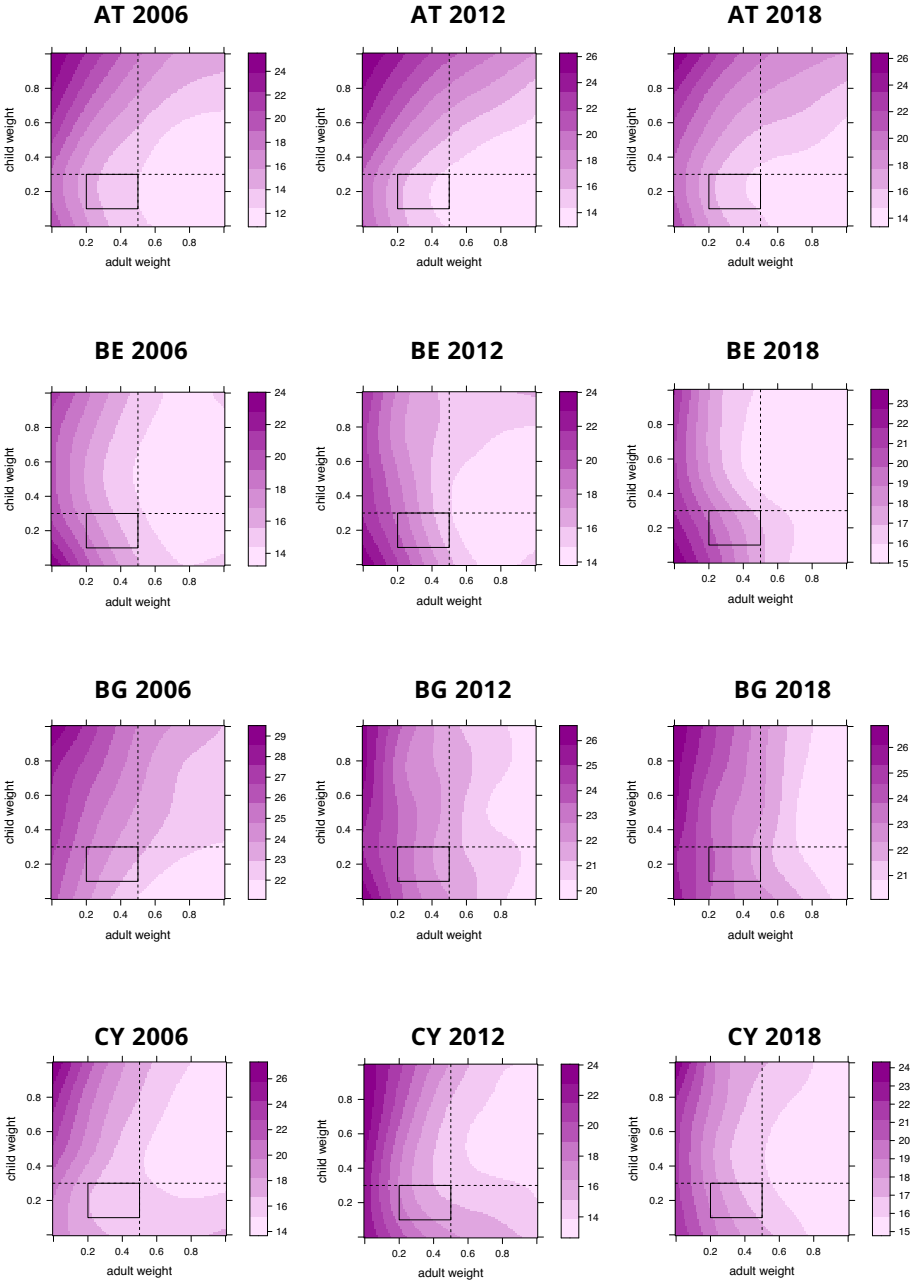
	Actual AROP	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
	[0.5;0.3]	MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
2005	13.3	12.8	25.4	0.155	0.139	0.071	13.0	16.9	0.073	0.074	0.008
2006	11.6	11.6	25.8	0.188	0.169	0.077	11.7	16.1	0.088	0.090	0.008
2007	10.6	10.5	24.9	0.217	0.200	0.076	10.6	15.2	0.110	0.111	0.011
2008	10.9	9.9	25.1	0.238	0.223	0.082	10.8	15.3	0.101	0.102	0.009
2009	11.0	9.8	24.6	0.240	0.222	0.092	10.0	14.6	0.105	0.107	0.014
2010	12.0	11.3	25.3	0.189	0.169	0.082	11.8	15.6	0.070	0.070	0.010
2011	13.0	12.0	25.0	0.163	0.148	0.066	12.4	15.8	0.065	0.066	0.009
2012	13.2	12.7	25.2	0.173	0.162	0.060	12.8	17.1	0.079	0.080	0.010
2013	12.8	12.3	25.3	0.167	0.143	0.085	12.6	16.0	0.067	0.066	0.015
2014	12.6	12.3	26.0	0.172	0.140	0.103	12.5	15.6	0.061	0.060	0.014
2015	12.3	11.3	26.8	0.199	0.159	0.117	11.7	15.0	0.067	0.067	0.010
2016	12.7	12.0	26.6	0.177	0.142	0.097	12.2	15.0	0.051	0.050	0.014
2017	12.4	11.2	25.2	0.191	0.164	0.094	11.8	15.2	0.061	0.060	0.015
2018	12.2	10.4	24.6	0.191	0.165	0.095	10.9	14.6	0.065	0.063	0.023

Source: EU-SILC 2005–2018. Author and Tomáš Želinský's computations.

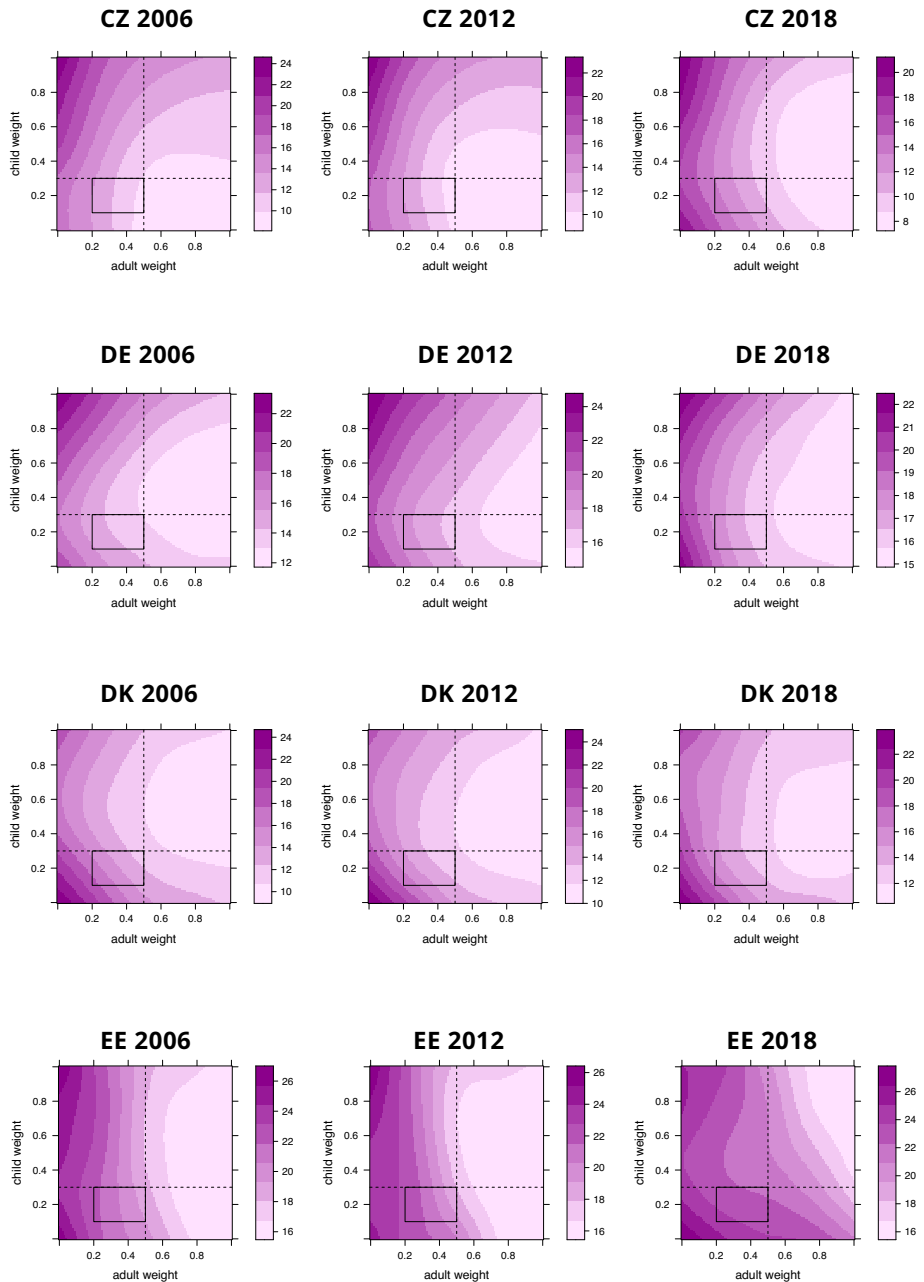
Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

European Appendix

Figure A.3.1 AROP rate by adult and child weights – AT, BE, BG, CY – 2006–2018 (%)



Source: EU-SILC 2006, 2012, 2018 (2007 for BG). Author and Tomáš Želinský's computations.
 Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.2 AROP rate by adult and child weights – CZ, DE, DK, EE – 2006–2018 (%)

Source: EU-SILC 2006, 2012, 2018. Author and Tomáš Želinský's computations.

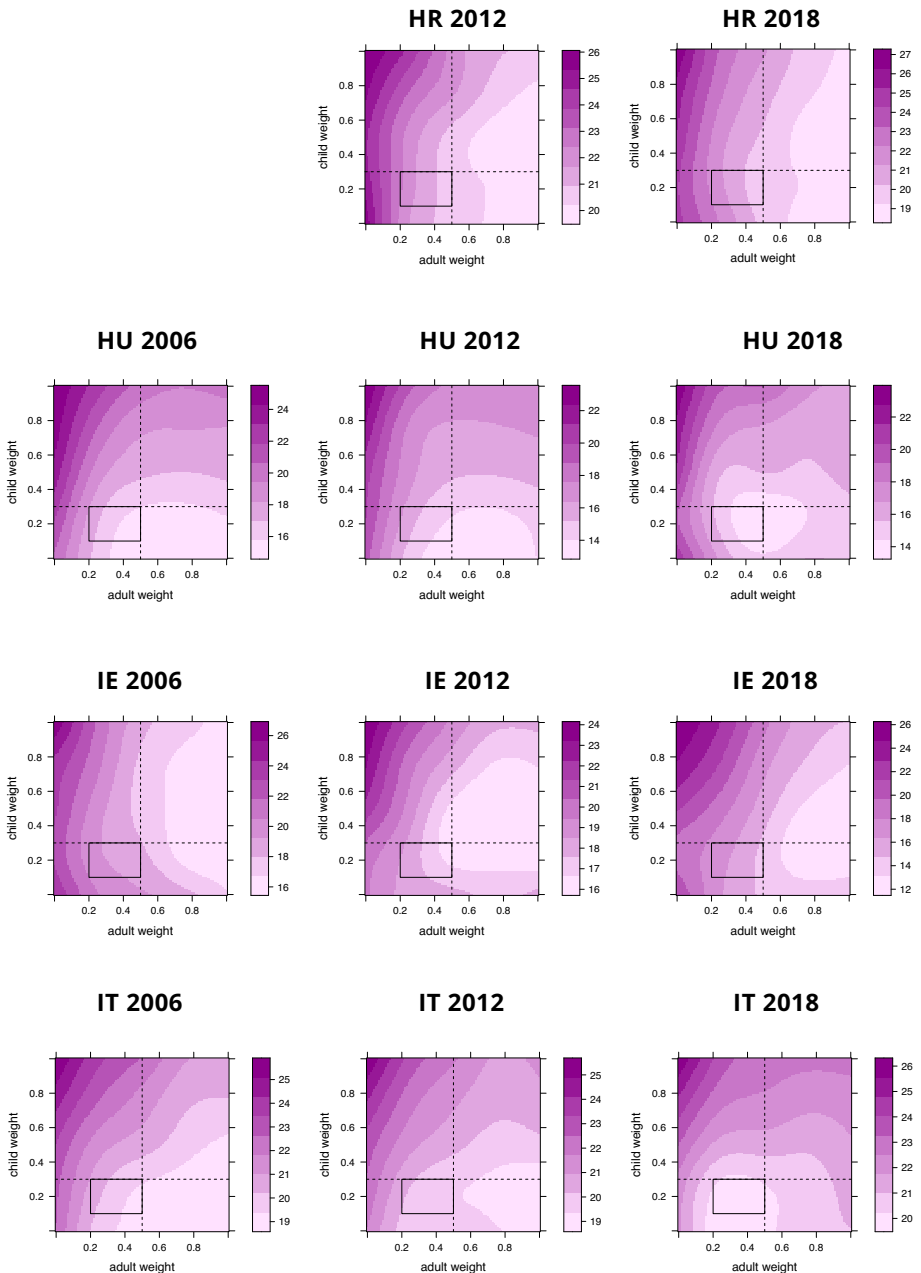
Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.3 AROP rate by adult and child weights – EL, ES, FI, FR – 2006–2018 (%)



Source: EU-SILC 2006, 2012, 2018. Author and Tomáš Želinský's computations.

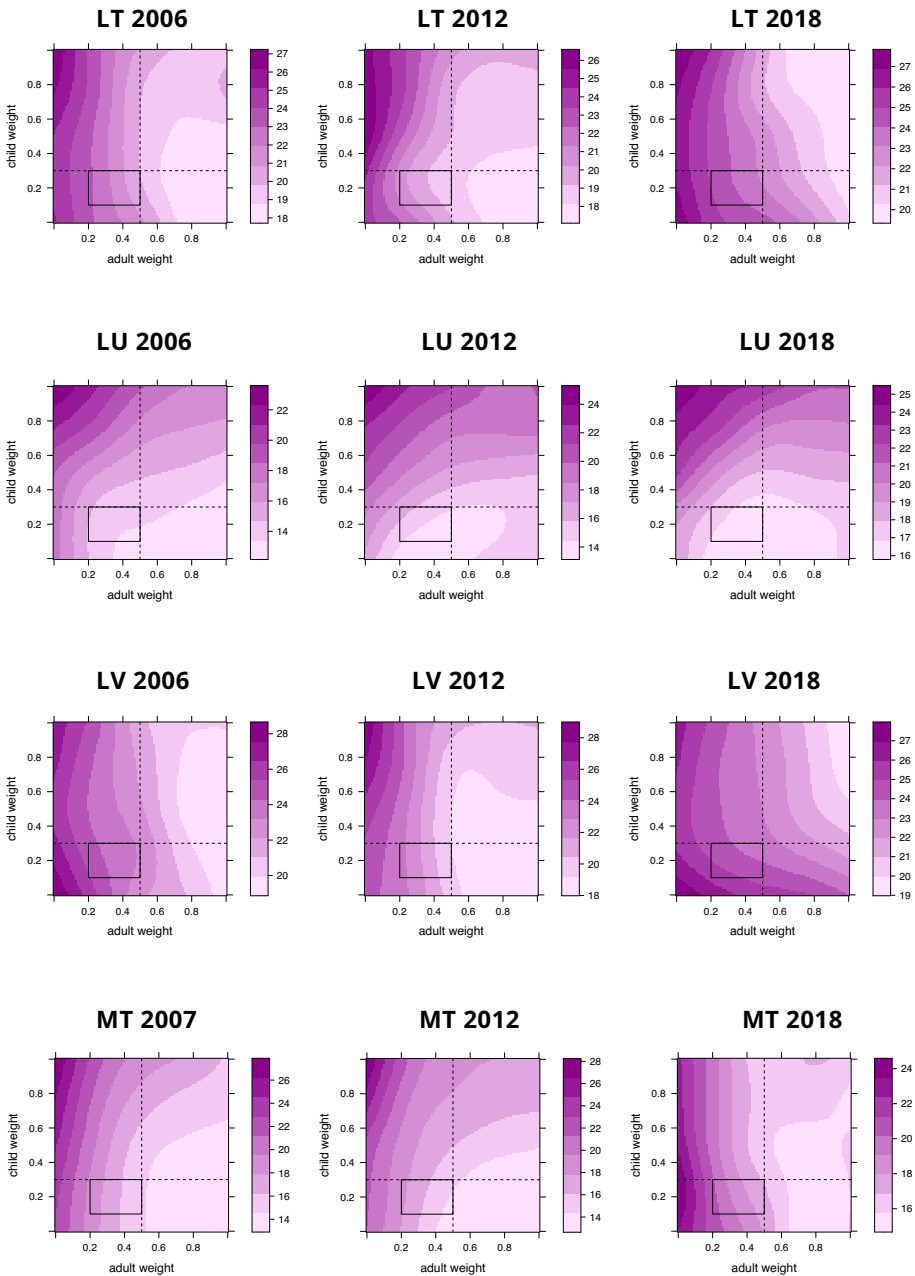
Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.4 AROP rate by adult and child weights – HR, HU, IE, IT – 2006–2018 (%)

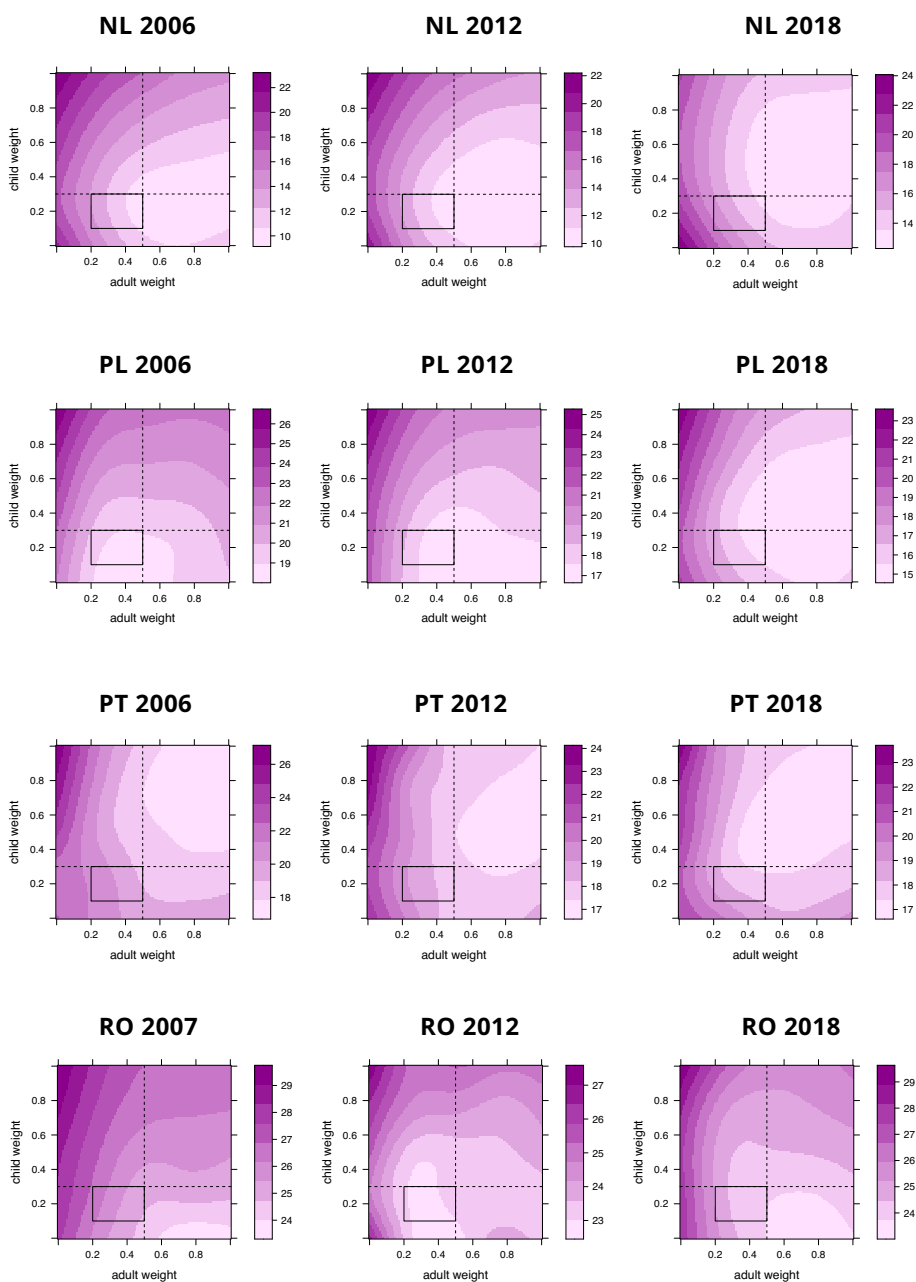
Source: EU-SILC 2006, 2012, 2018. Author and Tomáš Želinský's computations.

Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.5 AROP rate by adult and child weights – LT, LU, LV, MT – 2006–2018 (%)

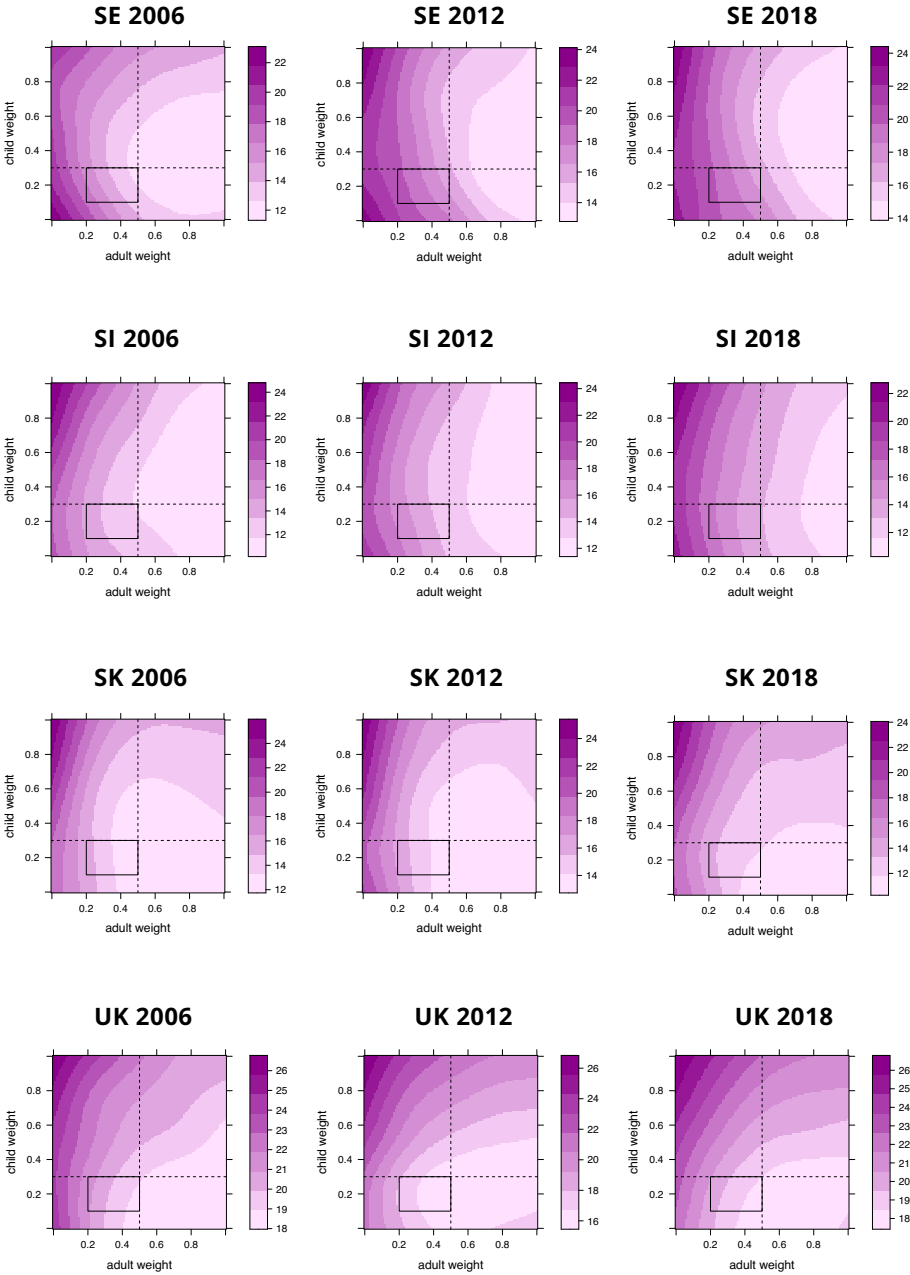


Source: EU-SILC 2006, 2012, 2018 (2007 for MT). Author and Tomáš Želinský's computations.
 Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.6 AROP rate by adult and child weights – NL, PL, PT, RO – 2006–2018 (%)

Source: EU-SILC 2006, 2012, 2018 (2007 for RO). Author and Tomáš Želinský's computations.
 Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Figure A.3.7 AROP rate by adult and child weights – SE, SI, SK, UK – 2006–2018 (%)



Source: EU-SILC 2006, 2012, 2018. Author and Tomáš Želinský's computations.

Notes: The dashed lines represent the OECD-modified scale. The rectangle defines the space of adult weight (0.2; 0.5) and child weight (0.1; 0.3). Note that the colour scale differs across countries and years. AROP – at risk of poverty.

Table A.3.1 AROP rate characteristics by adult and child weights, EU, 2006 (% and CV)

	Actual AROP	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
	[0.5;0.3]	MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
AT	12.6	10.6	25.3	0.219	0.183	0.120	12.1	15.4	0.061	0.062	0.010
BE	14.7	12.9	24.2	0.135	0.130	0.036	14.7	18.8	0.063	0.061	0.020
BG ^{a)}	22.0	21.1	29.3	0.074	0.067	0.032	22.3	25.2	0.027	0.026	0.008
CY	15.6	13.7	26.2	0.151	0.133	0.060	15.5	17.2	0.026	0.026	0.008
CZ	9.9	8.0	24.3	0.263	0.224	0.146	9.3	14.1	0.116	0.117	0.016
DE	12.5	11.6	23.2	0.164	0.139	0.081	12.8	16.0	0.047	0.043	0.022
DK	11.7	8.7	24.6	0.237	0.206	0.109	11.5	19.0	0.115	0.099	0.059
EE	18.3	15.4	27.0	0.164	0.164	0.021	18.4	22.3	0.047	0.047	0.007
EL	20.5	19.7	25.1	0.045	0.037	0.026	19.8	20.9	0.011	0.009	0.009
ES	20.3	19.0	27.5	0.085	0.077	0.034	20.2	22.4	0.022	0.022	0.006
FI	12.6	9.9	22.4	0.200	0.192	0.063	12.5	17.0	0.066	0.061	0.027
FR	13.2	12.7	21.8	0.116	0.096	0.067	13.0	15.4	0.037	0.033	0.020
HU	15.9	14.5	26.0	0.135	0.103	0.090	14.9	18.4	0.052	0.049	0.020
IE	18.5	15.1	26.9	0.127	0.124	0.034	18.1	20.7	0.032	0.031	0.011
IT	19.3	18.6	26.1	0.075	0.058	0.046	19.1	21.2	0.025	0.023	0.011
LT	20.0	17.6	27.3	0.112	0.111	0.023	19.8	23.6	0.049	0.049	0.008
LU	14.1	11.7	24.0	0.155	0.099	0.120	12.8	15.1	0.031	0.030	0.016
LV	23.5	18.8	28.4	0.107	0.106	0.021	22.4	25.9	0.028	0.027	0.010
MT ^{a)}	15.1	13.2	27.9	0.197	0.186	0.070	14.4	19.4	0.077	0.078	0.010
NL	9.7	9.2	23.4	0.232	0.191	0.143	9.6	14.7	0.109	0.109	0.021
PL	19.1	18.0	26.8	0.075	0.049	0.058	18.2	20.1	0.021	0.017	0.013
PT	18.5	16.7	27.4	0.106	0.099	0.038	18.6	21.4	0.038	0.038	0.009
RO ^{a)}	24.6	23.3	29.7	0.047	0.038	0.029	24.6	26.8	0.020	0.019	0.006
SE	12.3	11.1	23.5	0.171	0.159	0.069	12.2	17.6	0.096	0.089	0.038
SI	11.6	10.1	24.7	0.230	0.213	0.072	11.7	14.9	0.064	0.064	0.014
SK	11.6	11.6	25.8	0.188	0.169	0.077	11.7	16.1	0.088	0.090	0.008
UK	19.0	17.6	26.7	0.095	0.083	0.047	18.6	21.6	0.036	0.035	0.011
Coefficient of correlation with AROP rate				-0.874	-0.806	-0.808			-0.789	-0.786	-0.538

Source: EU-SILC 2006 (2007 for BG, MT, and RO). Author and Tomáš Želinský's computations.
Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty. a) year 2007.

Table A.3.2 AROP rate characteristics by adult and child weights, EU, 2012 (% and CV)

	Actual AROP [0.5;0.3]	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
		MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
AT	14.4	12.8	26.6	0.185	0.138	0.123	13.7	16.9	0.052	0.051	0.014
BE	15.3	13.5	24.5	0.139	0.135	0.039	15.1	20.1	0.075	0.076	0.012
BG	21.2	19.8	26.3	0.072	0.072	0.011	21.2	23.8	0.026	0.026	0.007
CY	14.7	12.6	24.2	0.175	0.171	0.046	14.7	18.7	0.056	0.051	0.026
CZ	9.6	8.6	23.1	0.249	0.221	0.124	9.4	13.9	0.112	0.113	0.013
DE	16.1	14.6	24.8	0.126	0.112	0.056	16.3	18.9	0.038	0.038	0.006
DK	12.0	9.9	25.3	0.204	0.183	0.085	11.9	18.5	0.100	0.080	0.061
EE	17.5	15.3	25.8	0.160	0.160	0.031	17.5	22.5	0.054	0.053	0.014
EL	23.1	21.3	25.5	0.027	0.018	0.023	21.3	23.0	0.019	0.018	0.012
ES	20.8	20.3	27.3	0.056	0.039	0.041	20.6	22.1	0.012	0.012	0.006
FI	13.2	9.7	23.5	0.221	0.216	0.056	13.0	17.3	0.069	0.068	0.017
FR	14.1	13.5	22.8	0.118	0.089	0.077	13.5	15.4	0.032	0.030	0.011
HR	20.4	19.4	26.5	0.075	0.072	0.025	20.4	22.6	0.026	0.026	0.007
HU	14.3	12.8	23.8	0.125	0.101	0.076	13.5	17.0	0.054	0.049	0.024
IE	16.3	15.4	24.6	0.107	0.094	0.050	16.2	18.9	0.041	0.041	0.012
IT	19.5	18.7	25.8	0.063	0.047	0.041	19.2	20.9	0.014	0.014	0.006
LT	18.6	16.7	26.7	0.119	0.113	0.039	18.3	21.6	0.041	0.039	0.017
LU	15.1	13.2	25.2	0.152	0.074	0.135	13.3	16.9	0.051	0.032	0.041
LV	19.2	17.9	28.3	0.120	0.117	0.030	19.1	23.4	0.058	0.059	0.006
MT	15.1	12.4	27.9	0.176	0.151	0.098	13.4	18.9	0.083	0.083	0.021
NL	10.1	9.6	22.1	0.210	0.182	0.114	10.0	14.3	0.098	0.098	0.020
PL	17.1	16.5	25.3	0.090	0.071	0.056	16.5	19.2	0.034	0.034	0.008
PT	17.9	16.4	24.5	0.087	0.084	0.023	17.9	19.7	0.023	0.023	0.006
RO	22.9	22.3	27.6	0.038	0.026	0.029	22.5	23.9	0.012	0.011	0.007
SE	15.2	12.7	23.9	0.175	0.173	0.038	15.3	20.0	0.059	0.056	0.020
SI	13.5	11.3	24.1	0.186	0.182	0.035	13.5	17.4	0.070	0.069	0.013
SK	13.2	12.7	25.2	0.173	0.162	0.060	12.8	17.1	0.079	0.080	0.010
UK	16.0	15.3	26.8	0.133	0.094	0.095	15.5	18.6	0.044	0.041	0.017
Coefficient of correlation with AROP rate			-0.914	-0.831	-0.695			-0.856	-0.829	-0.467	

Source: EU-SILC 2012. Author and Tomáš Želinský's computations.

Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

Table A.3.3 AROP rate characteristics by adult and child weights, EU, 2018 (% and CV)

	Actual AROP [0.5;0.3]	Whole range: adult weight (0;1), child weight (0;1)					Limited range: adult weight (0.2;0.5), child weight (0.1;0.3)				
		MIN	MAX	CV	CV adult	CV child	MIN	MAX	CV	CV adult	CV child
AT	14.3	13.1	26.3	0.155	0.122	0.097	14.3	17.2	0.047	0.047	0.010
BE	16.4	14.7	23.9	0.119	0.112	0.038	16.3	20.5	0.052	0.051	0.016
BG	22.0	19.9	27.0	0.079	0.078	0.013	22.0	24.2	0.025	0.026	0.004
CY	15.4	14.5	23.7	0.115	0.113	0.025	15.4	19.5	0.055	0.052	0.024
CZ	9.6	7.2	21.1	0.301	0.292	0.078	9.6	14.8	0.105	0.102	0.030
DE	16.0	14.8	22.8	0.104	0.100	0.031	15.9	18.6	0.040	0.040	0.010
DK	12.7	10.2	24.2	0.182	0.170	0.067	12.5	17.5	0.076	0.067	0.037
EE	21.9	15.0	27.9	0.132	0.117	0.066	21.9	24.5	0.026	0.014	0.022
EL	18.5	18.2	25.8	0.073	0.041	0.061	18.2	19.8	0.016	0.015	0.006
ES	21.5	20.7	26.6	0.041	0.033	0.025	21.5	22.5	0.007	0.007	0.005
FI	12.0	9.0	22.6	0.239	0.234	0.065	12.0	17.0	0.091	0.091	0.018
FR	13.4	11.9	22.6	0.140	0.091	0.108	11.9	14.8	0.044	0.035	0.030
HR	19.3	18.2	27.3	0.094	0.092	0.023	19.3	22.5	0.037	0.037	0.010
HU	12.8	12.6	24.2	0.121	0.098	0.074	12.6	16.8	0.071	0.069	0.023
IE	14.9	10.9	27.6	0.213	0.188	0.097	14.1	18.4	0.058	0.055	0.023
IT	20.3	19.4	26.1	0.056	0.029	0.048	19.4	20.6	0.012	0.006	0.011
LT	22.9	19.3	28.6	0.099	0.096	0.028	22.8	25.3	0.022	0.021	0.009
LU	18.3	16.9	26.5	0.114	0.063	0.096	17.5	19.5	0.020	0.015	0.014
LV	23.3	19.0	28.2	0.077	0.067	0.041	23.3	25.7	0.022	0.015	0.017
MT	16.8	14.4	24.7	0.138	0.136	0.031	16.8	20.5	0.046	0.044	0.017
NL	13.3	12.2	24.3	0.153	0.143	0.052	13.3	18.6	0.076	0.070	0.033
PL	14.8	14.4	23.8	0.116	0.107	0.044	14.8	17.3	0.038	0.037	0.013
PT	17.3	16.5	23.5	0.075	0.071	0.028	17.0	19.3	0.029	0.021	0.021
RO	23.5	22.8	29.4	0.048	0.041	0.028	23.4	25.4	0.019	0.019	0.006
SE	16.4	13.7	24.3	0.154	0.153	0.029	16.4	20.5	0.049	0.049	0.013
SI	13.3	10.3	22.8	0.199	0.195	0.038	13.1	16.8	0.064	0.064	0.011
SK	12.2	10.4	24.6	0.191	0.165	0.095	10.9	14.6	0.065	0.063	0.023
UK	18.9	17.8	27.3	0.102	0.074	0.072	18.4	21.5	0.037	0.034	0.016
Coefficient of correlation with AROP rate			-0.797	-0.745	-0.504				-0.876	-0.866	-0.632

Source: EU-SILC 2018. Author and Tomáš Želinský's computations.

Notes: CV – Coefficient of variation. CV adult – mean CV with respect to adult weight (holding child weight constant). CV child – mean CV with respect to child weight (holding adult weight constant). AROP – at risk of poverty.

3.2 Expenditure-based equivalence scales

The idea of comparing the economic well-being of households of different sizes based on expenditures reaches far back in history to Engel's law (Engel, 1895). The Engel method to estimate equivalence scales is based solely on food expenditures. Later, the expenditure basket was extended to include other necessities, such as housing and clothing (Watts, 1967). Rothbarth (1943) suggested a method based on *adult goods*. Multiple-equation methods based on demand systems were developed later (Prais and Houthakker, 1955). We demonstrate the Engel method, however, our main estimations rely on the complete demand system, for reasons discussed in the following subchapter.

3.2.1 Methodology

As noted, some of the earliest estimations of equivalence scales are based on Engel's law, according to which the proportion of expenditures on food decreases with income. In other words, poorer households spent a greater share of their budget on food. The simplest model thus assumes that households enjoy the same levels of economic well-being if their shares of expenditures on food are equal. As larger households spend a higher share of income on food than smaller households (Engel, 1883 and 1895), the Engel method enables derivation of equivalence scales.

The **Engel-based methodology** to estimate equivalence scales has been extended to consumption bundles that include other necessities, such as housing, clothing, and health care (see, e.g., Daley et al., 2020), also termed an iso-prop index in the literature (Watts, 1967). The Engel method can thus be considered a specific case of the broader single-equation method based on necessities. However, we believe that these necessities have very different economies of scale; food versus housing, for instance. Food exhibits very low economies of scale. Though shopping for groceries in bulk or home cooking in a single pot, for example, can yield certain economies of scale, we can hardly expect household members to eat less when living together. Housing, on the other hand, should exhibit relatively large economies of scale, as many related costs experience little to no change when an additional household member moves in (unless the extended family moves to a larger dwelling). For these reasons, we estimate the equivalence scales separately for food and housing to demonstrate that economies of scale differ for food and housing expenditures. We believe that it may be the structure of consumption expenditures with different economies of scale that inform cross-country differences in equivalence

scales. The expenditures on particular consumption bundles are estimated using the following equation (omitting the subscripts for individual households):

$$\ln(\widehat{E}_b) = \alpha + \beta \ln(X) + \sum_{i=1}^4 \gamma_i A_i + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l, \quad (3.1)$$

in which E_b is expenditures on bundle b , X is total net household income. A_i stands for four dummy variables for the number of adults, $i=\{2, 3, 4, 5+\}$. C_j stands for three dummy variables for the number of children, $j=\{1, 2, 3+\}$. V_l represents the control variables used in the regression, with $l=\{1, \dots, n\}$. α , β , γ_i , δ_j , and θ_l represents the corresponding regression coefficients.

Some studies include household size as the number of household members and others apply dummies (see Daley et al., 2020, for both approaches). We favour dummy variables because economies of scale are not constant across the number of household members. A discrete variable of household size, by the definition of OLS regression, would assume constant economies of scale and therefore constant weights of additional household members. Even including household size in a logarithmic form or its square requires us to make certain assumptions about economies of scale and the resulting equivalence scales. By using dummies, we allow the economies of scale to be more fully revealed. Further, we intend to distinguish between adults and children, as does the modified-OECD equivalence scale, because consumption expenditures are assumed to vary for additional adults and children (see also the discussion in Subchapter 3.3.1).

In accordance with the Engel method, we express the (log) share of consumption expenditures on bundle b on total income:

$$\ln\left(\frac{E_b}{X}\right) = \alpha + (\beta - 1) \ln(X) + \sum_{i=1}^4 \gamma_i A_i + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l. \quad (3.2)$$

Ceteris paribus, a single-adult household with total income X_1 and a household with i adult members and total income X_i reach the same economic well-being if their shares $\left(\frac{E_b}{X}\right)$ equal:

$$\begin{aligned} \alpha + (\beta - 1) \ln(X_1) + 0 + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l = \\ \alpha + (\beta - 1) \ln(X_i) + \gamma_i + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l, \end{aligned} \quad (3.3)$$

yielding the following income ratio (IR) by rearranging:

$$IR_i^A = \frac{X_i}{X_1} = e^{\frac{\gamma_i}{1-\beta}}. \quad (3.4)$$

Suppose that the income ratio for a two-adult family equals 1.5. That would mean that the two-adult household needs 1.5 times more income to sustain

the same economic well-being as the single-adult household. Note also that, in terms of the OECD-modified scale, the income ratio of 1.5 corresponds to a 0.5 weight of the second adult. The same expression holds for households with zero and j children, regardless of the i number of adult members we consider:

$$IR_j^C = \frac{x_j}{x_0} = e^{\frac{\delta_1}{1-\beta}}. \quad (3.5)$$

The Engel method is suitable for considering necessity bundles and is typically based on a single equation approach. The Extended Linear Expenditure System (ELES) approach developed later applied multiple consumption equation methods and even included a full basket of expenditures to capture different economies of scale for various consumption bundles (Prais and Houthakker, 1955, van der Gaag and Smolensky, 1982). The ELES complete **demand system approach** is more complex and general than Engel's. The ELES is more demanding in terms of assumptions; more details of the model are described by van der Gaag and Smolensky (1982).²³ Lluch (1973) derived the ELES based on the assumption that households maximise lifetime utility under a lifetime wealth constraint. Van der Gaag and Smolensky (1982) showed that the same results can be obtained based on a two-period model and, adopting additional assumptions, applied the model to the current period.

As with the Engel method, we estimate expenditures on each consumption bundle $b = (1;12)$ separately, for each of twelve basic COICOP categories (see Table 2.3 for definitions). Again, expenditures on each consumption bundle are estimated as a function of total disposable household income, household size is expressed as dummies for adults and children, and control variables (leaving out the subscripts for individual households):

$$\widehat{E}_b = \alpha_b + \beta_b X + \sum_{i=1}^4 \gamma_{bi} A_i + \sum_{j=1}^3 \delta_{bj} C_j + \sum_{l=1}^n \theta_{bl} V_l. \quad (3.6)$$

Once the system of demand equations is estimated, we can derive the following parameters:

$$\mu = \sum_{b=1}^{12} \beta_b, \quad (3.7)$$

$$\rho_b = \alpha_b + \beta_b \sum_{b=1}^{12} \rho_b = \alpha_b + \frac{\beta_b}{1-\mu} \sum_{b=1}^{12} \alpha_b. \quad (3.8)$$

²³ ELES differ from the Linear Expenditure System by including income as the explanatory variable (i.e., dis/savings are endogenous) instead of total consumption expenditures (van der Gaag and Smolensky, 1982).

Parameters ρ_b are usually referred to as the *subsistence expenditures* of consumption bundle b . For each of the estimated coefficients γ , δ , and θ , we can construct parameters d :

$$d_{bi} = \frac{1}{\rho_b} \frac{\gamma_{bi}(1-\mu) + \beta_b \sum_{b=1}^{12} \gamma_{bi}}{1-\mu}, \quad (3.9)$$

$$d_{bj} = \frac{1}{\rho_b} \frac{\delta_{bj}(1-\mu) + \beta_b \sum_{b=1}^{12} \delta_{bj}}{1-\mu}, \quad (3.10)$$

$$d_{bl} = \frac{1}{\rho_b} \frac{\theta_{bl}(1-\mu) + \beta_b \sum_{b=1}^{12} \theta_{bl}}{1-\mu}. \quad (3.11)$$

The Total Subsistence Expenditures (TSE) are defined as:

$$TSE = \sum_{b=1}^{12} \rho_b (1 + \sum_{i=1}^4 d_{bi} A_i + \sum_{j=1}^3 d_{bj} C_j + \sum_{l=1}^n d_{bl} V_l). \quad (3.12)$$

The logic behind the ELES system is to estimate the subsistence expenditures for each consumption bundle separately. Next, the subsistence expenditures are totalled into TSE, and these can be derived for various household types. Note that for a reference household, i.e., for a single-adult household with zero/reference control variables, Equation (3.12) simplifies to $TSE = \sum \rho_b$, i.e., the total subsistence expenditures simply equal the sum of subsistence expenditures for all consumption bundles. For other types of households, subsistence expenditures are adjusted by household structure and corresponding control characteristics.

3.2.2 Deriving the equivalence scales

The TSEs estimated for various numbers of adults and children then allow us to derive the expenditure-based equivalence scale. We directly compare the estimated equivalence scales with the OECD-modified ones, so we need to derive one final weight for additional adult and child household members.

First, we derive the partial weights, w , for adults (children) as the relative change in the adult (child) specific TSE when an additional adult (child) is added. The weights are defined as additional expenditures relative to the expenditures by the reference group (one-adult or childless household). The partial weights for adults and children, respectively, are defined as follows:

$$w_i^A = \frac{TSE_i^A - TSE_{i-1}^A}{TSE_1^A}, \quad (3.13)$$

$$w_j^C = \frac{TSE_j^C - TSE_{j-1}^C}{TSE_0^C}, \quad (3.14)$$

where A and C indicate adults and children, respectively, $i=\{2, 3, 4, 5+\}$ denotes additional adults, and $j=\{1, 2, 3+\}$ each additional child (as denoted in Equation (3.1)).

Note that, under the Engel-based method, we directly obtain the income ratio $IR_i^A = \frac{x_i}{x_1}$ for adults and $IR_j^C = \frac{x_j}{x_0}$ for children (Equations (3.4) and (3.5)).

The partial weights for adults and children are then simplified to:

$$w_i^A = IR_i^A - IR_{i-1}^A, \quad (3.15)$$

$$w_j^C = IR_j^C - IR_{j-1}^C. \quad (3.16)$$

Second, in order to obtain an equivalence scale comparable to the OECD-modified one, we need to derive one final weight W^A for adults and one final weight W^C for children. To obtain these, we calculate the mean of the partial weights, weighted by the shares of particular household types in country populations. Deriving the final weights W can be formalised as follows:

$$W^A = \sum_{i=1}^4 w_i^A s_i^A, \quad (3.17)$$

$$W^C = \sum_{j=1}^3 w_j^C s_j^C, \quad (3.18)$$

where W^A and W^C stand for the final weights for adults and children, which can be compared to the weights assigned by the OECD-modified equivalence scale, and s is the share of a particular household type within a country. Moreover, it holds that $\sum_{k=1}^m s_k = 1$, where m is the number of dummy variables used for adults or children. The derived partial weights w from the Engel-based method and TSEs, and the final weights W based on the population shares for V4 countries are provided in Subchapter 3.2.3.

3.2.3 Results

In accordance with our expectations, economies of scale from consumption expenditures on food are confirmed to be relatively low, i.e., the weights are relatively high (Table 3.5). The final adult weight is the highest in CZ (0.906), where the second adult household member exhibits almost no economies of scale (a weight of 0.965). The weight of the second adult is also relatively high in Poland (0.720), but the sharply decreasing partial weights for further adults lowers the final adult weight to 0.596. Similar results were reached by Daley et al. (2000), who estimated the Engel-based weight of a second household member at roughly 0.8 (without distinguishing between adults and children) in Poland over 1999–2010.²⁴

²⁴ The weight of a second household member dropped to roughly 0.5 when expenditures on food, housing, clothing (and health care) were joined into one consumption bundle (the iso-prop method).

The final estimated child weights are uniformly around 0.140 across the V4 countries. These values are quite low, therefore, we suggest that children should be distinguished by age in more detail to better reflect their food consumption expenditures in further research. Also, the differences in adult weights across the V4 countries are large enough to suspect incomparability of the data. Indeed, the HBS survey is not harmonised (e.g., the quota sampling design in CZ is unlike what is applied in other countries) and thus the data are not fully comparable across countries; time series would be needed to verify the results in individual countries.

Both the adult and child weights typically decrease with additional household members, however, they usually rise in the top category (5+ adults, 3+ children). This may be because the top categories are open, and in rare cases in PL, include as many as ten adults and eleven children. Households with numerous members increase the partial weight of the top category, nevertheless, their shares in the population are low and do not substantially affect the final adult and child weights (see Subchapter 3.2.2 for the method applied to derive the final weights). Moreover, there may be another reason for the relatively high weight of the top child category: when there are three or more children in a household, the oldest child may be closer to adult age and thus to the relatively higher weight of adult consumption.

The results of economies of scale based solely on food consumption expenditures for available EU countries are stated in Table A.3.4. In several cases, the adult weight exceeds one. This seems unrealistic, as it suggests that, for instance, two adults spent more than twice the amount a single adult spent on food. Though we do not wish to apply such a scale for income poverty measures, explanations for such findings may exist: for instance, more couples than singles may prefer restaurant meals more often than cost-saving by home cooking.

Table 3.6 shows the weights derived from housing expenditures. As expected, economies of scale are higher (weights lower) than for food. The final adult weight is again the highest in CZ (0.396), meaning that additional Czech adults in a household spend more on housing relatively to the first adult than in other V4 countries. Interestingly, the child weights are actually negative in most cases. Situations in which a child in a household imposes no additional housing expenses, a zero child weight, can be imagined more easily than a negative child weight. However, a negative child weight likely indicates different housing arrangements of households with children (e.g., living in a cheaper locality). Negative child weights are seen in the V4 and in BG and RO (Table A.3.5).

Table 3.5 Engel-based estimated equivalence scales: Food, V4, 2010

Adults				Children			
	IR ^a	Weight of additional adult (w ^a)	Structure of households (s ^a)		IR ^c	Weight of additional child (w ^c)	Structure of households (s ^c)
CZ							
1 adult	1.000			Childless	1.000		
2 adults	1.965	0.965	0.777	1 child	1.085	0.085	0.550
3 adults	2.645	0.680	0.154	2 children	1.294	0.209	0.395
4 adults	3.369	0.724	0.064	3+ children	1.425	0.131	0.056
5+ adults	4.519	1.150	0.005				
Final weight (W^a)		0.906	Σ = 1.0	Final weight (W^c)		0.136	Σ = 1.0
HU							
1 adult	1.000			Childless	1.000		
2 adults	1.570	0.570	0.634	1 child	1.139	0.139	0.562
3 adults	1.908	0.338	0.217	2 children	1.229	0.090	0.321
4 adults	2.369	0.461	0.117	3+ children	1.475	0.246	0.118
5+ adults	2.573	0.204	0.032				
Final weight (W^a)		0.495	Σ = 1.0	Final weight (W^c)		0.136	Σ = 1.0
PL							
1 adult	1.000			Childless	1.000		
2 adults	1.720	0.720	0.553	1 child	1.132	0.132	0.528
3 adults	2.164	0.444	0.248	2 children	1.272	0.141	0.352
4 adults	2.559	0.395	0.137	3+ children	1.492	0.220	0.120
5+ adults	3.104	0.545	0.062				
Final weight (W^a)		0.596	Σ = 1.0	Final weight (W^c)		0.145	Σ = 1.0
SK							
1 adult	1.000			Childless	1.000		
2 adults	1.689	0.689	0.545	1 child	1.163	0.163	0.560
3 adults	2.169	0.480	0.243	2 children	1.217	0.054	0.347
4 adults	2.418	0.248	0.162	3+ children	1.543	0.326	0.093
5+ adults	2.870	0.452	0.050				
Final weight (W^a)		0.555	Σ = 1.0	Final weight (W^c)		0.140	Σ = 1.0

Source: HBS 2010. Author's computations.

Notes: IR – Income ratio (model with controls applied, see Subchapter 2.2.2).

The Engel method of deriving economies of scale solely based on food or housing expenditures can be suitable for specific purposes. For instance, if a policy aims to distribute food stamps or housing allowances among poor households, this approach can deliver helpful information on how household composition influences needs for the particular commodity. However, the economies of scale of food and housing differ to such a high degree that we are reluctant to derive an equivalence scale using an Engel-based method for other purposes, such as in comparisons of disposable household income for construction of income poverty or inequality measures. Ultimately, we used the Engel-based estimations primarily to demonstrate that economies of scale differ substantially for food and housing, the two most extensive consumption bundles.

Table 3.6 Engel-based estimated equivalence scales: Housing, V4, 2010

Adults	IR ^a	Weight of additional adult (w ^a)	Structure of households (s ^a)	Children	IR ^c	Weight of additional child (w ^c)	Structure of households (s ^c)
CZ							
1 adult	1.000			Childless	1.000		
2 adults	1.450	0.450	0.777	1 child	0.951	-0.049	0.550
3 adults	1.683	0.233	0.154	2 children	0.869	-0.082	0.395
4 adults	1.819	0.135	0.064	3+ children	0.887	0.019	0.056
5+ adults	2.092	0.274	0.005				
Final weight (W^a)	0.396	Σ = 1.0		Final weight (W^c)	-0.058	Σ = 1.0	
HU							
1 adult	1.000			Childless	1.000		
2 adults	1.179	0.179	0.634	1 child	1.020	0.020	0.562
3 adults	1.332	0.153	0.217	2 children	1.057	0.036	0.321
4 adults	1.430	0.098	0.117	3+ children	0.992	-0.064	0.118
5+ adults	1.520	0.090	0.032				
Final weight (W^a)	0.161	Σ = 1.0		Final weight (W^c)	0.015	Σ = 1.0	
PL							
1 adult	1.000			Childless	1.000		
2 adults	1.262	0.262	0.553	1 child	0.938	-0.062	0.528
3 adults	1.429	0.166	0.248	2 children	0.927	-0.011	0.352
4 adults	1.388	-0.041	0.137	3+ children	0.812	-0.115	0.120
5+ adults	1.209	-0.178	0.062				
Final weight (W^a)	0.170	Σ = 1.0		Final weight (W^c)	-0.050	Σ = 1.0	
SK							
1 adult	1.000			Childless	1.000		
2 adults	1.392	0.392	0.545	1 child	0.901	-0.099	0.560
3 adults	1.533	0.140	0.243	2 children	0.953	0.052	0.347
4 adults	1.733	0.200	0.162	3+ children	0.874	-0.079	0.093
5+ adults	1.644	-0.088	0.050				
Final weight (W^a)	0.276	Σ = 1.0		Final weight (W^c)	-0.045	Σ = 1.0	

Source: HBS 2010. Author's computations.

Notes: IR – Income ratio (model with controls applied, see Subchapter 2.2.2).

Instead, we apply the ELES approach described in Subchapter 3.2.1 to estimate adult and child weights. Table 3.7 shows the Total Subsistence Expenditures, i.e., the sum of subsistence expenditures estimated for each consumption bundle, for various household types, as well as the derived adult and child weights. The regression results are stated at the end of this subchapter (Tables 3.8 to 3.11).²⁵ The estimated adult weight is highest in CZ (0.535) and reaches a value very similar to the OECD-modified adult weight (0.5). Economies of scale for adults are

²⁵ Note that household composition does not significantly affect the expenditures of all consumption bundles, e.g., CP05 - furnishings, household equipment and routine maintenance of the house. Except in PL, the coefficients of adult and child dummies are not statistically significant, meaning that households maintain their dwellings regardless of family size.

substantially higher in the other V4 countries, corresponding to an adult weight of 0.343 in PL, 0.288 in SK, and 0.241 in HU. The estimated child weights are considerably lower than the OECD-modified ones (0.3), so the economies of scale for children are notably higher. The estimated child weight is about half of the OECD-modified child weight in CZ and SK (0.169 and 0.164), and even lower in PL and HU (0.108 and 0.077). It should be stressed again that the HBS data are not fully comparable across countries and that time series would be needed to verify these unexpectedly low results.

In our earlier work (Mysíková et al., 2021), we applied the ELES method to estimate the equivalence scale in CZ for a longer period 2006–2016. This was possible because we were able to utilise the national version of the HBS survey, as it is collected annually for the national purposes. Maintaining as much as possible similar definitions of variables, the estimated adult weight was gradually decreasing from 0.587 in 2006 to 0.468 in 2016. The child weight was relatively stable at values slightly below 0.15. Though the estimated adult weight from HBS 2010 in this subchapter is higher in CZ than in the other V4 countries, it is obvious that the year 2010 captures in the middle of its decreasing trend. Éltető and Havasi (2002) estimated an expenditure-based equivalence scale using national HBS 1998–2000 data in HU with an adult weight of 0.7 and child weights of 0.6 for children aged 0–7 and 0.5 for children aged 8–14. Their equivalence scale was thus similar to the original OECD scale. However, their results do not contradict the idea that economies of scale have increased since the end of the 1990s.

We suggest that expenditure-based equivalence scales mostly yield higher economies of scale than the OECD-modified scale, though this holds more generally for the child weight (see Table A.3.6 for available data on EU countries). In half of the EU countries from which data is available, the adult weight is close to or exceeds the OECD-modified weight (0.5), while it is lower in the other countries.

Note that the age limit of children in our models is set to 15, while the OECD-modified scale only counts children up to 13. Regarding the definition of children, Hagenaars et al. (1994) stated: *“This is a rather arbitrary choice which we do not want to follow in all empirical research. A majority of the National Statistical Institutes use 16 as the age cut-off point between children and adults.”* (p. 16). We leave the definition of children for further research.²⁶

²⁶ Mysíková et al. (2021) noted that comparisons of the AROP rates applying the OECD-modified scale and various age limits for children (13, 14, and 15) lead mostly to 0.1 pp difference (0.3 pp in 2008) in CZ during 2006–2016. However, the AROP rate can be more sensitive to the child age limit in other countries.

Table 3.7 Yearly TSEs (in Euros) and the derived expenditure-base equivalence scales, V4, 2010

Adults	TSE ^a	Weight of additional adult (w ^a)	Structure of households (s ^a)	Children	TSE ^c	Weight of additional child (w ^c)	Structure of households (s ^c)
CZ							
1 adult	5,397			Childless	7,490		
2 adults	8,488	0.573	0.777	1 child	8,478	0.132	0.550
3 adults	10,891	0.445	0.154	2 children	10,265	0.238	0.395
4 adults	12,662	0.328	0.064	3+ children	10,645	0.051	0.056
5+ adults	13,052	0.072	0.005				
Final weight (W^a)		0.535	Σ = 1.0	Final weight (W^c)		0.169	Σ = 1.0
HU							
1 adult	4,581			Childless	5,575		
2 adults	5,829	0.273	0.634	1 child	6,268	0.124	0.562
3 adults	6,691	0.188	0.217	2 children	6,579	0.056	0.321
4 adults	7,895	0.263	0.117	3+ children	6,065	-0.092	0.118
5+ adults	7,406	-0.107	0.032				
Final weight (W^a)		0.241	Σ = 1.0	Final weight (W^c)		0.077	Σ = 1.0
PL							
1 adult	4,951			Childless	6,719		
2 adults	7,408	0.496	0.553	1 child	7,773	0.157	0.528
3 adults	8,106	0.141	0.248	2 children	8,296	0.078	0.352
4 adults	8,867	0.154	0.137	3+ children	8,151	-0.022	0.120
5+ adults	9,836	0.196	0.062				
Final weight (W^a)		0.343	Σ = 1.0	Final weight (W^c)		0.108	Σ = 1.0
SK							
1 adult	4,187			Childless	5,415		
2 adults	5,683	0.358	0.545	1 child	6,845	0.264	0.560
3 adults	7,101	0.339	0.243	2 children	7,122	0.051	0.347
4 adults	7,156	0.013	0.162	3+ children	7,018	-0.019	0.093
5+ adults	7,896	0.177	0.050				
Final weight (W^a)		0.288	Σ = 1.0	Final weight (W^c)		0.164	Σ = 1.0

Source: HBS 2010. Author's computations.

Notes: TSE – Total subsistence expenditures (model with controls applied, see Subchapter 2.2.2).

We recommend distinguishing children by age categories in order to estimate more suitable equivalence scales for setting national policies, as economies of scale are clearly different for infants than for teenagers; e.g., Éltető and Havasi (2002) differentiated children aged 0–7 and 8–14 in the Hungarian expenditure-based equivalence scale. Nevertheless, our aim is to estimate an equivalence scale structured in the same way as the OECD-modified scale. The final weights estimated by the ELES approach are applied in Chapter 3.4, where we demonstrate how the income poverty rate would be affected.

Table 3.8 ELES regression results: Consumption expenditures, CZ, 2010

COICOP:	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
Income	0.018*	0.004*	0.023*	0.025*	0.041*	0.010*	0.078*	0.007*	0.053*	0.008	0.023*	0.031*
2 adults	853.238*	135.569*	54.410*	485.448*	79.733	91.846*	166.935	115.591*	45.245	-22.873	-17.027	108.537*
3 adults	1,432.219*	160.910*	232.393*	704.103*	-41.570	101.692*	-64.385	292.756*	386.614*	96.181*	247.308*	178.439*
4 adults	1,954.218*	108.531*	353.410*	818.545*	-4.067	49.257	184.822	392.823*	289.798*	75.369	503.049*	202.700*
5+ adults	2,753.771*	133.947	172.984	880.937*	93.021	112.758	-124.085	259.420*	47.419	43.148	853.354*	-34.053
1 child	145.618*	-76.627*	195.840*	-63.861	-26.948	-59.832*	123.459	73.186*	133.429*	28.900	100.769*	96.420*
2 children	481.172*	-99.357*	279.798*	-91.178	100.882	-74.435*	351.309*	115.768*	330.504*	94.173*	257.390*	136.013*
3+ children	680.550*	-174.788*	264.769*	-56.147	-182.311*	-83.187*	379.906	85.309*	533.256*	149.072*	445.566*	98.320
Working	47.257	100.791*	171.607*	3.677	16.948	-125.706*	230.311*	117.828*	93.226*	-29.332	197.288*	93.462*
Females	-6.264	-125.793*	61.856*	207.373*	-42.284	48.036*	-398.493*	19.309	-15.372	45.043	-180.780*	80.723*
Tertiary	-7.847	-103.702*	150.129*	92.118	20.229	85.020*	355.638*	20.436	364.505*	72.274*	229.892*	84.450*
Young	-380.757*	-17.068	3.522	-342.241*	-101.951*	-126.862*	49.364	90.804*	-284.875*	-27.377	82.893*	50.035
Dense area	31.062	20.986	48.428*	235.918*	4.941	29.045*	-176.914*	34.595*	168.109*	32.487*	28.009	5.347
Medium area	75.716*	6.920	20.400	141.675*	9.539	12.638	-212.705*	-25.410*	20.355	2.074	34.189	-12.940
Rent	-20.084	15.532	-59.473*	947.134*	-108.025*	-1.182	-73.849	26.528*	-71.480*	32.557	-9.620	-41.534*
Constant	947.096*	179.823*	-85.023*	1,031.169*	87.936	126.194*	85.294	133.950*	57.229	-94.892*	67.643	35.624
N	2,931	2,931	2,931	2,931	2,931	2,931	2,931	2,931	2,931	2,931	2,931	2,931
R ²	0.554	0.101	0.425	0.310	0.148	0.095	0.179	0.337	0.370	0.045	0.397	0.435
F	289.20	26.99	121.30	81.58	24.96	15.03	48.88	86.08	70.95	24.13	105.70	91.72

Source: HBS 2010. Author's computations.

Notes: ELES – Extended linear expenditure system. See Subchapter 2.2.2 for descriptions of variables, and Table 2.3 for CIOPOP categories. *statistically significant at the 5% level.

Table 3.9 ELES regression results: Consumption expenditures, HU, 2010

COICOP:	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
Income	0.049*	0.004*	0.027*	0.045*	0.022*	0.017*	0.067*	0.019*	0.058*	0.005*	0.032*	0.043*
2 adults	406.738*	48.256*	0.732	230.973*	22.344	89.214*	119.416*	70.350*	-70.557*	1.652	-142.471*	-14.306
3 adults	664.894*	109.678*	9.789	399.749*	-3.930	101.012*	169.068*	155.534*	-150.493*	65.938*	-193.731*	-38.626
4 adults	992.588*	140.340*	48.216*	512.848*	-27.983	83.723*	301.205*	227.321*	-133.390*	104.800*	-189.237*	-36.858
5+ adults	1,222.469*	184.457*	-30.193	618.086*	-67.143	48.910	200.092	174.849*	-350.998*	63.088	-189.842*	-148.379*
1 child	163.046*	-19.908	99.265*	31.623	6.922	-86.249*	43.402	8.584	60.362*	-16.575*	72.295*	60.610*
2 children	238.851*	-26.556*	134.124*	73.424*	-7.968	-121.569*	12.330	4.291	101.931*	18.392	116.928*	69.260*
3+ children	511.472*	33.726	148.168*	42.595	10.859	-187.459*	-190.392*	-91.271*	16.395	-3.386	59.257	-50.906*
Working	26.786	80.080*	77.145*	62.887*	-15.851	-259.293*	254.032*	106.611*	67.562*	7.037	156.851*	8.241
Females	-16.977	-147.370*	21.588*	110.267*	19.411	83.179*	-182.645*	26.919*	-13.477	35.651*	-100.588*	42.035*
Tertiary	24.431	-67.088*	113.013*	97.973*	81.243*	98.268*	295.941*	142.296*	409.940*	61.334*	220.167*	208.481*
Young	-247.004*	-16.041	48.429*	-142.913*	-27.159	-206.911*	109.568	34.880*	50.474	114.326*	113.778*	-57.719*
Dense area	-81.182*	18.542*	48.379*	222.908*	26.897*	53.424*	-50.551	64.706*	191.428*	0.959	89.673*	13.160
Medium area	101.636*	-12.764	1.845	103.649*	0.972	31.884*	82.140*	42.396*	64.097*	13.968	24.902	13.432
Rent	-207.232*	11.860	12.168	1,419.375*	-18.736	-91.571*	-125.311*	-26.180	33.216	12.412	58.737	-115.940*
Constant	767.104*	193.608*	-86.344*	877.764*	46.488*	210.421*	4.343	46.393*	-100.542*	-54.927*	-25.674	18.169
N	9,928	9,928	9,928	9,928	9,928	9,928	9,928	9,928	9,928	9,928	9,928	9,928
R ²	0.337	0.099	0.321	0.391	0.127	0.146	0.197	0.358	0.344	0.093	0.205	0.186
F	237.00	76.65	145.20	241.8	40.50	80.90	85.71	225.60	98.88	29.32	76.1	46.12

Source: HBS 2010. Author's computations.

Notes: ELES – Extended linear expenditure system. See Subchapter 2.2.2 for descriptions of variables, and Table 2.3 for COICOP categories. *statistically significant at the 5% level.

Table 3.10 ELES regression results: Consumption expenditures, PL, 2010

COICOP:	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
Income	0.029*	0.007*	0.028*	0.038*	0.027*	0.016*	0.053*	0.009*	0.042*	0.008*	0.017*	0.023*
2 adults	687.110*	37.944*	50.127*	373.256*	103.051*	136.366*	166.396*	88.270*	77.411*	9.291	-99.227*	99.455*
3 adults	1,110.805*	60.979*	55.811*	549.179*	61.059*	101.933*	115.470	166.899*	68.036	5.158	-160.546*	85.972*
4 adults	1,493.169*	68.667*	61.598*	689.967*	85.459*	128.121*	137.811	224.776*	-10.690	10.996	-198.930*	65.669*
5+ adults	2,004.472*	99.935*	38.680	838.628*	110.529	130.445*	216.451	271.254*	-111.972	22.655	-238.381*	56.184
1 child	182.348*	-21.437*	123.451*	-55.431*	36.412*	-29.107*	119.520*	20.754*	186.443*	69.547*	30.339*	79.097*
2 children	421.421*	-37.323*	171.965*	-5.877	14.086	-52.643*	24.772	28.328*	279.767*	132.719*	71.320*	61.400*
3+ children	759.066*	-43.912*	134.094*	6.731	-11.746	-88.671*	-138.398*	-8.082	205.297*	95.247*	96.108*	2.103
Working	86.799*	83.127*	189.365*	19.020	67.895*	-202.664*	398.091*	88.446*	179.409*	39.986*	80.829*	76.714*
Females	9.559	-143.441*	117.111*	73.309*	48.525*	106.523*	-214.568*	21.167*	10.899	39.013*	-113.913*	127.814*
Tertiary	164.667*	-49.728*	234.140*	238.416*	205.431*	212.872*	543.641*	92.620*	547.277*	112.586*	168.625*	271.955*
Young	-354.699*	13.379	67.411*	-165.079*	-15.725	-183.269*	122.175	-18.777*	-99.887*	79.389*	110.384*	38.907*
Dense area	2.719	35.433*	11.930	147.175*	26.809	69.472*	-51.783	43.191*	226.781*	44.915*	66.396*	47.787*
Medium area	63.843*	-20.811*	0.651	88.206*	16.809	48.906*	54.766	33.026*	57.645*	25.938*	9.019	9.741
Rent	-149.524*	31.391*	87.367*	1,434.192*	-124.529*	-29.839	-47.925	-33.787*	-18.161	-15.164	105.130*	-23.825
Constant	933.439*	168.792*	-138.089*	784.699*	-11.151	162.112*	-24.247	77.302*	-144.517*	-110.412*	55.766*	-63.322*
N	37,039	37,039	37,039	37,039	37,039	37,039	37,039	37,039	37,039	37,039	37,039	37,039
R ²	0.464	0.073	0.180	0.088	0.070	0.079	0.064	0.259	0.204	0.058	0.078	0.121
F	1,970.00	201.90	297.60	203.20	82.15	114.80	127.40	726.70	230.50	85.18	92.55	175.40

Source: HBS 2010. Author's computations.

Notes: ELES – Extended linear expenditure system. See Subchapter 2.2.2 for descriptions of variables, and Table 2.3 for COICOP categories. *statistically significant at the 5% level.

Table 3.11 ELES regression results: Consumption expenditures, SK, 2010

COICOP:	CP01	CP02	CP03	CP04	CP05	CP06	CP07	CP08	CP09	CP10	CP11	CP12
Income	0.051*	0.011*	0.042*	0.049*	0.036*	0.018*	0.124*	0.016*	0.116*	0.003*	0.027*	0.029*
2 adults	605.628*	47.293*	-3.139	409.489*	-5.262	91.350*	-263.726	98.050*	-169.491	-5.050	-81.152*	-10.853
3 adults	1,037.950*	96.000*	22.120	535.089*	-34.314	79.208*	-175.923	244.416*	-428.535*	-7.677	-0.811	20.859
4 adults	1,269.802*	63.877*	25.195	649.377*	-53.878	33.375	-556.807	280.661*	-508.683*	45.631*	219.109*	-52.872
5+ adults	1,721.644*	221.184*	-3.955	664.821*	-175.636	2.010	-637.789	411.878*	-561.505	11.724	189.198*	-76.520
1 child	238.774*	-25.952	103.462*	-38.148	-100.276*	-37.797	193.537	78.018*	13.496	40.640*	70.295*	145.009*
2 children	281.315*	-44.452	132.813*	-30.631	35.701	-5.019	152.245	71.502*	22.464	63.952*	86.026*	47.041
3+ children	735.688*	-55.413	57.546	-172.183	-59.533	-61.110	-104.355	49.942	-21.861	42.154*	271.042*	81.814
Working	-74.910	73.961*	143.746*	-14.517	-42.68	-152.897*	-101.057	174.162*	-157.848	13.053	407.460*	26.618
Females	-19.241	-173.582*	109.999*	92.185	132.339	79.875*	-21.446	31.510*	84.859	14.818	-69.996	62.143
Tertiary	-50.252	-123.044*	213.131*	123.731	34.742	20.309	65.790	50.713*	268.615	42.304*	267.927*	128.934*
Young	-250.541*	-18.392	69.397	-245.500*	90.698	-110.113*	-69.519	82.353*	-4.591	-18.138	179.138*	91.057
Dense area	84.110*	-12.345	46.521	68.031	-82.295	46.160*	-239.842	11.718	239.745*	8.893	-69.798*	73.089
Medium area	235.067*	4.209	31.391	85.297	-96.736*	31.879	-181.659*	-0.840	149.361*	6.483	-60.637*	39.926
Rent	-155.441*	54.405*	-23.497	851.043*	18.465	-49.751*	-28.799	-4.655	-265.129*	-10.262	-116.235*	-14.856
Constant	948.971*	216.291*	-181.892*	1,079.926*	1.216	80.622*	-382.717	69.137*	-501.034*	-34.425*	-43.049	-51.457
N	6,137	6,137	6,137	6,137	6,137	6,137	6,137	6,137	6,137	6,137	6,137	6,137
R ²	0.408	0.124	0.216	0.118	0.018	0.038	0.069	0.391	0.152	0.066	0.273	0.084
F	228.00	51.57	52.63	48.76	7.57	12.64	82.49	194.30	18.33	14.20	90.65	43.15

Source: HBS 2010. Author's computations.

Notes: ELES – Extended linear expenditure system. See Subchapter 2.2.2 for descriptions of variables, and Table 2.3 for COICOP categories. *statistically significant at the 5% level.

European Appendix

Table A.3.4 Expenditure-based equivalence scales, Engel method: Food, EU, 2010

	2 adult	3 adult	4 adult	5+ adult	Final adult weight	1 child	2 child	3+ child	Final child weight
BE	1.102	0.734	0.370	0.917	0.989	0.054	0.295	0.133	0.159
BG	0.536	0.174	0.317	0.380	0.410	0.206	0.118	-0.060	0.171
CY	1.166	0.468	0.428	0.656	0.888	0.102	0.256	0.435	0.208
CZ	0.965	0.680	0.724	1.150	0.906	0.085	0.209	0.131	0.136
DK	0.955	0.659	0.576	0.170	0.900	0.428	0.273	0.533	0.383
EE	0.641	0.037	0.473	-0.120	0.492	0.056	0.340	0.309	0.159
ES	1.345	1.038	0.818	0.693	1.194	0.187	0.200	-0.006	0.181
FI	1.195	0.830	0.400	0.813	1.115	0.433	-0.027	0.443	0.268
FR	3.480	1.883	1.746	-0.974	3.115	0.247	0.125	-0.007	0.166
HR	0.481	0.429	0.100	0.479	0.409	0.209	0.090	0.364	0.186
HU	0.570	0.338	0.461	0.204	0.495	0.139	0.09	0.246	0.136
IE	1.040	0.860	0.848	0.891	0.977	0.273	0.231	0.215	0.245
LT	0.582	0.391	0.411	0.200	0.504	0.241	0.115	0.247	0.200
LV	0.706	0.462	0.193	0.531	0.599	0.094	0.118	0.276	0.114
PL	0.720	0.444	0.395	0.545	0.596	0.132	0.141	0.220	0.145
PT	2.778	1.583	2.397	-0.210	2.355	0.204	0.325	0.272	0.248
RO	0.448	0.288	0.223	0.357	0.366	0.279	0.238	0.367	0.274
SE	0.993	0.640	0.458	0.575	0.909	0.237	0.135	0.274	0.201
SK	0.689	0.48	0.248	0.452	0.555	0.163	0.054	0.326	0.140
UK	1.201	0.765	0.698	2.830	1.134	0.241	0.324	0.326	0.281

Source: HBS 2010. Author's computations.

Notes: Data for AT and NL are not available. DE, EL, IT, LU, MT, and SI are excluded due to missing (income) or inconsistent data. Models with controls applied (see Subchapter 2.2.2). Control variable for rent missing in BG. Control variable for tertiary education missing in DK FI, FR, SE, SI, and UK. Control variable for employment is missing in SE. Only one dummy for degree of urbanisation included in LT, LT; degree of urbanisation missing in RO.

Table A.3.5 Expenditure-based equivalence scales, Engel method: Housing, EU, 2010

	2 adult	3 adult	4 adult	5+ adult	Final adult weight	1 child	2 child	3+ child	Final child weight
BE	0.083	0.222	0.241	0.234	0.119	0.061	0.055	-0.009	0.048
BG	0.335	-0.005	0.000	-0.321	0.184	-0.307	0.100	-0.611	-0.201
CY	0.404	0.495	0.342	0.512	0.420	0.234	0.189	-0.119	0.166
CZ	0.450	0.233	0.135	0.274	0.396	-0.049	-0.082	0.019	-0.058
DK	0.000	0.029	0.028	-0.170	0.004	-0.008	0.128	0.016	0.047
EE	0.459	0.256	0.595	0.101	0.420	0.140	0.139	0.088	0.136
ES	0.332	0.187	0.013	0.068	0.255	0.113	0.079	-0.005	0.095
FI	0.150	0.386	0.403	0.056	0.188	-0.004	0.310	0.059	0.120
FR	0.093	0.072	0.164	-0.054	0.092	0.101	-0.078	0.063	0.027
HR	0.706	0.240	-0.035	0.053	0.425	-0.007	0.228	-0.051	0.073
HU	0.179	0.153	0.098	0.090	0.161	0.020	0.036	-0.064	0.015
IE	0.207	0.175	0.193	-0.027	0.190	0.152	0.107	0.123	0.129
LT	0.386	0.201	0.056	0.258	0.300	0.024	0.050	-0.229	0.015
LV	0.249	0.193	0.005	-0.156	0.203	0.131	0.017	-0.224	0.073
PL	0.262	0.166	-0.041	-0.178	0.170	-0.062	-0.011	-0.115	-0.050
PT	0.471	0.247	0.294	0.050	0.387	0.029	0.045	0.050	0.036
RO	0.223	-0.103	-0.241	-0.367	0.031	-0.020	-0.552	-0.422	-0.222
SE	-0.061	-0.102	-0.001	0.120	-0.061	0.116	0.007	0.066	0.067
SK	0.392	0.140	0.200	-0.088	0.276	-0.099	0.052	-0.079	-0.045
UK	0.025	0.108	0.021	0.246	0.043	0.074	0.097	0.096	0.085

Source: HBS 2010. Author's computations.

Notes: Data for AT and NL are not available. DE, EL, IT, LU, MT, and SI are excluded due to missing (income) or inconsistent data. Models with controls applied (see Subchapter 2.2.2). Control variable for rent missing in BG. Control variable for tertiary education missing in DK FI, FR, SE, SI, and UK. Control variable for employment is missing in SE. Only one dummy for degree of urbanisation included in LT, LT; degree of urbanisation missing in RO.

Table A.3.6 Expenditure-based equivalence scales, ELES method, EU, 2010

	2 adult	3 adult	4 adult	5+ adult	Final adult weight	1 child	2 child	3+ child	Final child weight
BE	0.596	0.373	0.235	0.515	0.534	0.029	0.145	0.109	0.086
BG	0.342	0.058	0.164	0.116	0.239	0.410	0.185	-0.458	0.314
CY	0.591	0.415	0.467	0.488	0.532	0.277	0.102	0.023	0.174
CZ	0.573	0.445	0.328	0.072	0.535	0.132	0.238	0.051	0.169
DK	0.528	0.373	-0.021	-0.064	0.488	0.194	0.190	0.139	0.185
EE	0.304	0.199	0.401	0.913	0.297	0.193	0.805	-0.099	0.354
ES	0.585	0.518	0.445	0.197	0.542	0.244	0.151	0.109	0.204
FI	0.542	0.206	0.333	0.126	0.490	0.289	0.007	0.384	0.203
FR	0.533	0.222	0.383	-0.399	0.470	0.166	0.155	0.004	0.140
HR	0.425	0.383	0.155	0.267	0.361	0.250	0.187	0.056	0.201
HU	0.273	0.188	0.263	-0.107	0.241	0.124	0.056	-0.092	0.077
IE	0.594	0.510	0.568	0.757	0.580	0.073	0.188	0.116	0.122
LT	0.453	0.233	0.270	0.053	0.365	0.208	0.077	0.098	0.158
LV	0.385	0.477	-0.118	0.377	0.364	0.200	0.172	-0.129	0.168
PL	0.496	0.141	0.154	0.196	0.343	0.157	0.078	-0.022	0.108
PT	0.405	0.250	0.325	0.023	0.348	0.203	0.165	0.177	0.189
RO	0.358	0.357	0.129	0.290	0.319	0.222	0.055	-0.094	0.142
SE	0.617	0.193	0.055	1.478	0.534	0.187	0.190	0.106	0.179
SK	0.358	0.339	0.013	0.177	0.288	0.264	0.051	-0.019	0.164
UK	0.665	0.277	0.650	0.525	0.597	0.137	0.103	0.125	0.123

Source: HBS 2010. Author's computations.

Notes: ELES – Extended linear expenditure system. Data for AT and NL are not available. DE, EL, IT, LU, MT, and SI are excluded due to missing (income) or inconsistent data. Models with controls applied (see Subchapter 2.2.2). Control variable for rent missing in BG. Control variable for tertiary education missing in DK FI, FR, SE, SI, and UK. Control variable for employment is missing in SE. Only one dummy for degree of urbanisation included in LT, LT; degree of urbanisation missing in RO.

3.3 Subjective equivalence scales

In addition to the extensive literature on equivalence scales estimated based on consumption or expenditure data, there is a growing pool of studies utilising various subjective approaches. The most known use an income evaluation and/or minimum income questions (Bishop et al., 2014, De Vos and Garner, 1991, Flik and Van Praag, 1991, Garner and De Vos, 1995, Hagenaars et al., 1994, Kapteyn et al., 1988, Martin, 2017), or similarly, minimum spending questions (Garner and Short, 2003, 2004). Less work has been devoted to approaches based on income satisfaction (Bütikofer and Gerfin, 2009), and personal evaluations of material well-being (Dang et al., 2019). Driven mainly by the variables available in a large and comparative survey, the EU-SILC data, we apply a Subjective Poverty Line (SPL) approach that uses the Minimum Income Question (MIQ). First, this chapter describes the SPL estimation methodology we use to derive subjective equivalence scales (SES) that are structurally the same as the weights used in the OECD-modified scale. Next, we present the resulting adult and child SES weights (specifically for each country and over time).

3.3.1 Methodology

The methodology for deriving equivalence scales using a subjective approach begins with estimating subjective poverty lines in general (see Chapter 4). The SPL method was introduced by Goedhart et al. (1977). They proved that *“the welfare level associated with a respondent’s minimum income is not independent of his actual income”* (p. 512). They showed that answers to a Minimum Income Question (MIQ, see Subchapter 2.1.2 for the wording of the question) are positively related to actual household income and size, and that the relationship is loglinear. The poverty lines thus differ by household size and we assume that, for each household size, there is an income level (SPL) at which a typical households’ minimum required income equals its actual income.

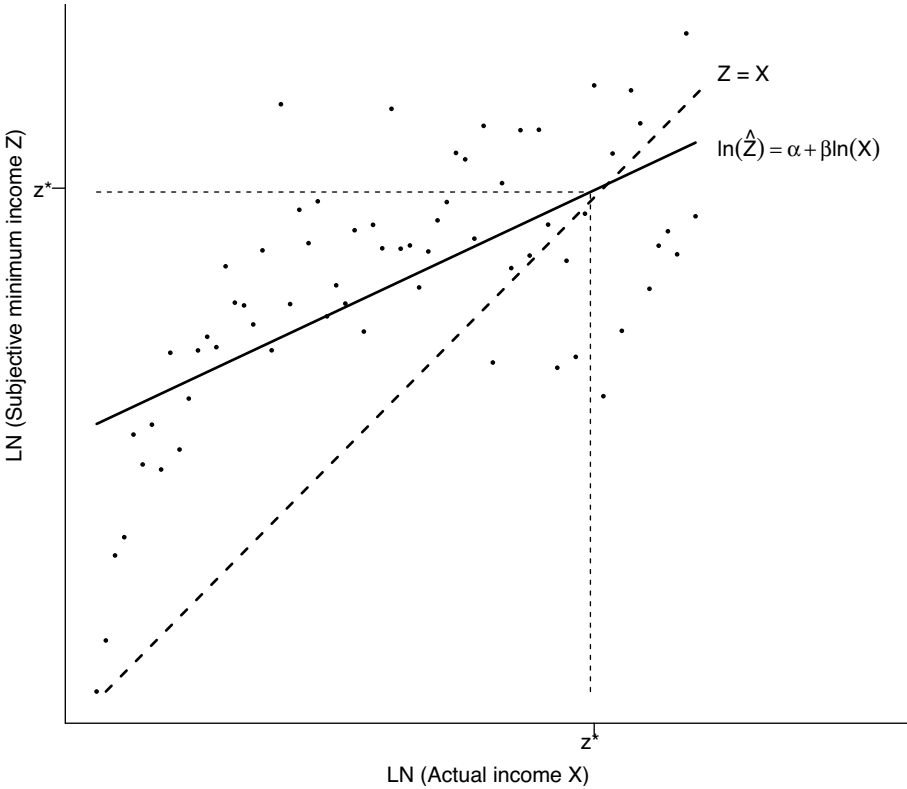
Figure 3.4 depicts the method for the double logarithmic form (see also Goedhart et al., 1977, p. 513). The subjective poverty line is derived as the income level at which $Z = X = Z^*$, where Z is the household subjective minimum income, and X is the actual household income, given the function (leaving out the subscripts for individual households):

$$\ln(\hat{Z}) = \alpha + \beta \ln(X), \quad (3.19)$$

which yields

$$\ln(Z^*) = \frac{\alpha}{1-\beta}. \quad (3.20)$$

Figure 3.4 MIQ and the intersection method (in a double log form)



Source: Illustration provided by Tomáš Želinský.

Notes: Z – household subjective minimum income, X – total disposable household income. The graph is illustrative and does not correspond to any concrete country sample.

Inevitably, subjective minimum income Z varies by household size. The original approach (Goedhart et al., 1977) thus controlled for household size in terms of the number of household members. The marginal minimum income Z , and so the SPLs (Z^*), are assumed to decrease with each additional household member, therefore, household size was included in logarithmic form. In Kapteyn and van Praag (1976), the household size was complicated by weighting household members by age and rank in the family.

As our aim is to estimate subjective equivalence scales in a structure similar to the OECD-modified scale, we need to consider adult household members and children separately and to estimate separate impacts of additional adults and children on the SPLs. One option could be to include the number of adults and of children, however, the number of children is problematic as the majority of households are childless, so we cannot apply the logarithmic form (without any transformation) for zero children. On the other hand, a non-logarithmic

form, by the definition of OLS regression, would assume constant marginal effects of an additional adult/child on $\ln(Z)$. This would result in constantly increasing SPLs for adults/children (when kept in log form – $\ln(Z^*)$), and so constant weights of adults/children in the equivalence scale.²⁷ This is one of the critiques of the OECD-modified scale, as economies of scale are assumed to increase with additional household members, rather than remaining constant. This was recognised in the 1970s: *“a three-year-old child seems to cost less if he is the third child in a family than if he is the second one”* (Kapteyn and van Praag, 1976, p. 322).

For these reasons, we abandon the idea of including the number of adults and children in a household as key explanatory variables, and instead include dummies. The dummies fully reflect the differences in the impact of additional household members. Previous studies (e.g., Bishop et al., 2014) formed dummy variables that directly reflected various combinations of numbers of adults and children (A+C), e.g., 1+0, 1+1, 1+2, ..., 2+0, 2+1, 2+2, ..., 3+0, 3+1, 3+2, etc. This is preferable when we are interested in SPLs for various types of households. However, if we aim to derive the weights for an equivalence scale, it does not provide a final solution. For instance, to obtain the weight of the first child, we would have to compare SPLs for 1+1 vs 1+0; 2+1 vs 2+0; 3+1 vs 3+0, etc., yielding several different values for the weight of the first child.

Therefore, we opt for a simpler way to construct dummies and a more transparent way to derive the weights for equivalence scales. Separate sets of dummies for adults and children are included (see our earlier studies, Mysíková et al., 2019a, 2021). As the reference household in the OECD-modified scale is a single-member household (1+0), we consider dummies for 2, 3, 4, and 5+ adults (1 adult being the reference group). Similarly, we create dummies for 1, 2, and 3+ children (0 children being the reference group).

In addition to the key explanatory variables of actual income and household size, we run the OLS models both with and without other control variables (described in Subchapter 2.1.2); while some authors prefer models without controls for the purpose of estimating SES (e.g., Bishop et al., 2014, García-Carro and Sánchez-Sellero, 2019), others include them (De Vos and Garner, 1991). We opt for models with control variables included. Two households with the same composition and income level may live in different conditions, e.g., in a city or a rural area, or in their own flat or a rented one, and thus need a different minimum income. The full model with control variables takes the following form:

²⁷ Moreover, when the SPLs are transformed back to non-logarithmic form (Z^*), the weights for an additional adult/child would in fact increase.

$$\ln(\hat{Z}) = \alpha + \beta \ln(X) + \sum_{i=1}^4 \gamma_i A_i + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l, \quad (3.21)$$

where X is total (monthly) disposable household income, A_i stands for four dummy variables for the number of adults, $i=\{2, 3, 4, 5+\}$. C_j stands for three dummy variables for the number of children, $j=\{1, 2, 3+\}$. V_l represents control variables used in the regression, with $l=\{1, \dots, n\}$. α , β , γ_i , δ_j , and θ_l represent the corresponding regression coefficients.

Subsequently, the estimates of the SPLs (for various types of households) are given by the extension of Equation (3.20):

$$\ln(Z^*) = \frac{\alpha + \sum_{i=1}^4 \gamma_i A_i + \sum_{j=1}^3 \delta_j C_j + \sum_{l=1}^n \theta_l V_l}{1 - \beta}. \quad (3.22)$$

To construct the weights of equivalence scales for each country, we first need to derive the corresponding SPLs for households of 1 to 5+ adults and households of 0 to 3+ children. The SPL for a one-adult household is derived with values of the four dummies for adults (2, 3, 4, 5+) set to zero, while the three dummies for children (as well as control variables when included) are set to their country means. Further, the SPL for a two-adult household is derived with the value of the 2-adult dummy set to 1, the other three dummies for adults set to zero, and all other explanatory variables set to the country means, and so on for 3, 4 and 5+ adults. The SPLs for adults are thus valid regardless of the number of children in a household. Similarly, the set of SPLs for children is derived keeping the relevant children dummies at required values and all other explanatory variables at the country means. The SPLs for children are then also estimated regardless of the number of adults.

The SPLs for various numbers of adults and children allow us to derive the subjective equivalence scale. The weights are defined as the additional minimum income required to meet household needs, relative to the minimum income required by the reference group. The methodology used to derive the SES is identical to the method used for the expenditure-based equivalence scale described in Subchapter 3.2.2. The only difference is that TSE in Equations (3.13) and (3.14) is substituted by SPL.

3.3.2 Results

Some authors argue for models of SPLs estimations without control variables (Saunders et al., 1994, Bishop et al., 2014, Kalbarczyk-Steclik et al., 2017), while others argue for them (De Vos and Garner, 1991; Mysíková et al., 2019a, 2021). Kapteyn and van Praag (1976) did not include control variables, but estimated the results separately for subsamples by education, degree of urbanisation, and wife's economic activity. The results from models with control variables

are provided in Table 3.12, which shows the example of deriving the partial weights w from SPLs as well as the final adult and child weights W based on 2018 population shares for V4 countries. Table 3.13 shows the estimated SES based on models without control variables. Compared with Table 3.12, in 2018, inclusion of control variables usually increases adult weights (except in SK) and lowers child weights (see Tables A.3.7 and A.3.8 for EU countries).

Using the same methodology, Mysíková et al. (2019a) shows the same effect of control variables for all EU countries on 2017 data: while the impact on adult weight is moderate in both directions, the child weight decreases by about 0.1, with more profound effects in Western European countries. However, Mysíková et al. (2019a) did not identify any single control variable responsible for the effect of lowered child weight, but in fact, step by step inclusion of control variables changes the child weight gradually. We prefer the version with control variables because we believe that some household characteristics crucially affect subjective minimum income.

We assume that the partial weights decrease with an additional person. The potential drawback is that if the top adult or child categories include only a small number of observations and so are vulnerable to outlier subjective minimum income, the corresponding SPLs for the top categories may be biased in either direction. As Table 3.12 shows, the partial weights are typically decreasing up to the top category, where the weight mostly rises. Note that the top categories are open and, for instance, include as many as 10 adults in two households in the 2018 SK sample, which increases the SPL of the whole category of 5+ adults. On the other hand, in CZ, the weight of 5+ adults is actually negative. This group consists only of 5 or 6 adults (and one household with 8 adults) in CZ, so the SPL for 5+ adults is not biased upward. However, as the final weights W are derived as a population-weighted average, the partial weights of top categories impact the final weights minimally. Constructing more dummies could be an option for countries where households of six and more adults are relatively frequent. The same logic applies for children.

In all cases, the estimated weights in SES are substantially lower than those assigned by the OECD-modified scale. In particular, the estimated weights of children may be rather small. The preferences and consumption bundle can change considerably when a child is born. Using an example discussed by Goedhart et al. (1977), a childless couple accustomed to relatively high expenses on holiday may dramatically change its preferences when raising a child, spending more holidays at home to compensate for the additional expenditures related to the child. These substitution effects are, however, not considered in the methodological approach.

Table 3.12 Monthly SPLs (in Euros) and derived SES, V4, 2018

Adults	SPL ^A	Weight of additional adult (w ^a)	Structure of households (s ^a)	Children	SPL ^C	Weight of additional child (w ^c)	Structure of households (s ^c)
CZ							
1 adult	584			Childless	703		
2 adults	761	0.304	0.692	1 child	783	0.113	0.534
3 adults	871	0.188	0.214	2 children	818	0.050	0.398
4 adults	975	0.177	0.079	3+ children	904	0.121	0.068
5+ adults	973	-0.002	0.015				
Final weight (W^a)		0.265	Σ = 1.0	Final weight (W^c)		0.089	Σ = 1.0
HU							
1 adult	321			Childless	382		
2 adults	408	0.270	0.651	1 child	437	0.142	0.547
3 adults	485	0.241	0.213	2 children	460	0.062	0.334
4 adults	536	0.159	0.105	3+ children	505	0.118	0.119
5+ adults	635	0.307	0.031				
Final weight (W^a)		0.253	Σ = 1.0	Final weight (W^c)		0.112	Σ = 1.0
PL							
1 adult	484			Childless	667		
2 adults	694	0.434	0.533	1 child	707	0.061	0.557
3 adults	790	0.200	0.246	2 children	741	0.051	0.354
4 adults	923	0.275	0.143	3+ children	846	0.158	0.089
5+ adults	1006	0.171	0.078				
Final weight (W^a)		0.333	Σ = 1.0	Final weight (W^c)		0.066	Σ = 1.0
SK							
1 adult	684			Childless	926		
2 adults	935	0.366	0.525	1 child	1007	0.087	0.542
3 adults	1130	0.285	0.246	2 children	1127	0.130	0.372
4 adults	1260	0.190	0.158	3+ children	1318	0.207	0.085
5+ adults	1438	0.260	0.072				
Final weight (W^a)		0.311	Σ = 1.0	Final weight (W^c)		0.113	Σ = 1.0

Source: EU-SILC 2018. Author's computations.

Notes: SPL - Subjective poverty line based on the minimum income question (model with controls applied, see Subchapter 2.1.2), SES - subjective equivalence scale.

Table 3.13 Subjective equivalence scales – models without control variables, V4, 2018

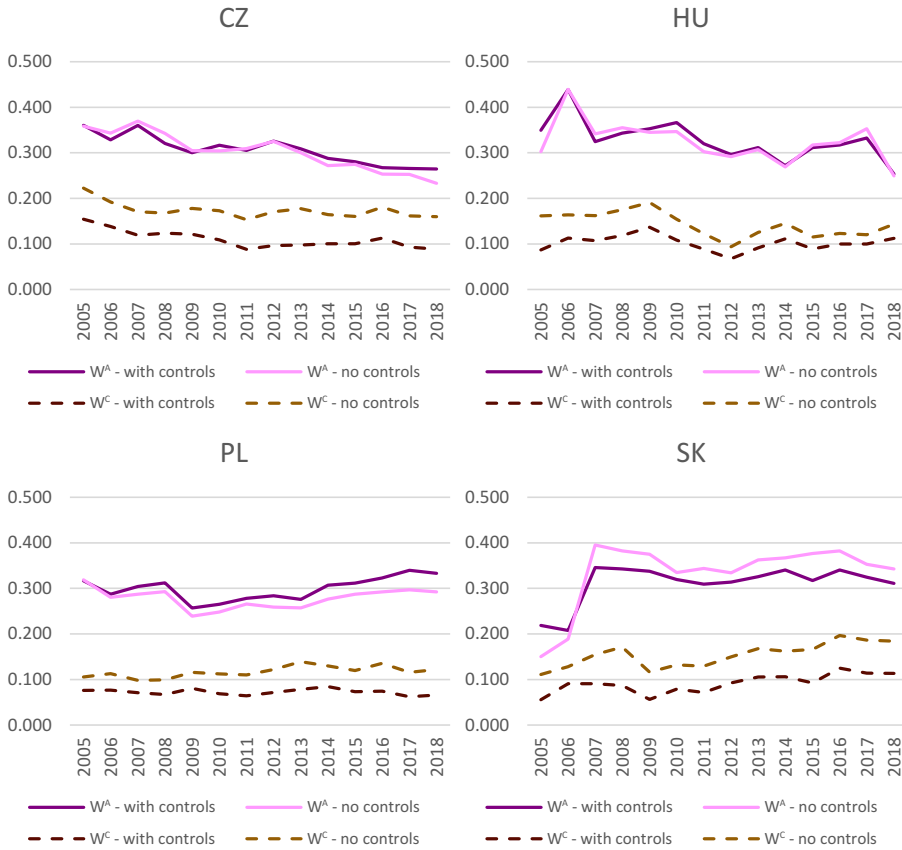
	CZ	HU	PL	SK
2 adults	0.260	0.265	0.433	0.429
3 adults	0.184	0.234	0.100	0.288
4 adults	0.186	0.183	0.204	0.194
5+ adults	-0.056	0.244	0.098	0.230
Final adult weight	0.233	0.249	0.292	0.343
1 child	0.215	0.199	0.154	0.181
2 children	0.095	0.095	0.077	0.182
3+ children	0.107	0.023	0.095	0.210
Final child weight	0.160	0.144	0.122	0.184

Source: EU-SILC 2018. Author's computations.

Figure 3.5 shows the estimated SES over 2005–2018 (see Tables A.3.9 and A.3.10 for EU countries). The trends in estimated SES differ across V4 countries. In CZ, both adult and child weight decrease over time. HU adult weights trend downwards, while the child weight oscillates around 0.100. PL shows an increasing (or U-shaped) trend in adult weights and stable child weights averaging 0.072. Finally, overlooking the first two years in SK,²⁸ adult weights decline, while the child weight grows. The results resemble findings by Kalbarczyk-Steclik et al. (2017), who estimated a decreasing trend of SES in pooled data for non-Euro-Zone Eastern European countries from EU-SILC 2005–2012. However, they did not include control variables in the models and their sample was restricted to the six most frequent household types (e.g., excluding single-parent families), thus providing five combinations of applicable weights. In contrast, we provide estimates based on the whole sample, not excluding any household types, because we believe that less common household types, such as the households of single parents, make up a non-negligible share of populations, especially when the results are applied to identify the poor.

²⁸ Mysíková et al. (2019b) suspect the inconsistency in early waves of EU-SILC (up to 2008, i.e., before the Euro currency was adopted) in SK to have been caused by fluctuations in the exchange rates.

Figure 3.5 Subjective equivalence scales, V4



Source: EU-SILC 2005–2018. Author’s computations.
Notes : For control variables, see Subchapter 2.1.2.

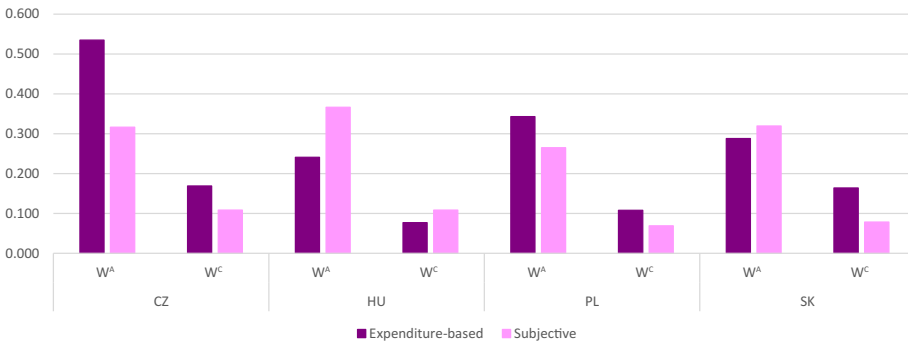
To summarize our findings of both SES and expenditure-based equivalence scales (Subchapter 3.2.3), the results suggest that: First, the estimated weights are lower than the OECD-modified ones, except the expenditure-based adult weight in CZ in 2010.²⁹ Second, the estimated SES for 2010 mostly correspond to lower (or similar) weights than the expenditure-based weights, with the exception of the adult weight in HU (Figure 3.6). Though the empirical results from various papers are not directly comparable due to different data, periods, and methods, we observe that subjective equivalence scales tend to yield higher economies of scale (lower weights) in the literature than the expenditure-based scales. This observation is

²⁹ However, our earlier work (Mysíková et al., 2021) based on annual Czech national HBS data files and ELES method indicated that the adult weight exhibited a decreasing trend in CZ, reaching a value below 0.5 in 2016).

confirmed by our estimates, which at least attempt to preserve similar explanatory variables as much as possible, despite different datasets (HBS and EU-SILC). In 2010, the subjective weights were lower than the expenditure-based weights in fourteen of the twenty EU countries for which we calculated expenditure-based estimates. In six countries, the adult weight was higher when estimated using the subjective method: BG, EE, HU, LT, LV, and SK. HU is the only exception, with a higher subjective child weight. Interestingly, these countries belong exclusively to the Eastern European group.

Our results indicate that for most countries (Western European countries as well as several Eastern European countries) the economies of scale are lower when based on expenditures than on subjective assessments. In other words, additional members in a household *cost* more than people *perceive* that they cost. This suggests that people may consider only their necessary needs and disregard non-necessary expenses when subjectively evaluating the minimum income they need. The question of which equivalence scale we should apply to measure income poverty in the EU remains. Authorities are commonly sceptical about subjective methods, as people's answers to subjective questions can reflect desires or aspirations and may be considered unreliable or volatile. Unfortunately, a time series of comparable expenditure data are not available at the EU level, therefore, we cannot provide any long-term assessment of the stability of expenditure-based versus subjective estimations of weights. The complete demand system method reflects the actual consumption expenditures of households and thus is expected to provide an *objective* picture, and is commonly preferred to subjective estimations. However, expenditures can be affected by household dis/savings patterns and their individual propensity to borrow/save. With a subjective approach, people's responses are not defined by how much debt or savings they have and they can freely indicate what they feel that their financial needs are, irrespective of whether their needs are higher or lower than their actual income.

Figure 3.6 Estimated expenditure-based and subjective equivalence scales, V4, 2010



Source: HBS 2010; EU-SILC 2010. Author's computations.

Notes: Models with controls applied for estimating expenditure-based and subjective equivalence scales; see Subchapters 2.1.2 and 2.2.2.

European Appendix

Table A.3.7 Subjective equivalence scales – models without control variables, EU, 2018

	2 adults	3 adults	4 adults	5+ adults	Final adult weight	1 child	2 children	3+ children	Final child weight
AT	0.384	0.191	0.309	0.117	0.332	0.207	0.079	0.162	0.156
BE	0.346	0.151	0.216	0.184	0.298	0.197	0.087	0.132	0.146
BG	0.681	0.474	0.464	0.146	0.581	0.295	0.239	-0.099	0.251
CY	0.245	0.336	0.583	0.435	0.309	0.336	0.195	0.060	0.249
CZ	0.260	0.184	0.186	-0.056	0.233	0.215	0.095	0.107	0.160
DE	0.291	0.131	0.124	0.343	0.259	0.212	0.166	0.142	0.189
DK	0.254	0.304	-0.054	-0.034	0.244	0.226	0.261	0.066	0.224
EE	0.618	0.517	0.581	-0.042	0.581	0.274	0.098	0.176	0.205
EL	0.419	0.227	0.241	0.107	0.341	0.157	0.068	0.022	0.109
ES	0.233	0.097	0.185	-0.054	0.189	0.187	0.148	0.046	0.164
FI	0.182	0.151	0.242	-0.069	0.179	0.414	0.195	0.115	0.285
FR	0.395	0.129	0.201	-0.036	0.337	0.229	0.044	0.149	0.145
HR	0.494	0.268	0.276	0.146	0.377	0.271	0.097	0.172	0.191
HU	0.265	0.234	0.183	0.244	0.249	0.199	0.095	0.023	0.144
IE	0.167	0.068	0.230	-0.685	0.118	0.461	0.060	-0.026	0.231
IT	0.225	0.176	0.168	0.149	0.205	0.165	0.096	0.141	0.138
LT	0.395	0.223	0.305	0.278	0.348	0.307	0.078	0.073	0.206
LU	0.173	0.174	0.169	0.053	0.170	0.395	0.026	0.118	0.244
LV	0.553	0.397	0.357	0.768	0.507	0.287	0.206	-0.015	0.233
MT	0.252	0.005	0.036	0.158	0.174	0.365	0.257	0.165	0.330
NL	0.219	-0.108	0.120	-0.169	0.166	0.167	0.083	0.137	0.127
PL	0.433	0.100	0.204	0.098	0.292	0.154	0.077	0.095	0.122
PT	0.250	0.182	0.200	-0.109	0.220	0.245	0.205	0.159	0.229
RO	0.197	0.020	-0.026	0.010	0.112	0.072	-0.042	0.228	0.048
SE	0.073	0.185	0.042	0.122	0.083	0.237	0.210	0.116	0.211
SI	0.435	0.298	0.224	-0.038	0.366	0.181	0.082	0.000	0.124
SK	0.429	0.288	0.194	0.230	0.343	0.181	0.182	0.210	0.184
UK	0.414	0.061	0.212	-0.353	0.329	0.482	0.192	-0.055	0.303

Source: EU-SILC 2018. Author's computations.

Table A.3.8 Subjective equivalence scales – models with control variables, EU, 2018

	2 adults	3 adults	4 adults	5+ adults	Final adult weight	1 child	2 children	3+ children	Final child weight
AT	0.384	0.167	0.320	-0.012	0.325	0.079	0.031	0.119	0.067
BE	0.381	0.141	0.237	0.208	0.324	0.088	0.042	0.083	0.070
BG	0.565	0.365	0.410	0.244	0.483	0.129	0.166	0.045	0.135
CY	0.303	0.324	0.500	0.503	0.340	0.156	0.082	0.073	0.118
CZ	0.304	0.188	0.177	-0.002	0.265	0.113	0.050	0.121	0.089
DE	0.328	0.143	0.155	0.358	0.292	0.125	0.102	0.127	0.117
DK	0.331	0.314	0.093	0.037	0.316	0.086	0.032	0.041	0.058
EE	0.625	0.475	0.627	0.212	0.585	0.126	0.057	0.194	0.108
EL	0.380	0.216	0.231	0.162	0.316	0.073	0.048	0.042	0.061
ES	0.246	0.148	0.174	0.047	0.210	0.071	0.086	0.068	0.077
FI	0.282	0.172	0.281	-0.075	0.266	0.152	0.067	0.094	0.112
FR	0.388	0.100	0.177	-0.084	0.324	0.051	-0.028	0.085	0.024
HR	0.472	0.246	0.269	0.178	0.362	0.171	0.076	0.180	0.136
HU	0.270	0.241	0.159	0.307	0.253	0.142	0.062	0.118	0.112
IE	0.201	0.118	0.184	-0.521	0.153	0.255	0.000	-0.014	0.115
IT	0.245	0.169	0.139	0.154	0.212	0.087	0.059	0.127	0.080
LT	0.393	0.231	0.283	0.288	0.347	0.155	0.056	0.113	0.116
LU	0.218	0.189	0.183	0.095	0.207	0.156	0.000	0.049	0.093
LV	0.542	0.386	0.407	0.812	0.502	0.161	0.157	0.048	0.149
MT	0.225	0.097	0.050	0.168	0.176	0.191	0.115	0.199	0.171
NL	0.235	-0.017	0.180	-0.091	0.196	0.082	0.017	0.089	0.055
PL	0.434	0.200	0.275	0.171	0.333	0.061	0.051	0.158	0.066
PT	0.257	0.147	0.174	0.000	0.216	0.106	0.129	0.132	0.114
RO	0.210	0.037	-0.014	0.014	0.126	0.052	-0.023	0.213	0.041
SE	0.119	0.190	0.077	0.100	0.125	0.084	0.112	0.097	0.099
SI	0.433	0.242	0.201	0.014	0.352	0.054	0.027	-0.003	0.038
SK	0.366	0.285	0.190	0.260	0.311	0.087	0.130	0.207	0.113
UK	0.319	0.060	0.191	-0.216	0.259	0.174	0.052	0.059	0.113

Source: EU-SILC 2018. Author's computations.

Notes: Model with controls applied, see Subchapter 2.1.2.

Table A.3.9 Adult weight in subjective equivalence scales, EU

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	mean
AT	0.248	0.291	0.272	0.344	0.314	0.346	0.345	0.344	0.334	0.273	0.326	0.310	0.315	0.325	0.313
BE	0.258	0.245	0.229	0.290	0.257	0.302	0.338	0.314	0.298	0.285	0.327	0.303	0.308	0.324	0.291
BG			0.604	0.509	0.520	0.553	0.520	0.509	0.498	0.485	0.511	0.499	0.500	0.483	0.516
CY	0.269	0.283	0.224	0.180	0.212	0.250	0.263	0.246	0.279	0.331	0.281	0.291	0.275	0.340	0.266
CZ	0.360	0.329	0.360	0.321	0.300	0.317	0.305	0.325	0.309	0.288	0.281	0.267	0.266	0.265	0.307
DE	0.299	0.292	0.300	0.305	0.267	0.231	0.270	0.249	0.235	0.285	0.296	0.329	0.297	0.292	0.282
DK	0.294	0.398	0.325	0.377	0.378	0.180	0.257	0.234	0.230	0.340	0.288	0.228	0.371	0.316	0.301
EE	0.514	0.525	0.534	0.510	0.495	0.509	0.560	0.488	0.598	0.557	0.544	0.593	0.537	0.585	0.539
EL	0.356	0.282	0.296	0.315	0.324	0.318	0.321	0.308	0.266	0.275	0.294	0.322	0.310	0.316	0.307
ES	0.214	0.216	0.242	0.198	0.199	0.176	0.215	0.224	0.202	0.201	0.198	0.207	0.211	0.210	0.208
FI	0.190	0.245	0.217	0.202	0.175	0.210	0.230	0.193	0.181	0.240	0.164	0.196	0.202	0.266	0.208
FR	0.355	0.302	0.351	0.323	0.300	0.327	0.357	0.347	0.375	0.355	0.332	0.364	0.336	0.324	0.339
HR						0.366	0.371	0.407	0.341	0.403	0.361	0.356	0.359	0.362	0.370
HU	0.349	0.439	0.325	0.343	0.353	0.366	0.320	0.296	0.312	0.272	0.311	0.317	0.333	0.253	0.328
IE	0.255	0.223	0.257	0.251	0.297	0.267	0.219	0.242	0.263	0.248	0.223	0.224	0.236	0.153	0.240
IT	0.228	0.234	0.220	0.229	0.228	0.224	0.168	0.176	0.173	0.192	0.189	0.190	0.198	0.212	0.204
LT	0.378	0.404	0.397	0.418	0.422	0.452	0.370	0.377	0.397	0.435	0.430	0.438	0.394	0.347	0.404
LU	0.305	0.244	0.229	0.247	0.225	0.185	0.150	0.189	0.145	0.179	0.257	0.228	0.255	0.207	0.218
LV	0.458	0.528	0.517	0.469	0.441	0.497	0.516	0.476	0.522	0.543	0.516	0.514	0.516	0.502	0.501
MT			0.220	0.207	0.145	0.163	0.174	0.140	0.161	0.111	0.132	0.161	0.197	0.176	0.142
NL	0.303	0.279	0.283	0.234	0.291	0.263	0.241	0.249	0.226	0.255	0.214	0.131	0.150	0.196	0.237
PL	0.317	0.287	0.304	0.312	0.257	0.265	0.278	0.284	0.276	0.307	0.312	0.323	0.340	0.333	0.300
PT	0.296	0.279	0.227	0.268	0.220	0.205	0.197	0.225	0.210	0.267	0.257	0.266	0.252	0.216	0.242
RO			0.279	0.250	0.237	0.177	0.205	0.148	0.208	0.173	0.208	0.158	0.109	0.126	0.163
SE	0.285	0.237	0.204	0.177	0.165	0.219	0.167	0.178	0.205	0.179	0.210	0.222	0.175	0.125	0.196
SI	0.334	0.279	0.245	0.246	0.267	0.302	0.287	0.253	0.282	0.293	0.295	0.321	0.359	0.352	0.294
SK	0.219	0.208	0.346	0.343	0.338	0.320	0.309	0.314	0.326	0.341	0.317	0.340	0.324	0.311	0.311
UK	0.290	0.329	0.298	0.416	0.344	0.324	0.303	0.244	0.252	0.229	0.211	0.199	0.252	0.259	0.282

Source: EU-SILC 2005–2018. Author's computations.

Notes: Model with controls applied, see Subchapter 2.1.2.

Table A.3.10 Child weight in subjective equivalence scales, EU

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	mean
AT	0.043	0.064	0.053	0.043	0.069	0.062	0.047	0.047	0.055	0.066	0.043	0.067	0.070	0.067	0.057
BE	0.097	0.095	0.108	0.088	0.073	0.061	0.075	0.078	0.062	0.066	0.062	0.076	0.102	0.070	0.080
BG			0.127	0.139	0.141	0.123	0.144	0.153	0.131	0.128	0.118	0.146	0.140	0.135	0.135
CY	0.224	0.228	0.220	0.181	0.192	0.158	0.187	0.141	0.132	0.126	0.114	0.105	0.137	0.118	0.162
CZ	0.154	0.139	0.119	0.123	0.121	0.109	0.088	0.097	0.098	0.101	0.101	0.113	0.093	0.089	0.110
DE	0.030	0.070	0.090	0.100	0.072	0.079	0.072	0.077	0.081	0.084	0.108	0.110	0.117	0.117	0.086
DK	0.065	0.068	0.073	0.085	0.092	0.134	0.078	0.089	0.076	0.073	0.049	0.065	0.045	0.058	0.075
EE	0.203	0.155	0.167	0.178	0.173	0.156	0.137	0.139	0.127	0.132	0.138	0.141	0.126	0.108	0.149
EL	0.182	0.135	0.115	0.098	0.072	0.086	0.095	0.103	0.077	0.068	0.057	0.067	0.073	0.061	0.092
ES	0.138	0.123	0.117	0.092	0.083	0.085	0.088	0.068	0.064	0.076	0.071	0.087	0.077	0.077	0.089
FI	0.143	0.128	0.136	0.118	0.121	0.116	0.098	0.120	0.133	0.110	0.124	0.115	0.112	0.112	0.120
FR	0.023	0.015	0.026	0.042	0.052	0.038	0.030	0.054	0.026	0.012	0.027	0.015	0.030	0.024	0.030
HR						0.114	0.123	0.124	0.148	0.102	0.124	0.111	0.126	0.136	0.123
HU	0.087	0.113	0.107	0.118	0.137	0.108	0.088	0.067	0.092	0.111	0.089	0.100	0.100	0.112	0.102
IE	0.095	0.144	0.122	0.119	0.088	0.066	0.100	0.080	0.072	0.080	0.127	0.090	0.070	0.115	0.098
IT	0.093	0.103	0.100	0.094	0.094	0.106	0.107	0.104	0.092	0.073	0.099	0.077	0.086	0.080	0.093
LT	0.132	0.134	0.133	0.150	0.149	0.107	0.124	0.123	0.143	0.163	0.146	0.161	0.126	0.116	0.136
LU	0.176	0.155	0.071	0.079	0.031	0.066	0.075	0.033	0.050	0.049	0.059	0.047	0.074	0.093	0.076
LV	0.241	0.247	0.168	0.186	0.184	0.168	0.142	0.137	0.129	0.141	0.132	0.166	0.156	0.149	0.168
MT			0.108	0.068	0.104	0.106	0.099	0.090	0.193	0.164	0.115	0.188	0.165	0.171	0.112
NL	0.036	0.018	0.026	0.037	0.034	0.035	0.039	0.036	0.031	0.020	0.056	0.060	0.060	0.055	0.039
PL	0.076	0.077	0.071	0.067	0.081	0.069	0.064	0.072	0.078	0.084	0.073	0.074	0.062	0.066	0.072
PT	0.091	0.110	0.106	0.062	0.095	0.039	0.110	0.112	0.094	0.098	0.087	0.100	0.103	0.114	0.094
RO			0.148	0.136	0.102	0.099	0.086	0.046	0.107	0.061	0.105	0.066	0.108	0.041	0.092
SE	0.056	0.072	0.050	0.085	0.073	0.081	0.092	0.103	0.091	0.101	0.085	0.111	0.070	0.099	0.084
SI	0.120	0.127	0.071	0.083	0.095	0.089	0.090	0.076	0.072	0.072	0.061	0.054	0.051	0.038	0.079
SK	0.056	0.091	0.091	0.087	0.056	0.079	0.071	0.093	0.105	0.106	0.093	0.125	0.114	0.113	0.091
UK	0.085	0.129	0.120	0.134	0.095	0.125	0.091	0.135	0.112	0.134	0.116	0.115	0.088	0.113	0.114

Source: EU-SILC 2005–2018. Author's computations.

Notes: Model with controls applied, see Subchapter 2.1.2.

3.4 Impacts of estimated equivalence scales on income poverty lines and rates

This chapter shows how the AROP rates would change if the estimated expenditure-based and subjective equivalence scales (SES) were applied instead of the OECD-modified version. Several versions of the estimated equivalence scales are applied to EU-SILC data in order to obtain the AROP rates. First, we apply the estimated expenditure-based final adult and child weights based on the ELES method (see Chapter 3.2). As only HBS 2010 are available, we apply the final weights from 2010 for the whole period of 2005–2018. Second, we apply the 2005–2018 mean SES final adult and child weights (see Chapter 3.3), i.e., the weights are fixed throughout the period. Third, we allow the SES to vary each year as estimated (Figure 3.5).

For convenience, Table 3.14 repeats the estimated expenditure-based and mean subjective equivalence scales which are applied to derive the AROP rates (for annual SES, see also Tables A.3.9 and A.3.10). The expenditure-based adult weights differ across V4 countries more than those assigned by mean SES. The possible valid range for adult weight yields roughly (0.3; 0.5), as applied in the analysis of AROP rate sensitivity in Chapter 3.1. The child weight varies less both across V4 countries and approaches, ranging roughly between 0.070 to 0.170. In order to include the OECD-modified child weight, the range in the sensitivity analysis was set to (0.1; 0.3).

Table 3.14 Estimated equivalence scales applied to derive the AROP rates

	CZ		HU		PL		SK	
	W ^A	W ^C	W ^A	W ^C	W ^A	W ^C	W ^A	W ^C
Expenditure-based (2010)	0.535	0.169	0.241	0.077	0.343	0.108	0.288	0.164
Subjective equivalence scale (mean 2005–2018)	0.307	0.110	0.328	0.102	0.300	0.072	0.311	0.091
Subjective equivalence scale 2018	0.265	0.089	0.253	0.112	0.333	0.066	0.311	0.113

Source: HBS 2010; EU-SILC 2005–2018. Author's computations.

Notes: Models with controls applied for estimating expenditure-based and subjective equivalence scales; see Subchapters 2.1.2 and 2.2.2. OECD-modified scale: W^A = 0.5; W^C = 0.3. AROP – at risk of poverty.

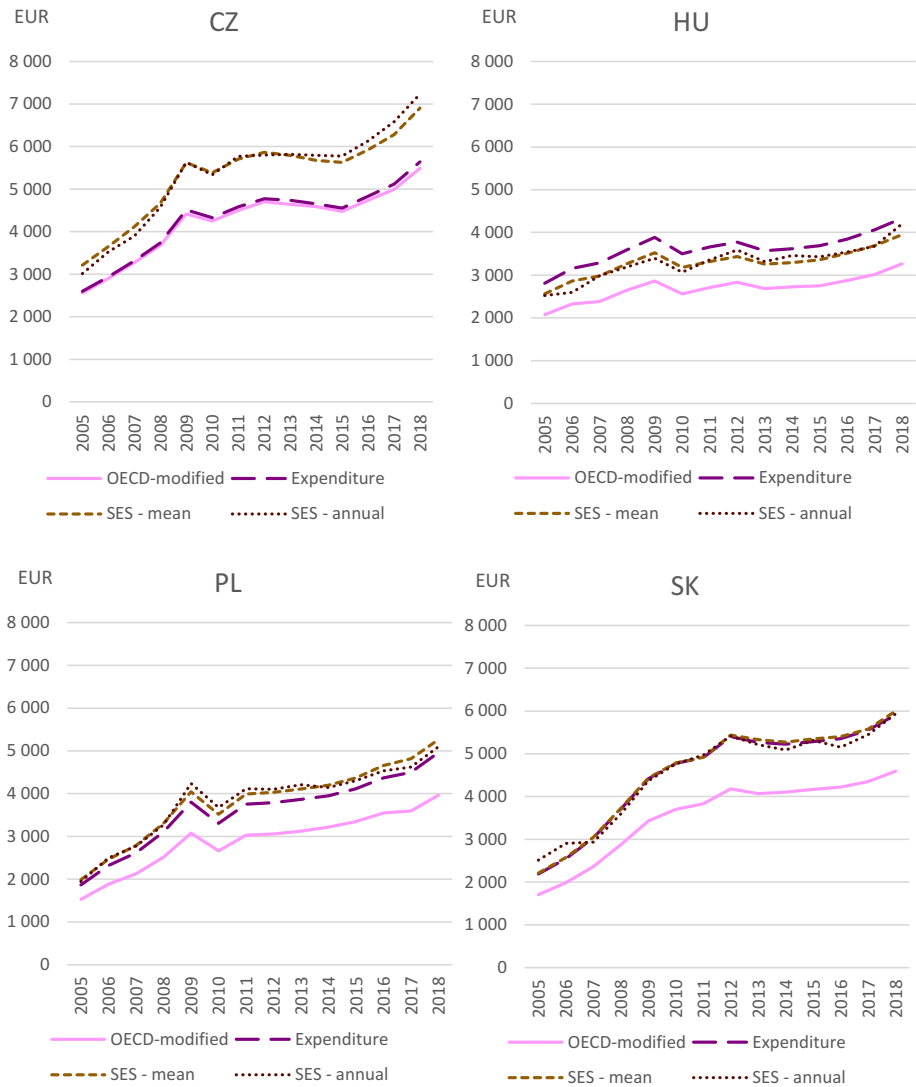
Application of a different equivalence scale leads to changes in equivalised income. In most cases, the estimated weights are lower than the weights in the OECD-modified scale. With lower weights, the resulting equivalent income is higher, except for one-person households. However, the magnitude of the change of the equivalised income depends not only on how much lower the

weight is, but mainly on the composition of households: the more household members, the more the equivalised household size is affected, and the more substantial are changes in the equivalised income of household members. Importantly, the ranking of people's equivalised income within a country also changes. Consider a simple hypothetical example of two households: a single retired person with a monthly pension of 500 EUR, and a single parent earning 600 EUR monthly. With the OECD-modified scale, the pensioner's equivalised income is still 500 EUR, and the parent and her/his child's equivalised incomes equal $600/1.3 = 462$ EUR for each, i.e., the pensioner's equivalised income is higher than the equivalised incomes of the parent and child. If we apply a lower equivalence scale, assume an adult weight of 0.25 and child weight of 0.15, the pensioner's equivalised income remains 500 EUR, however, the parent and her/his child's equivalised income equals $600/1.15 = 522$ EUR, i.e., the pensioner's equivalised income becomes lower than the equivalised incomes of the parent and child.

Therefore, a different equivalence scale affects not only the median equivalised income, and so the 60% poverty line, but also the ranking of people's incomes. Technically, with lower weights, the poverty line will always increase, but the same does not hold for the income poverty rate.

Figure 3.7 shows how the AROP lines change if we apply the three sets of estimated equivalence scales (for EU countries, see Table A.3.11). Applying the estimated equivalence scales increases the poverty lines in all V4 countries. The difference is negligible in CZ with the expenditure-based scale, because the estimated adult weight (0.535) is only slightly higher than the OECD-modified adult weight, while the estimated child weight (0.169) is substantially lower than the OECD-modified child weight. As the AROP in CZ is highly sensitive to the adult weight and less to the child weight, the impacts of slightly higher adult weight and substantially lower child weight counterbalance each other and result in similar AROP lines.

In HU, the highest poverty lines are reached with the expenditure-based equivalence scale because both adult and child weights are the lowest. In contrast, the subjective weights are higher than the expenditure-based weights in PL and, therefore, the AROP lines with subjective scales are the highest there. In SK, the estimated expenditure-based and subjective adult weights are very similar and, with the relatively low sensitivity of AROP to child weight, the differences in the estimated child weights are not large enough to affect the poverty lines.

Figure 3.7 AROP lines using estimated and OECD-modified scales, V4 (yearly, EUR)

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered in equivalence scales. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Table A.3.9 and Table A.3.10.

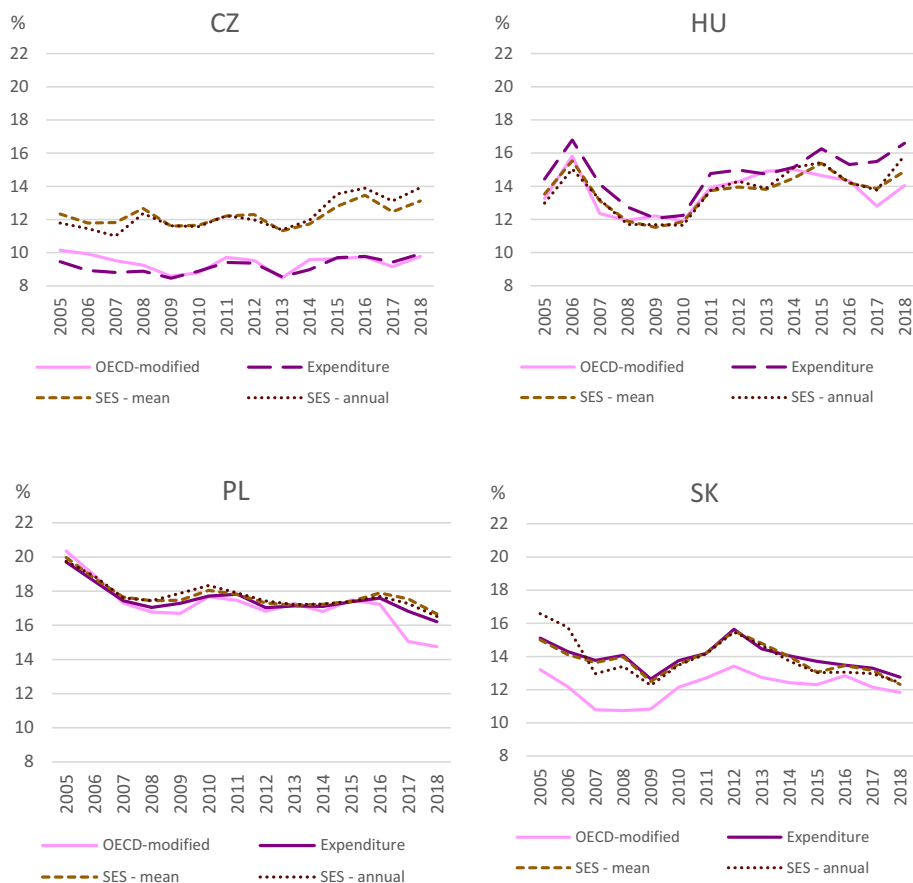
The overall AROP rates using various equivalence scales are depicted in Figure 3.8 (for EU countries, see Tables A.3.12 to A.3.14). The most apparent differences in AROP rates are in CZ, where the estimated expenditure-based

and OECD-modified adult weights are similar (0.5), and mean subjective adult weight is substantially lower (0.3). The expenditure-based (0.17) and mean subjective (0.11) child weights are both lower than the OECD-modified weight (0.3). However, as shown in Chapter 3.1, the Czech AROP rate is highly sensitive to the adult weight, and much less sensitive to the child weight. As a consequence, the difference in the AROP rates using an OECD-modified or expenditure-based equivalence scale versus the subjective equivalence scale is primarily driven by the difference in the adult weight. The gap consists of roughly 3 pp.

In HU, the impact of the estimated equivalence scales on the overall AROP rate is relatively modest, but intensifies in recent years, when the sensitivity to both adult and child weights increased. The lower weights included in SES mostly decrease the AROP rate compared to the rate produced by the OECD-modified scale. However, the further decrease in the weights of the expenditure-based equivalence scale drives increases in it until the rate exceeds the one produced by the OECD-modified scale. The difference in rates using the OECD-modified and expenditure-based scales expands to 2.5 pp in 2018.

In PL, where the sensitivity of the AROP rate to the equivalence scale is the lowest in the V4 countries (Chapter 3.1), the overall AROP rates remained almost unaffected by the equivalence scales except in two recent years, when the sensitivity slightly increased. The estimated expenditure-based scale and SES are very similar and the weights are substantially lower than in the OECD-modified equivalence scale. The SES increased the AROP rate by less than 1 pp throughout the period and only exceeded the rate produced by the OECD-modified scale by 2 pp in 2018.

The AROP rate in SK is highly sensitive to the adult weight and much less sensitive to the child weight, with the overall sensitivity decreasing over time (see Chapter 3.1). Both the estimated expenditure-based scale and SES include a similar adult weight (0.3), which is considerably lower than the OECD-modified weight. The estimated expenditure-based child weight is also lower, and the child weight in SES is lower still. However, the low sensitivity to the child weight results in almost no differences between the AROP rates using the expenditure-based scale and SES. Thus, the difference in the AROP rates using the OECD-modified and the estimated equivalence scales seems to be caused primarily by the adult weight. Interestingly, the gap between the rates is shrinking over the period, closing at 1 pp in recent years. As opposed to the other V4 countries, the equivalence scale in SK seems to be gradually losing influence.

Figure 3.8 AROP rates using estimated and OECD-modified scales, V4 (%)

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered in equivalence scales. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Table A.3.9 and Table A.3.10.

Burkhouser et al. (1996) did not find the overall income poverty and inequality to be sensitive to the equivalence scale in Germany in the 1980s, however, this did not hold for population subgroups such as older single people. Similarly, De Vos and Zaidi (1997) pointed to the sensitivity of the AROP rates of single elderly households and households with children in Western European countries on data from the late 1980s. We focus on the presumably most vulnerable subpopulations, i.e., singles aged 65+, persons living in single parent families, and persons in households of two adults with child(ren) in V4 countries in Tables 3.15 to 3.18 (the results for EU countries are shown in Tables

A.3.12 to A.3.14). The impact of the equivalence scales on the AROP rates of subpopulations can evolve in either direction, though this might sometimes seem counter-intuitive. The impact of the equivalence scale on the AROP rates of various subgroups depends not only on how much the scale changes, but also on the national household structure and the distribution of equivalised income around the poverty line. We will use the example of CZ to describe the effects in more detail.

Table 3.15 shows the AROP rates for vulnerable subgroups in CZ. The high sensitivity of the AROP rate in CZ is strongly confirmed for singles aged 65+. As shown in Subchapter 1.1.1, the average Czech pension is very close to the AROP line, so the AROP rate of retired persons is expected to be highly sensitive to the equivalence scale. The equivalised income of singles remains unaffected when using different weights (the weight of the first adult household member is always one). However, the equivalised income of persons from all other household types increases when the weights applied in equivalence scales are lowered, and the poverty line is raised. Therefore, older single adults (and singles in general) are relatively worse off. As the estimated expenditure-based adult weight is similar to the OECD-modified weight in CZ, and as the AROP rate is less sensitive to the child weight, the AROP rate of singles 65+ increases by only 3 pp when measured using the expenditure-based scale as versus the OECD-modified scale. With the mean SES, however, the AROP rate of singles aged 65+ almost doubles, reaching 75% in 2018 in CZ.

Certain sensitivity to child weight can be seen when we compare the AROP rates for persons in single parent families. The single adult has a weight of one, therefore their equivalised income is affected only by the child weight. The expenditure-based equivalence scale lowers the AROP rate of persons in single parent families in CZ. This might sound counter-intuitive, as the poverty line inevitably increases with the expenditure-based equivalence scale. Because the expenditure-based child weight is half the OECD-modified child weight, the equivalised income of persons from households with child(ren) increases, as does the poverty line. For persons in single parent families, in particular, households with two and more children can be classified as poor when the OECD-modified equivalence scale is applied, but non-poor when the expenditure-based equivalence scale is used. The equivalised household size of a single parent with two children decreases from 1.60 to 1.34 when we shift from the OECD-modified to the expenditure-based equivalence scale, therefore, the equivalised income often increases enough to exceed the higher poverty line.

When we further lower the weights and apply the SES, the AROP rate of persons from single parent families returns to a level similar to that with the OECD-modified scale. The intuitive effect prevails here: the lower weights cause

the poverty line to further increase and the equivalised income of persons from single parent families, though it increases as well, often does not exceed the higher poverty line. The AROP rate of persons from two-parent families is lower than that of the total population in recent years in CZ. Applying the expenditure-based scale instead of the OECD-modified scale further lowers it. This is again the rather counter-intuitive effect mainly concerning two-parent households with two and more children: the lower child weight increases the equivalised income enough to exceed the poverty line, though the line is higher. The mean SES, though it further lowers the weights, does not change the AROP at this point.

The estimated equivalence scales increase the AROP rates of singles 65+ in HU (Table 3.16). The expenditure-based equivalence scale assigns the lowest weights and results in the highest AROP rate of older singles. In 2018, the AROP rate of singles 65+ triples (to 47%) when the expenditure-based scale is applied. The AROP rate of persons from one-parent households decreases when the estimated mean SES are applied, compared to the AROP rate calculated using the OECD-modified scale. However, lowering the weights further to the expenditure-based weights, which mainly involves lowering the adult weight, increases the AROP rate again, sometimes to figures even higher than the rate calculated using the OECD-modified scale (an effect similar to that in CZ). In two-parent families, the AROP rate decreases with the lower weights inherent in both estimated scales, however, the difference between applying the expenditure-based scale and SES is negligible.

Again, the AROP rate of singles 65+ inevitably increases in PL (Table 3.17). Applying the mean SES assigning the lowest weights, the AROP rate of singles 65+ doubled in 2018. The estimated expenditure-based scale and SES are very similar in PL, therefore, Table 3.17 shows similar AROP rates for persons from households with child(ren) when either of the estimated scales is used. The estimated scales typically decrease the AROP rates of persons from both one-parent and two-parent households. The impact is somewhat stronger for two-parent families; the AROP rates of their household members drops by roughly 3 pp when any estimated equivalence scale is applied.

In SK, the AROP rate of singles 65+ more than triples with both the expenditure-based scale and SES. Though the resulting 55% in 2018 (mean SES scale in Table 3.18) is still far lower than in CZ, the increase in relative terms is the highest in SK. The AROP rates of persons from single-parent families rises non-negligibly when the estimated equivalence scales are applied instead of the OECD-modified scale. It confirms the intuition that with lowered weights and increased poverty line, the AROP rate of the vulnerable group of single-parent households increases. However, the statistics are somewhat vulnerable here: the SK data has the smallest sample size of the V4 countries; there are

fewer than 100 observations of individuals from single-parent households across several years. The AROP rates of persons from two-parent households decrease when the estimated equivalence scales are used. The impact is relatively strong when we switch the scale from the expenditure-based to the SES, though it is basically only the child weight that decreases.

Table 3.15 AROP rates using estimated and OECD-modified scales, CZ (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population														
OECD-modified	10.2	9.9	9.5	9.3	8.6	8.8	9.7	9.5	8.5	9.6	9.6	9.7	9.2	9.8
Expenditure	9.5	8.9	8.8	8.9	8.5	8.9	9.4	9.4	8.6	9.0	9.7	9.8	9.4	9.9
SES – mean	12.3	11.8	11.8	12.7	11.6	11.6	12.2	12.3	11.3	11.7	12.8	13.5	12.5	13.1
SES – annual	11.8	11.4	11.0	12.4	11.6	11.6	12.2	12.0	11.4	12.0	13.5	13.9	13.1	13.9
Singles 65+														
OECD-modified	14.3	15.8	14.1	19.8	21.4	19.4	18.1	14.7	13.6	14.8	18.7	21.5	29.0	38.5
Expenditure	16.1	17.0	16.0	21.6	26.8	21.8	20.5	16.7	16.2	16.8	21.3	26.6	34.2	41.8
SES – mean	66.0	68.4	65.5	73.5	73.6	66.1	66.9	59.1	55.4	56.7	63.4	68.6	72.0	74.8
SES – annual	50.0	57.4	51.4	69.7	73.8	64.6	67.9	55.9	55.9	59.4	71.9	73.3	77.5	81.1
1 adult + child/ren														
OECD-modified	46.5	44.4	47.9	40.1	41.5	41.9	36.5	33.0	29.1	34.4	35.2	41.0	32.8	34.2
Expenditure	32.6	34.3	36.0	23.9	27.9	30.3	24.8	24.4	21.5	22.8	26.3	29.7	18.6	25.2
SES – mean	45.4	42.0	45.7	39.4	41.8	42.6	38.4	33.1	30.0	30.0	34.8	43.9	33.6	33.1
SES – annual	45.5	42.7	43.6	39.4	43.2	42.2	36.6	29.7	28.1	31.5	36.0	45.7	36.5	35.6
2 adults + child/ren														
OECD-modified	12.2	11.7	9.7	8.3	8.0	9.3	10.1	9.8	7.5	11.2	11.2	10.8	8.6	7.3
Expenditure	7.9	7.7	6.7	6.3	5.9	7.9	7.6	7.5	5.9	8.3	9.4	9.0	6.9	5.5
SES – mean	8.9	8.4	7.5	6.8	6.4	8.3	8.1	7.6	5.6	8.3	9.4	9.1	7.1	5.5
SES – annual	10.0	9.2	7.2	7.0	6.6	8.2	7.5	7.5	5.6	8.3	9.4	9.2	7.0	5.2

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Tables A.3.9 and A.3.10.

Table 3.16 AROP rates using estimated and OECD-modified scales, HU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population														
OECD-modified	13.2	15.8	12.4	11.9	12.2	11.9	13.9	14.3	14.9	15.0	14.6	14.3	12.8	14.0
Expenditure	14.4	16.8	14.1	12.7	12.1	12.2	14.8	15.0	14.7	15.2	16.3	15.3	15.5	16.6
SES – mean	13.5	15.5	13.1	11.9	11.5	11.9	13.7	14.0	13.8	14.5	15.4	14.2	13.9	14.9
SES – annual	13.0	15.0	13.2	11.7	11.7	11.6	13.8	14.3	13.9	15.1	15.4	14.2	13.8	15.9
Singles 65+														
OECD-modified	10.6	13.9	12.0	8.5	9.2	8.2	9.1	9.9	6.3	6.6	5.9	9.4	10.5	14.6
Expenditure	37.4	47.7	47.7	37.3	40.8	39.5	40.7	42.9	31.1	29.5	34.2	36.0	41.6	46.7
SES – mean	26.7	33.4	34.5	24.0	25.9	25.0	26.0	27.3	19.3	19.7	24.9	24.1	27.7	31.7
SES – annual	24.5	22.0	34.6	21.4	22.0	21.0	27.6	33.7	20.8	24.8	27.5	26.0	27.3	42.3
1 adult + child/ren														
OECD-modified	31.8	40.3	30.2	32.8	22.4	23.5	23.5	24.4	32.8	32.0	38.0	31.5	21.7	31.8
Expenditure	34.2	40.9	34.2	34.2	24.9	24.3	22.1	22.2	33.8	31.4	43.0	33.4	25.4	28.3
SES – mean	30.2	35.3	30.4	29.9	22.0	20.2	17.9	19.8	28.4	24.6	37.0	27.6	20.7	26.4
SES – annual	26.8	32.6	30.4	29.1	21.6	19.1	16.9	19.7	29.4	33.5	38.4	27.8	18.7	28.3
2 adults + child/ren														
OECD-modified	17.6	21.2	15.5	15.8	17.1	15.2	18.0	16.6	16.8	17.5	15.5	16.0	12.9	12.9
Expenditure	11.9	15.8	12.2	10.6	10.8	10.9	12.3	10.3	10.6	12.5	11.1	10.5	10.1	9.8
SES – mean	12.1	15.7	11.7	10.3	10.7	10.8	11.9	10.2	10.6	12.3	11.2	10.5	9.4	9.8
SES – annual	10.7	15.4	12.1	10.7	11.9	10.2	11.3	9.2	10.5	13.5	11.1	10.5	9.3	9.8

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Tables A.3.9 and A.3.10.

Table 3.17 AROP rates using estimated and OECD-modified scales, PL (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population														
OECD-modified	20.3	18.9	17.3	16.8	16.7	17.7	17.5	16.8	17.3	16.8	17.5	17.2	15.1	14.7
Expenditure	19.7	18.6	17.4	17.0	17.3	17.7	17.8	17.0	17.1	17.1	17.4	17.6	16.8	16.2
SES – mean	20.0	18.7	17.6	17.4	17.5	18.1	17.8	17.3	17.2	17.2	17.4	17.9	17.5	16.7
SES – annual	19.7	18.9	17.6	17.4	17.9	18.3	17.9	17.4	17.2	17.2	17.4	17.7	17.3	16.5
Singles 65+														
OECD-modified	7.3	8.2	9.2	16.6	20.4	22.1	22.3	22.6	19.6	17.9	19.7	21.9	25.0	31.1
Expenditure	22.0	26.7	28.8	35.8	41.2	41.3	44.0	44.1	38.6	37.5	40.1	43.4	46.6	53.3
SES – mean	27.7	32.8	35.0	42.2	47.2	49.3	49.7	49.5	44.8	43.3	45.5	48.5	54.1	60.5
SES – annual	25.8	34.1	34.6	41.0	53.8	54.7	52.8	51.3	46.9	42.6	44.8	46.2	49.4	56.0
1 adult + child/ren														
OECD-modified	40.5	31.7	38.2	32.0	36.0	28.0	23.3	21.3	28.2	28.2	21.6	30.4	18.5	23.5
Expenditure	37.8	32.0	38.3	28.7	28.2	26.0	20.2	20.8	28.6	26.2	20.5	28.9	17.5	22.7
SES – mean	37.7	30.3	38.3	29.4	27.7	27.0	20.2	20.3	28.6	27.1	20.9	31.3	19.9	24.1
SES – annual	37.1	33.8	37.5	29.4	33.9	27.4	20.2	21.1	29.7	27.1	20.9	26.7	14.7	21.4
2 adults + child/ren														
OECD-modified	24.8	21.8	19.7	16.8	18.0	17.3	16.2	15.2	16.1	14.6	15.9	15.7	12.3	9.2
Expenditure	20.9	18.4	16.4	14.2	14.6	13.4	13.8	12.5	13.7	12.3	13.7	13.0	11.0	7.4
SES – mean	20.8	17.7	16.2	13.8	14.2	13.1	13.1	12.1	13.6	12.0	13.4	13.2	11.0	7.3
SES – annual	20.5	18.1	16.1	13.5	14.7	13.4	13.3	12.2	14.0	12.1	13.2	12.7	10.4	6.9

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Tables A.3.9 and A.3.10.

Table 3.18 AROP rates using estimated and OECD-modified scales, SK (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population														
OECD-modified	13.2	12.2	10.8	10.7	10.8	12.1	12.7	13.4	12.7	12.4	12.3	12.9	12.2	11.8
Expenditure	15.1	14.3	13.8	14.1	12.6	13.8	14.2	15.6	14.5	14.0	13.7	13.5	13.3	12.8
SES – mean	15.0	14.1	13.6	14.0	12.5	13.5	14.2	15.5	14.8	14.0	13.1	13.4	13.2	12.3
SES – annual	16.6	15.8	13.0	13.4	12.3	13.5	14.2	15.5	14.7	13.7	13.0	13.1	13.0	12.4
Singles 65+														
OECD-modified	12.2	14.8	15.3	21.9	26.2	15.8	13.5	14.7	10.0	11.2	9.5	9.6	12.5	14.6
Expenditure	56.6	58.1	65.9	75.6	65.8	55.7	48.0	60.4	49.2	42.4	40.9	42.2	46.0	51.4
SES – mean	58.5	60.2	67.4	76.3	67.1	56.5	48.0	61.2	50.7	44.5	43.7	42.9	47.0	54.5
SES – annual	83.4	80.0	56.9	67.5	64.1	55.4	50.1	60.7	47.6	37.5	42.1	35.5	42.7	52.3
1 adult + child/ren														
OECD-modified	32.3	21.6	23.5	16.9	24.5	27.0	21.0	12.0	25.5	27.2	32.5	40.5	30.4	26.7
Expenditure	40.0	26.3	32.1	22.4	27.2	27.0	21.0	17.3	30.6	42.9	43.3	45.9	41.8	28.1
SES – mean	33.5	20.5	32.1	19.6	24.5	27.0	21.0	15.2	29.1	29.2	35.8	39.2	39.2	28.1
SES – annual	42.3	34.8	25.9	16.9	24.5	27.0	21.0	15.2	29.1	24.7	33.4	38.1	39.2	28.1
2 adults + child/ren														
OECD-modified	16.8	15.1	11.1	12.2	12.6	15.0	16.6	18.9	16.4	16.3	17.4	17.7	15.6	16.2
Expenditure	16.0	14.9	10.7	12.4	12.0	14.1	15.3	16.8	15.4	15.2	17.2	15.5	14.4	15.5
SES – mean	13.6	11.9	7.6	10.0	10.5	11.9	13.0	14.2	13.0	14.0	12.9	13.5	12.1	11.0
SES – annual	14.0	13.8	7.0	9.6	9.5	11.6	12.1	14.2	13.4	14.0	12.9	13.7	12.6	12.2

Source: EU-SILC 2005–2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales and mean SES, see Table 3.14. Annual SES are listed in Tables A.3.9 and A.3.10.

European Appendix

Table A.3.11 AROP lines using estimated and OECD-modified scales, EU, 2006–2018 (yearly, EUR)

	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
2006														
OECD-modified	10793	10426		8780	2901	9424	13741	2184	5900	6704	11035	9794		2329
Expenditure		11024		9025	2939		14752	2515		6648	11570	10681		3158
SES – mean	14009	13351		11642	3650	11959	17680	2237	7345	9586	14724	12421		2864
SES – annual	14231	13793		10928	3527	11971	16679	2253	7432	9337	14191	12911		2597
2012														
OECD-modified	13199	12223	1723	10257	4704	11748	16474	3603	5537	8367	13726	12458	3262	2834
Expenditure		12958	2216	10426	4774		17483	4143		8306	14390	13543	3801	3773
SES – mean	16890	15672	1777	13545	5866	14707	20980	3728	6836	11633	18325	15738	3886	3435
SES – annual	16524	15345	1780	14034	5803	15151	21818	3875	6798	11546	18541	15431	3742	3587
2018														
OECD-modified	15260	14316	2172	9233	5490	13778	18243	6368	4740	8924	14798	13416	4050	3267
Expenditure		15197	2696	9480	5642		19131	7113		8898	15484	14472	4751	4332
SES – mean	19356	18227	2246	12042	6907	17097	22524	6556	5943	12230	19548	16638	4851	3948
SES – annual	19042	17782	2306	11493	7236	16717	22552	6486	5970	12267	18843	16898	4875	4202
	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
2006														
OECD-modified	11972	8755	1539	17723	1507		10471	1884	4406		10745	5635	1986	11679
Expenditure	12383		1795		1768		0	2319	5233		11229		2545	11773
SES – mean	16923	12128	1743	24392	1571		14744	2467	6066		15014	7500	2577	14763
SES – annual	16628	11713	1745	22930	1499		14420	2495	5794		14663	7442	2906	14080
2012														
OECD-modified	11914	9635	2615	19766	2679	7054	12428	3061	4994	1230	14415	7316	4180	11610
Expenditure	12467		3037		3095			3788	5835	1525	14836		5403	11761
SES – mean	16401	13185	2962	27113	2769	10607	17327	4034	6741	1864	19629	9571	5434	14699
SES – annual	16546	13486	3032	28731	2846	10805	17158	4103	6804	1942	19673	10028	5412	14980
2018														
OECD-modified	15096	10180	4174	24222	4459	8891	14515	3965	5640	1994	15498	7993	4593	12700
Expenditure	15461		4809		5185			4962	6619	2477	16092		5912	12827
SES – mean	20966	13628	4738	32407	4685	13437	19944	5265	7578	2969	21036	10436	6000	15990
SES – annual	22826	13591	5002	32634	4701	12578	20490	5098	7697	3216	22066	10088	5935	16343

Source: EU-SILC 2006, 2012, 2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered in equivalence scales. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP lines, though applying the OECD-modified scale, can differ from the official lines. SES – subjective equivalence scale. For expenditure-based equivalence scales, see Table A.3.6. Mean and annual SES are listed in Table A.3.9 and Table A.3.10.

Table A.3.12 AROP rates using estimated and OECD-modified scales, EU, 2006 (%)

	AT	BE	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU
Total population												
OECD-modified	12.4	14.7	15.4	9.9	12.8	11.9	18.8	20.5	20.5	12.7	13.1	15.8
Expenditure		15.3	15.0	8.9		13.2	21.1		20.3	13.5	13.3	16.8
SES – mean	14.7	17.9	16.8	11.8	15.2	18.1	18.9	20.3	21.6	16.7	14.9	15.5
SES – annual	15.1	18.4	16.1	11.4	15.2	16.1	19.1	20.6	21.5	16.1	15.4	15.0
Singles 65+												
OECD-modified	26.5	28.2	69.8	15.8	18.1	23.0	52.8	33.8	45.9	43.6	21.8	13.9
Expenditure		35.2	73.3	17.0		32.0	77.2	41.0	45.5	50.9	27.4	47.7
SES – mean	45.4	62.8	89.5	68.4	36.8	67.1	57.7	48.3	74.9	78.7	41.3	33.4
SES – annual	49.3	67.6	86.4	57.4	36.8	53.1	59.4	49.3	74.1	75.3	45.1	22.0
1 adult + child/ren												
OECD-modified	29.8	31.4	32.6	44.4	23.1	18.0	39.4	15.1	35.9	12.1	24.7	40.3
Expenditure		9.0	13.3	34.3		9.2	51.4		31.4	8.1	16.8	40.9
SES – mean	27.1	27.6	43.4	42.0	21.9	12.4	29.8	16.9	42.1	17.3	18.0	35.3
SES – annual	28.3	33.7	46.2	42.7	20.8	4.7	33.0	18.3	42.7	16.9	20.2	32.6
2 adults + child/ren												
OECD-modified	12.9	10.3	8.7	11.7	9.4	7.0	14.9	16.8	18.9	6.9	10.4	21.2
Expenditure		7.6	5.8	7.7		5.8	17.5		16.0	4.6	7.2	15.8
SES – mean	8.3	8.0	8.8	8.4	6.5	4.8	12.2	12.6	17.5	3.9	5.9	15.7
SES – annual	8.5	8.3	9.6	9.2	6.4	4.8	12.2	14.6	18.1	3.9	5.6	15.4
	IE	IT	LT	LU	LV	NL	PL	PT	SE	SI	SK	UK
Total population												
OECD-modified	18.5	19.5	19.9	13.9	23.1	10.0	18.9	18.3	11.9	11.5	12.2	19.0
Expenditure	18.1		21.3		23.7		18.6	20.0	12.0		14.3	17.9
SES – mean	20.3	20.4	20.9	14.5	22.9	14.6	18.7	20.6	17.8	13.8	14.1	20.3
SES – annual	20.0	20.1	20.9	14.5	22.8	14.2	18.9	20.6	17.3	13.7	15.8	19.8
Singles 65+												
OECD-modified	60.4	33.9	44.2	8.4	68.4	4.0	8.2	40.3	20.9	45.6	14.8	36.6
Expenditure	64.6		70.6		80.7		26.7	61.9	26.0		58.1	37.2
SES – mean	80.9	57.9	66.8	30.0	72.8	50.1	32.8	70.0	71.5	72.4	60.2	58.9
SES – annual	79.7	54.8	66.8	28.5	67.2	45.5	34.1	67.8	70.3	71.2	80.0	54.7
1 adult + child/ren												
OECD-modified	47.4	29.9	45.3	58.0	35.7	38.6	31.7	45.0	30.1	21.9	21.6	40.8
Expenditure	19.7		37.7		35.8		32.0	48.8	17.2		26.3	18.5
SES – mean	45.2	32.9	37.3	53.3	31.5	21.2	30.3	50.1	30.5	24.3	20.5	38.7
SES – annual	53.7	32.6	37.3	60.6	33.3	18.6	33.8	48.8	25.6	30.3	34.8	35.5
2 adults + child/ren												
OECD-modified	14.3	20.8	18.3	14.7	20.6	9.7	21.8	14.6	8.2	10.8	15.1	16.9
Expenditure	8.8		15.5		19.4		18.4	14.7	7.2		14.9	12.2
SES – mean	11.4	17.3	15.0	11.8	18.3	6.1	17.7	13.9	6.5	7.4	11.9	13.2
SES – annual	13.3	17.3	15.0	13.4	19.2	5.6	18.1	14.1	6.5	9.1	13.8	13.5

Source: EU-SILC 2006. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales, see Table A.3.6. Mean and annual SES are listed in Table A.3.9 and Table A.3.10.

Table A.3.13 AROP rates using estimated and OECD-modified scales, EU, 2012 (%)

	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total population														
OECD-modified	14.0	15.2	21.4	14.5	9.5	16.3	12.2	17.6	22.5	20.6	13.2	13.8	20.7	14.3
Expenditure		15.5	23.4	15.0	9.4		13.2	21.3		20.5	13.7	13.4	21.1	15.0
SES – mean	15.2	18.8	21.8	17.2	12.3	18.3	17.7	18.7	22.2	21.7	17.0	14.7	21.0	14.0
SES – annual	15.1	18.2	21.7	17.9	12.0	18.6	18.5	19.7	22.1	21.5	17.1	14.3	20.8	14.3
Singles 65+														
OECD-modified	23.9	19.0	55.4	46.5	14.7	24.7	18.9	33.9	21.7	13.2	38.0	14.6	42.3	9.9
Expenditure		29.0	76.4	47.9	16.7		25.2	74.8		13.0	44.8	21.1	52.7	42.9
SES – mean	42.5	61.3	57.6	71.1	59.1	41.9	51.4	46.1	29.7	53.3	74.6	32.8	54.1	27.3
SES – annual	40.9	58.1	57.7	75.2	55.9	45.4	57.1	59.0	29.5	52.9	75.4	30.8	52.1	33.7
1 adult + child/ren														
OECD-modified	33.5	31.1	54.3	16.9	33.0	35.5	24.3	25.0	47.4	31.0	15.4	34.2	40.7	24.4
Expenditure		9.4	72.2	13.3	24.4		20.4	40.0		29.1	12.8	21.2	40.7	22.2
SES – mean	22.2	31.6	42.5	26.7	33.1	36.2	24.4	17.8	35.5	36.0	18.0	19.0	33.9	19.8
SES – annual	22.2	26.5	42.5	27.7	29.7	38.1	31.6	21.0	35.5	34.1	18.0	20.0	33.9	19.7
2 adults + child/ren														
OECD-modified	14.0	12.4	22.4	14.8	9.8	11.1	5.6	12.4	23.4	22.2	8.7	12.9	19.9	16.6
Expenditure		8.4	26.0	11.7	7.5		4.5	16.0		20.1	6.1	8.7	18.9	10.3
SES – mean	8.6	9.3	20.6	14.6	7.6	7.6	3.9	10.9	19.9	20.4	5.0	6.9	16.9	10.2
SES – annual	8.5	9.0	20.6	14.6	7.5	7.5	4.0	10.9	19.9	19.7	5.1	7.4	16.3	9.2
	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total population														
OECD-modified	16.5	19.4	18.6	14.5	19.0	14.8	9.8	16.8	17.9	22.6	15.6	13.6	13.4	16.2
Expenditure	16.0		19.9		21.4			17.0	18.2	23.1	16.3		15.6	15.5
SES – mean	17.9	19.9	19.5	14.2	19.4	18.5	14.8	17.3	19.3	23.3	20.4	16.2	15.5	17.0
SES – annual	17.5	20.0	19.6	14.7	19.8	18.5	14.5	17.4	19.4	23.5	20.3	16.7	15.5	17.3
Singles 65+														
OECD-modified	16.8	26.8	31.2	8.4	20.8	20.1	7.0	22.6	27.1	25.0	33.6	42.8	14.7	21.8
Expenditure	20.1		55.7		56.7			44.1	39.1	42.4	40.2		60.4	22.6
SES – mean	69.6	48.6	51.1	25.7	28.5	75.9	46.3	49.5	54.4	54.0	78.7	64.4	61.2	43.0
SES – annual	70.0	50.6	55.3	30.7	36.3	77.9	44.1	51.3	55.0	58.1	79.0	69.4	60.7	44.8
1 adult + child/ren														
OECD-modified	33.9	39.8	37.1	47.9	41.7	43.1	28.5	21.3	31.0	25.1	28.3	30.2	12.0	20.4
Expenditure	13.5		39.4		42.6			20.8	32.9	25.1	22.6		17.3	8.6
SES – mean	38.9	42.6	31.4	50.4	34.8	56.1	24.1	20.3	33.6	31.1	29.2	32.4	15.2	21.6
SES – annual	33.3	44.0	31.4	48.4	34.8	54.8	22.1	21.1	36.4	31.1	32.6	34.9	15.2	26.3
2 adults + child/ren														
OECD-modified	11.7	21.9	16.2	14.9	20.4	18.3	9.1	15.2	16.4	28.3	13.1	12.0	18.9	15.1
Expenditure	7.6		15.2		18.5			12.5	15.9	27.0	11.1		16.8	9.5
SES – mean	9.3	17.8	15.0	10.3	17.8	15.7	5.4	12.1	14.8	28.4	10.3	8.6	14.2	10.5
SES – annual	8.4	18.5	14.9	8.9	17.7	14.5	5.2	12.2	15.5	27.5	10.4	9.0	14.2	11.4

Source: EU-SILC 2012. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales, see Table A.3.6. Mean and annual SES are listed in Table A.3.9 and Table A.3.10.

Table A.3.14 AROP rates using estimated and OECD-modified scales, EU, 2018 (%)

	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU
Total population														
OECD-modified	14.1	16.3	22.3	15.3	9.8	16.1	13.0	21.8	18.5	21.5	11.9	13.1	19.8	14.0
Expenditure		17.5	23.8	16.4	9.9		13.5	22.1		21.3	12.6	12.1	20.5	16.6
SES – mean	16.1	19.6	22.5	18.2	13.1	17.8	16.4	22.8	18.6	22.1	16.8	12.5	20.7	14.9
SES – annual	15.8	19.2	22.5	18.3	13.9	17.5	16.6	23.2	18.7	22.1	16.1	12.7	20.8	15.9
Singles 65+														
OECD-modified	25.4	21.1	50.3	31.6	38.5	29.0	17.1	81.6	16.2	20.8	29.4	12.5	50.8	14.6
Expenditure		33.9	66.9	34.0	41.8		21.7	85.9		19.2	37.2	16.5	60.8	46.7
SES – mean	41.3	64.2	53.2	59.3	74.8	46.3	42.3	82.3	33.4	53.7	68.7	25.3	64.5	31.7
SES – annual	39.9	59.5	55.0	56.2	81.1	44.7	42.3	82.3	33.8	53.9	65.6	26.7	64.5	42.3
1 adult + child/ren														
OECD-modified	37.8	41.5	35.9	29.9	34.2	39.1	30.6	35.7	21.7	37.4	21.3	31.1	28.8	31.8
Expenditure		18.0	44.8	17.0	25.2		22.0	48.2		33.4	13.8	21.2	35.8	28.3
SES – mean	33.9	34.4	32.4	44.7	33.1	36.4	23.4	23.7	24.2	41.7	26.9	18.6	29.9	26.4
SES – annual	34.5	32.7	32.4	32.5	35.6	37.7	22.9	19.5	21.2	41.6	20.1	18.7	31.7	28.3
2 adults + child/ren														
OECD-modified	17.5	13.0	20.4	15.0	7.3	9.7	7.3	10.6	18.0	21.4	7.3	12.9	15.0	12.9
Expenditure		8.4	24.0	13.6	5.5		5.7	13.4		19.1	5.4	8.3	14.6	9.8
SES – mean	11.9	8.9	17.2	15.1	5.5	5.2	4.6	9.3	14.3	18.7	3.7	5.4	12.8	9.8
SES – annual	12.1	8.4	17.2	14.0	5.2	5.7	4.3	8.9	13.8	18.4	3.5	5.3	13.2	9.8
	IE	IT	LT	LU	LV	MT	NL	PL	PT	RO	SE	SI	SK	UK
Total population														
OECD-modified	14.6	20.2	23.1	18.1	23.8	16.8	13.2	14.7	17.1	23.5	16.8	13.2	11.8	18.8
Expenditure	13.8		24.0		25.0			16.2	18.4	24.6	17.0		12.8	17.7
SES – mean	16.5	19.8	24.2	18.3	24.7	21.3	18.7	16.7	19.2	25.6	20.2	15.8	12.3	19.1
SES – annual	18.2	19.9	24.4	18.9	24.5	20.4	19.3	16.5	19.0	25.9	21.1	15.2	12.4	19.5
Singles 65+														
OECD-modified	47.2	23.9	66.6	21.0	74.5	29.5	10.9	31.1	27.8	37.0	31.4	42.1	14.6	27.0
Expenditure	50.6		76.1		80.3			53.3	44.1	56.2	40.7		51.4	27.9
SES – mean	72.5	40.9	76.1	38.0	75.8	76.5	55.6	60.5	54.1	68.8	74.2	69.1	54.5	46.8
SES – annual	75.0	40.8	78.1	39.6	75.8	68.8	60.6	56.0	54.7	74.9	76.8	66.2	52.3	49.8
1 adult + child/ren														
OECD-modified	30.0	33.7	51.4	44.9	26.8	44.6	23.3	23.5	26.3	29.3	32.9	25.0	26.7	37.6
Expenditure	8.7		48.2		26.5			22.7	29.1	29.3	21.3		28.1	18.8
SES – mean	31.4	36.1	46.0	48.0	22.1	52.6	17.3	24.1	31.3	39.4	31.9	22.1	28.1	33.6
SES – annual	45.4	35.9	46.3	48.0	21.3	52.6	24.8	21.4	34.9	43.0	38.6	17.8	28.1	36.3
2 adults + child/ren														
OECD-modified	9.5	22.4	17.6	16.3	11.7	14.7	9.7	9.2	12.3	28.5	14.9	10.9	16.2	19.0
Expenditure	6.1		14.9		11.0			7.4	12.4	25.9	11.9		15.5	12.9
SES – mean	7.4	18.5	14.8	12.0	10.2	14.8	6.8	7.3	11.1	26.9	9.0	7.6	11.0	13.9
SES – annual	9.9	18.3	14.8	13.4	9.7	15.4	7.2	6.9	11.4	26.5	10.6	5.2	12.2	14.1

Source: EU-SILC 2018. Author's computations.

Notes: AROP – at risk of poverty. Children aged 0–15 are considered both in equivalence scales and household type. Note that the OECD-modified equivalence scale defines children as aged 0–13; therefore, the AROP rates, though applying the OECD-modified scale, can differ from the official rates. SES – subjective equivalence scale. For expenditure-based equivalence scales, see Table A.3.6. Mean and annual SES are listed in Table A.3.9 and Table A.3.10.

Chapter 4: Subjective income poverty

Subjective income poverty measures represent an alternative approach to assess well-being. Objective measures compare income relative to some standard level in a society. This requires some entity other than the households themselves to externally decide what their standard income should be. However, it is widely accepted that poverty also includes a subjective dimension that cannot be set externally: *"If we do not base our poverty definition on the subjective feelings of individuals, we run the risk that our poverty definition will lead us to results that do not reflect reality. Households which are defined as poor may feel 'non-poor' and vice versa."* (van Praag and Ferrer-i-Carbonell, 2004, p. 316). Further, people presumably do not assess only their income, but take the overall circumstances and conditions of their households into account. Two households of the same composition and the same income may not perceive the same welfare from it, as each of them can be burdened by different necessary expenses, loans, and mortgages.

In the past, subjective variables in economic research were rarely analysed, economic scepticism about the meaningfulness of subjective survey responses being well known (Bertrand and Mullainathan, 2001). The general critique regarding subjective assessments of economic well-being (for instance, the minimum income question) is that responses are affected by individuals' desires, aspirations, tastes, and ideals, and it is not always clear what respondents consider relevant – in other words, the subjectivity *per se*. Nevertheless, subjective approaches to measure income poverty were developed in the 1970s. Goedhart et al. (1977) introduced two approaches to estimate subjective poverty lines in their seminal study: the Leyden Poverty Line (LPL) and the Subjective Poverty Line (SPL). The methods usually compare a households' self-assessed situation with its actual income.

LPL is based on an Income Evaluation Question (IEQ), which is used to derive the welfare function of income. IEQ asks households to express an income value corresponding to various situations: *"Taking into account my/our living circumstances, I would regard a net weekly/monthly/yearly household income as excellent if it were above X"*. The question is repeated by asking the respondents to state values of household income considered *good, sufficient, ..., very bad*. The verbal labels are then transformed into a numerical scale. Specifying the relationship between income and a corresponding numerical value of *well-being* results in the (cardinal) welfare function of income used to derive the poverty line (see, e.g., Flick and van Praag, 1991, for more details).

SPL utilises the Minimum Income Question (MIQ) framed as: *"In your opinion, what is the very lowest net monthly income that your household would have to have*

in order to make ends meet, that is, to pay its usual necessary expenses? Please answer in relation to the present circumstances of your household, and what you consider to be usual necessary expenses (to make ends meet)." The SPL method estimates the subjective minimum income as a function of actual income, typically resulting in a concave function (unless expressed in a logarithmic form as depicted in Figure 3.4). The poverty line is then established by the *intersection method* at which the subjective minimum income equals the actual income (see Subchapters 3.3.1 and 4.2.1 for details). Subjective methods were abundantly applied and discussed into the 1990s (De Vos and Garner, 1991, Garner and De Vos, 1995, Kapteyn et al., 1988, Saunders et al., 1994), but took a backseat later, and have only been revived relatively recently (Bishop et al., 2014, García-Carro and Sánchez-Sellero, 2019, Mysíková et al., 2019a, 2021).

Two main types of subjective questions on perceptions of poverty can be distinguished: first, categorical questions where respondents select an answer on a predefined scale, such as the *making ends meet* question, and, second, questions asking for a money-metric expression, such as the minimum income question or income evaluation question (the latter is not included in EU-SILC data; see Chapter 2.1). In this book, we utilise both approaches, given the availability of EU-SILC data. The *making ends meet* question is also called the *Deeleck question* in the literature. Professor Deeleck, at the Centre of Social Policy (CSP) in Antwerp, independently developed a CSP-measure, a method very similar to SPL using MIQ, except that it restricts the sample to those making ends meet with some difficulty (Flik and van Praag, 1991).

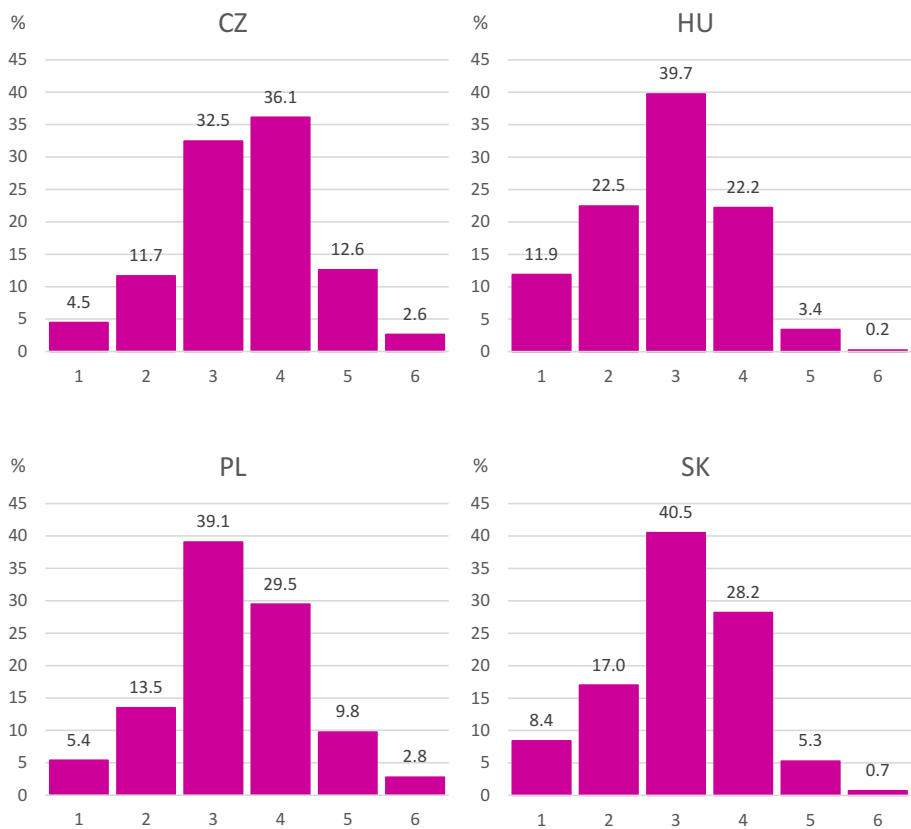
Chapter 4.1 shows a simple measure of subjective poverty based on the categorical variable of *making ends meet*. We demonstrate how persons from households reporting *difficulties making ends meet* overlap with those identified as poor by the objective income poverty indicator, though these two groups can be substantially different. The subjective income poverty rates based on the Subjective Poverty Line in Goedhart et al.'s (1977) meaning are estimated in Chapter 4.2. The SPL utilises the MIQ available in EU-SILC data by using the *intersection method* (see Subchapter 3.3.1). Finally, the population identified as *poor* by SPL is compared with the poor population identified by the objective income poverty indicator.

4.1 Inability to make ends meet

The question on (in)ability to *make ends meet* (MEM) is elicited as "A household may have different sources of income and more than one household member

may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?", with a 6-point scale of possible answers: (1) with great difficulty, (2) with difficulty, (3) with some difficulty, (4) fairly easily, (5) easily, and (6) very easily. MEM does not ask households directly to express whether they feel poor or not, but we use *difficulties to make ends meet* as a proxy for subjective poverty. Figure 4.1 depicts the histograms of persons living in households by their degree of ability to make ends meet. Note that, similarly to the at-risk-of-poverty (AROP) rate, this statistic also refers to individuals, not households.

Figure 4.1 In/ability to make ends meet, V4, 2018 (%)



Source: EU-SILC 2018, author's computations.

Notes: 1 – with great difficulty, 2 – with difficulty, 3 – with some difficulty, 4 – fairly easily, 5 – easily, 6 – very easily. Share of persons whose household expressed particular ability to make ends meet (not share of households).

Considering the worst category, *great difficulty to make ends meet*, the share of persons in households reporting that they belong in this category ranges from 4.5% in CZ to 11.9% in HU. The V4 countries are evenly spread along the EU ladder (see Table A.4.1). The distribution of answers differs across the V4 region. The middle categories, *with some difficulty* and *fairly easily*, which we could theoretically consider to be a standard in a society, are occupied the least frequently (60%) in HU (70% in the other three countries), and are accompanied by a higher frequency of less favourable categories *with difficulty* or *great difficulty*. This indicates that the highest subjective poverty in terms of inability to make ends meet occurs in HU of the V4 countries.

CZ is the only country in the V4 with a somewhat different histogram shape: *fairly easily* (4) exceeds *with some difficulty* (3). Further, the most favourable two top categories are most frequent, evidence that Czechs perceive themselves as the least subjectively poor in the V4 region. On the other hand, the share of Czech persons whose households make ends meet very easily (2.6%) ranks around the mid-range of the EU (Table A.4.1 shows that this share exceeds 10% in Scandinavian countries, NL, DE, and AT).

As cited above (van Praag and Ferrer-i-Carbonell, 2004), households/persons who are defined as poor under the objective approach may feel non-poor and *vice versa*. Therefore, the objective and subjective concepts of measuring income poverty can overlap across the identified populations to a relatively low degree. We think this is likely because households consider their overall situation, such as necessary expenses and liabilities, in their subjective assessments, not only their income. For now, we define the subjectively poor as persons living in households which make ends meet with great difficulty or with difficulty, meaning an inability to make ends meet. Figure 4.2 depicts how these subjectively poor populations overlap with those objectively defined by AROP. Kis and Gábos (2015) showed a relatively high correlation of inability to make ends meet and severe material deprivation in 2012 in Central and East European countries (a stronger correlation than for severe material deprivation and AROP rates). Indeed, at the V4 level in 2018, the inability to make ends meet correlates to AROP (coefficient of correlation 0.24), but the correlation is stronger with severe material deprivation (0.36) and even stronger with material and social deprivation (0.48). Table 4.1 in the next chapter shows the correlations in V4 countries.

Figure 4.2 Inability to make ends meet and AROP rates – the overlap, V4, 2018 (%)

Source: EU-SILC 2018. Author's computations.

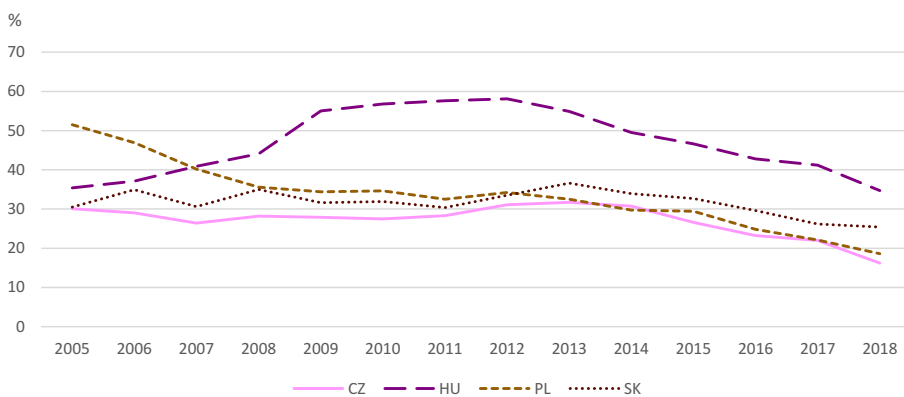
Notes: Inability to make ends meet (MEM) is defined as a share of persons whose household have great difficulty or difficulty to MEM. AROP – at risk of poverty.

The lowest overlap of those individuals unable to make ends meet and objectively poor is in CZ, and the highest in HU (for EU countries, see Table A.4.2). The overlaps seem to correspond with the rates of inability to make ends meet and poverty. CZ has the lowest of both rates in the V4 region. HU has an extremely high (34%) share of persons unable to make ends meet, which seems to overlap more with the AROP indicator. Ultimately, Hungarians appear to be the most economically endangered, as the share of persons in the population identified either by their inability to make ends meet or by objective income poverty is the highest in the V4 (39%).

When we consider only the populations identified by either of these poverty types, the overlap is about 21% in the four countries. This again raises the question of whether the EU statistics should in fact rely on the AROP rate, as it is obvious that a large share of persons identified as poor do not have difficulties or great difficulties to make ends meet, and at the same time, many persons from households that are unable to make ends meet are not identified as poor by the AROP indicator.

Inability to make ends meet was steadily decreasing in PL (Figure 4.3). Because more than half its population reported being unable to make ends meet in 2005, PL ranked among the worst in the EU at that time (after BG and LV). By 2018, the share had fallen to 18.6% and PL rose to the middle of the EU rankings in 2018 (for EU countries, see Table A.4.3). Trends in HU were obviously more affected by the global financial crisis after 2009, with much more favourable development after 2012. CZ and SK maintained very similar patterns, oscillating around 30% with steadily decreasing trends after 2013.

Figure 4.3 Inability to make ends meet rates, V4 (%)



Source: Eurostat database (variable ilc_mdcs09; extracted on 28.5.2020).

Notes: Inability to make ends meet (MEM) is defined as a share of persons whose household have great difficulty or difficulty to MEM.

Mysíková et al. (2019b) analysed the Slovak-Czech gap in inability to make ends meet, focusing only on *great difficulties to make ends meet*, and found a narrowing of the gap between 2005 and 2016. Interestingly, once the researchers controlled for regional socioeconomic and macroeconomic characteristics, the SK-CZ disparity was substantially higher than the raw gap, but still with a narrowing trend after 2007. Applying both *great difficulties* and *difficulties to make ends meet* (as in this chapter) made the SK-CZ gap smaller, but the trend more volatile. The authors concluded that: "...despite a high degree of actual economic convergence of Slovakia and Czechia, the gap in subjective perceptions of poverty [was] declining at a remarkably slower pace. ...relatively fast economic growth is not necessarily associated with a commensurate decline in subjective poverty perceptions." (p. 523). The results thus supported the Easterlin Paradox (Easterlin, 1974), although the authors substituted *happiness* for an economic dimension of subjective well-being.

European Appendix

Table A.4.1 In/ability to make ends meet, EU, 2018 (%)

	With great difficulty	With difficulty	With some difficulty	Fairly easily	Easily	Very easily
AT	4.5	6.8	23.2	30.8	23.2	11.5
BE	8.0	11.0	17.2	26.1	29.3	8.5
BG	26.4	29.4	30.8	10.2	2.5	0.7
CY	20.7	25.7	24.5	17.6	9.5	2.0
CZ	4.5	11.7	32.5	36.1	12.6	2.6
DE	1.7	4.0	9.0	39.0	32.8	13.5
DK	3.5	5.8	15.9	30.2	27.9	16.6
EE	4.3	9.6	37.8	31.8	14.0	2.6
EL	38.2	35.9	18.8	5.1	1.7	0.2
ES	10.4	16.7	28.1	30.6	13.1	1.1
FI	2.3	3.8	15.6	33.9	25.2	19.1
FR	4.6	13.7	38.4	29.4	11.7	2.1
HR	14.1	28.6	40.4	12.9	3.3	0.6
HU	11.9	22.5	39.7	22.2	3.4	0.2
IE	7.2	13.7	35.0	30.3	9.9	4.0
IT	9.7	20.6	40.3	24.1	4.7	0.5
LT	5.5	17.9	51.1	19.2	5.4	0.9
LU	4.8	8.1	17.2	35.5	25.2	9.2
LV	10.3	21.9	38.2	22.2	6.3	1.1
MT	3.9	10.2	26.7	39.7	17.1	2.4
NL	2.2	7.8	15.2	22.0	37.5	15.3
PL	5.4	13.5	39.1	29.5	9.8	2.8
PT	13.3	15.9	39.0	23.3	7.7	0.8
RO	13.4	22.6	42.8	15.7	4.3	1.2
SE	3.5	4.5	10.8	31.5	27.3	22.4
SI	5.6	14.9	34.9	27.6	15.0	2.0
SK	8.4	17.0	40.5	28.2	5.3	0.7
UK	5.2	7.6	24.3	34.6	18.2	10.0

Source: EU-SILC 2018, author's computations.

Notes: Share of persons whose household expressed its ability to make ends meet (not share of households).

Table A.4.2 Inability to make ends meet and AROP rates – the overlap, EU, 2018 (%)

	Only Inability to MEM	Both Inability to MEM and AROP	Only AROP	None
AT	6.8	4.5	9.9	78.9
BE	9.6	9.3	7.1	74.0
BG	37.2	18.7	3.3	40.9
CY	33.4	13.0	2.4	51.2
CZ	11.7	4.4	5.2	78.7
DE	2.6	3.2	12.7	81.6
DK	5.7	3.6	9.1	81.6
EE	7.3	6.5	15.4	70.8
EL	57.1	17.1	1.5	24.4
ES	16.0	11.2	10.4	62.4
FI	4.4	1.7	10.1	83.8
FR	11.9	6.4	7.0	74.7
HR	27.4	15.4	3.9	53.3
HU	26.4	7.9	4.8	60.8
IE	14.5	6.3	8.6	70.5
IT	19.0	11.4	8.9	60.7
LT	12.6	10.8	12.1	64.5
LU	6.5	6.4	11.9	75.2
LV	18.0	14.2	9.1	58.6
MT	8.5	5.6	11.3	74.6
NL	6.3	3.7	9.5	80.6
PL	12.7	6.2	8.6	72.5
PT	19.3	9.9	7.4	63.4
RO	21.2	14.8	8.7	55.3
SE	4.0	3.9	12.1	79.9
SI	14.1	6.3	7.0	72.6
SK	18.9	6.5	5.8	68.8
UK	7.5	5.4	14.5	72.7

Source: EU-SILC 2018. Author's computations.

Notes: Inability to MEM (make ends meet) is defined as the share of persons whose household have difficulty or great difficulty to MEM. AROP – at risk of poverty.

Table A.4.3 Inability to make ends meet, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	9.6	7.8	10.9	14.0	15.4	14.4	14.4	14.0	14.0	14.9	13.4	12.8	11.5	11.3
BE	17.1	16.5	15.3	21.4	21.1	20.8	20.9	22.1	21.0	20.2	20.5	21.5	20.9	19.1
BG	71.2	71.2	68.0	63.8	63.1	65.0	62.4	65.9	65.2	63.2	64.0	61.7	58.4	55.9
CY	42.7	49.3	45.6	51.7	49.7	52.5	53.7	49.6	59.4	60.4	58.8	59.8	43.6	46.4
CZ	30.1	29.0	26.4	28.2	27.9	27.5	28.3	31.1	31.7	30.7	26.6	23.2	22.0	16.2
DE	11.5	8.1	6.1	6.7	10.3	8.9	9.4	9.2	9.1	8.5	7.6	6.9	6.1	5.9
DK	6.8	8.2	6.5	7.9	9.2	8.7	9.3	10.6	11.8	11.8	10.4	10.0	9.4	9.3
EE	12.3	15.4	11.0	11.2	20.5	25.5	24.3	24.1	23.4	19.7	16.2	15.4	14.3	13.9
EL	50.8	52.6	52.4	54.5	57.0	58.4	62.6	73.1	78.3	78.1	77.7	76.8	77.2	74.1
ES	27.8	30.9	28.0	31.9	34.0	33.8	29.0	34.7	38.8	39.1	35.2	35.6	25.1	27.1
FI	8.5	8.0	7.6	8.1	6.8	6.9	7.4	7.1	6.9	7.4	7.0	6.9	6.7	6.1
FR	16.2	15.8	16.1	15.9	19.1	20.2	19.7	19.5	20.7	20.7	19.9	19.2	18.1	18.3
HR						52.9	51.9	55.8	62.5	60.9	54.4	51.4	43.9	42.7
HU	35.4	37.1	40.9	44.1	55.0	56.8	57.6	58.1	54.9	49.5	46.6	42.8	41.2	34.7
IE	24.9	24.9	21.8	23.6	26.5	33.3	32.1	34.2	36.8	36.6	31.8	27.4	23.6	20.9
IT	34.8	35.7	37.7	38.9	37.3	37.7	38.0	40.1	41.5	40.2	37.9	33.3	28.1	30.3
LT	30.3	28.7	23.7	25.9	34.4	37.7	35.9	37.5	32.9	29.4	28.9	29.6	28.2	23.4
LU	6.3	5.5	6.6	7.3	7.6	8.3	9.3	10.2	13.4	11.9	12.4	12.4	12.6	12.8
LV	52.1	46.8	39.9	39.8	48.0	56.0	57.0	52.1	54.4	49.0	42.7	39.3	40.5	32.1
MT	36.7	41.4	37.0	37.3	48.9	47.2	37.9	41.6	37.0	32.7	21.6	19.9	16.1	14.1
NL	16.9	14.0	10.4	11.0	10.2	12.1	12.5	12.7	15.5	15.0	12.9	12.6	11.5	10.0
PL	51.5	46.9	40.2	35.6	34.4	34.6	32.5	34.2	32.5	29.7	29.4	24.8	22.1	18.6
PT	36.8	36.8	37.5	46.7	46.1	44.9	41.8	40.5	46.9	43.7	40.4	36.7	33.6	29.2
RO			50.5	47.6	48.6	49.0	48.9	50.0	51.0	48.5	45.6	44.1	37.4	36.0
SE	8.5	8.3	7.6	9.9	8.8	8.3	9.5	8.4	7.7	7.9	7.1	7.6	7.0	8.0
SI	27.2	24.3	20.2	26.1	25.7	28.6	29.5	28.5	33.1	30.6	28.7	25.9	22.6	20.5
SK	30.5	34.9	30.6	35.0	31.6	31.9	30.4	33.5	36.6	33.9	32.7	29.6	26.2	25.4
UK	13.1	13.7	13.6	17.0	16.8	16.4	16.5	20.2	21.1	20.3	16.4	16.3	14.1	12.8
EU							26.0	27.8	28.9	27.7	25.7	24.1	21.6	20.7

Source: Eurostat database (variable ilc_mdes09; extracted on 28.5.2020).

Notes: Inability to make ends meet (MEM) is defined as the share of persons whose household has difficulty or great difficulty to MEM.

4.2 Subjective poverty based on a Minimum Income Question

Subjective poverty (SP) can be derived based on the intersection method utilising the Minimum Income Question (MIQ). The methodology for estimating the SPL is explained in Subchapter 3.3.1. This chapter applies a slightly modified version, which does not rely on single or several SPLs, but estimates the SP directly. First, we describe the modification and then proceed to the results.

4.2.1 SPL-based method specification

In order to derive the equivalences scales, we needed to estimate separate SPLs for various household types (see Chapter 3.3). When we do not aim to derive the equivalence scale, we can choose how specific the SPL need to be, according to our purposes. We might need to estimate a single poverty line for a country, for instance, to provide a simple and transparent cross-country comparison (or regional comparison within a country), so we would hold all the explanatory variables at their national means. Or we may be interested in SPLs for various household sizes. In such a case, the rest of the control variables (except the household size) would be set to the national means in the same way as in Chapter 3.3. Alternatively, we can go further into detail and derive the SPLs for specific groups of population from another view, for instance, we might be interested in SPLs for households of different sizes separately for home owners and tenants.

Overall, we can choose from two general methods to derive SPL (Garner and Short, 2004). In the first method, a SPL (or a set of SPLs differentiated by several characteristics) holding the values of (other) control variables at their national means is calculated. The second method identifies a specific SPL for each household. However, the SP rates resulting from the two methods differ. We argue that the specific SPL for each household is particularly useful if we apply a high number of control variables, and are not interested in exact values of the specific SPLs, but in the SP rate instead. If we are only interested in the SP rate, we do not have to derive the SPL at all.

The more control variables and their impacts on SPL we are specifically interested in, which need to be set to their possible and relevant values (so that fewer control variables are set to national means), the more household-specific SPLs we would obtain. In the end, we can derive SPLs for all possible combinations of the explanatory variables included. The same result can be reached by directly estimating the *fitted values* for each household. The fitted value represents a SPL specific to each household. The household can then be identified as *poor* or *non-poor* according to the relationship of its actual income to the fitted values.

As shown in Subchapter 3.3.1, the subjective poverty line (Z^*) is defined as:

$$Z^* = \exp\left(\frac{\alpha}{1-\beta}\right), \quad (4.1)$$

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

$$X_i < Z^*, \quad (4.2)$$

i.e., if the actual household income (X_i) is less than the poverty line. For $0 < \beta < 1$ and $\alpha > 0$ the inequality (4.2) is equivalent to:

$$X_i < \hat{Z}_i. \quad (4.3)$$

It follows that we can compare actual income directly with the fitted values. The inequality (4.3) is particularly helpful if we employ a large number of control variables on the right-hand side of Equation (3.21) and intend to avoid using country means of some variables.

4.2.2 Subjective poverty based on MIQ

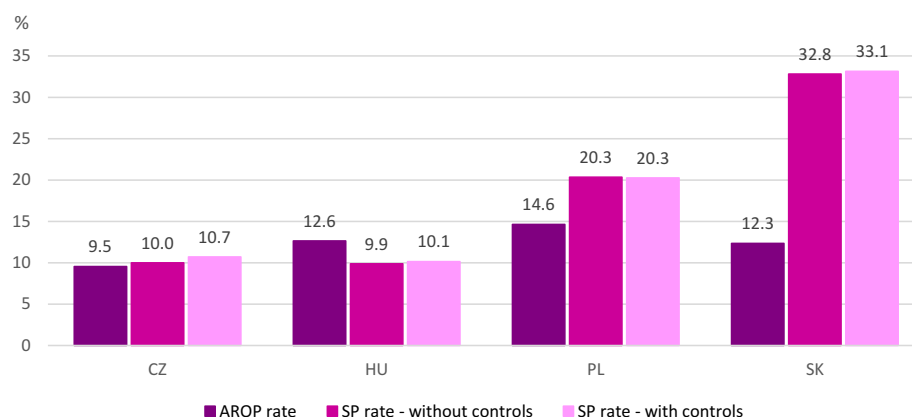
We apply the *fitted value method* to differentiate between subjectively poor and non-poor populations as described in Subchapter 4.2.1. This method, however, does not allow us to derive a single SPL, as, in technical terms, specific SPLs are calculated for a high number of narrowly defined groups of households with the same characteristics. Therefore, for comparisons of poverty lines valid in AROP and subjective methods, we use the SPLs for single households, i.e., one childless adult, derived similarly as in Subchapter 3.3.2.³⁰

Previous literature does not fully concur about whether or not to include control variables (Bishop et al., 2014). We are inclined to control for relevant variables in subjective approaches. Some of them, like the type of ownership of a dwelling, substantially affect the minimum income needed by those paying mortgage or rent compared to outright owners. Others, like the degree of urbanisation, reflect different living costs and prices in large cities versus rural areas. Various individual characteristics, such as gender and education, affect people's and households' aspirations and ambitions. In order to capture the impact of the control variables on the resulting SP rates, we show results from models both with and without control variables in Figure 4.4, but refer to results only from models with control variables thereafter. We can conclude

210 ³⁰ More precisely, we set the values of dummy variables for 2, 3, 4, and 5+ adults to zero, and all children dummies to zero (not to national means as in Subchapter 3.3.2).

that the control variables increased SP rates only slightly in V4 countries in 2018, with a 0.7 pp difference in CZ and no difference in PL.

Figure 4.4 Subjective poverty (based on MIQ) and AROP rates, V4, 2018 (%)



Source: EU-SILC 2018. Author's computations.

Notes: See Subchapter 2.1.2 for a list of control variables. AROP – at risk of poverty, MIQ – Minimum Income Question.

In most of the V4 countries, subjective poverty rates are higher than the rates obtained from AROP. This result is common in most EU countries (see Table A.4.4). However, the SP rate is lower in eleven EU countries, HU being the only *Eastern* exception. The lowest SP rates and highest differences compared to AROP rates typically occur in Scandinavian countries, IE and the UK. Within the V4, the difference is enormous in SK, where the SP rate includes more than 2.5 times more persons than the AROP rate. In CZ, the SP and AROP rates differ the least.

Moreover, comparing the two subjective approaches utilised in this chapter, the MIQ identifies more subjectively poor people than the inability to make ends meet in SK (25.4%, see Figure 4.3). In PL, the SP rate reaches 20.3%, which is comparable to the population that is unable to make ends meet (18.6%). In CZ, the MIQ approach identifies fewer people as subjectively poor (10.7%) than the inability to make ends meet (16.2%).

HU is a unique case, where the SP rate includes a lower share of the population than the AROP rate in 2018; this occurs more commonly in Western European countries. This finding is especially interesting in relation to the relatively high share of population unable to make ends meet (34.7%). These results suggest that people assess their situation differently when asked to express their minimum income needed in money metrics and when they only have to rank themselves into the six categories of their (in)ability to make ends meet.

Figure 4.5 Subjective poverty (based on MIQ) and AROP rates – the overlap, V4, 2018 (%)



Source: EU-SILC 2018. Author's computations.

Notes: SP – subjective poverty based on minimum income question (model with controls applied, see Subchapter 2.1.2), AROP – at risk of poverty, MIQ – Minimum Income Question.

The populations defined as both subjectively (MIQ) and objectively (AROP) poor range from 7.7% in CZ to 12.9% in PL (Figure 4.5). The MIQ based approach identifies the poor in higher congruity with the AROP than did the subjective approach based on the inability to make ends meet question (compare Figures 4.2 and 4.5). The populations identified as poor either by the MIQ approach and/or the AROP overlap by about 60% (though the overlap is only 36% in SK, where the SP rate is relatively high). These overlaps are much greater than when we compared the inability to make ends meet and AROP in Chapter 4.1 (21%). Therefore, it seems that the subjective MIQ approach coincides with AROP to a higher degree than the subjective approach based on inability to make ends meet (Chapter 4.1). Table 4.1 shows the correlations of all indicators analysed in this book. At the V4 level, in 2018, SP highly correlates to AROP (coefficient of correlation 0.68), while its correlation to the inability to make ends meet is substantially lower (0.21). Similarly low correlation can be seen with severe material deprivation (0.15), material or social deprivation (0.22) and very low work intensity (0.21).

Subjective approaches are often mistrusted for their volatility in respondents' answers and in the estimated results. Figure 4.6 shows the development of SP rates based on MIQ in V4 countries over 2005–2018 (for all EU countries, see Table A.4.5). CZ and PL exhibit consistent trends in their SP rates. Both countries experienced a decreasing trend up to 2010, an oscillation possibly related to the global economic crisis thereafter, and returned to the decreasing trend in recent years. Respondents in HU seem to have been the most affected by the economic crisis, with subjective poverty rates sharply jumping to roughly 40% or more between 2008–2010. However, after that, the SP rate has steadily decreased from 21.5% in 2013 to 10.1% in 2018. Such a rapid decrease is in accordance with the sharply decreasing share of Hungarian population unable to make ends meet after 2012 (Figure 4.3) and recent declines in the AROP rate (Figure 1.2).

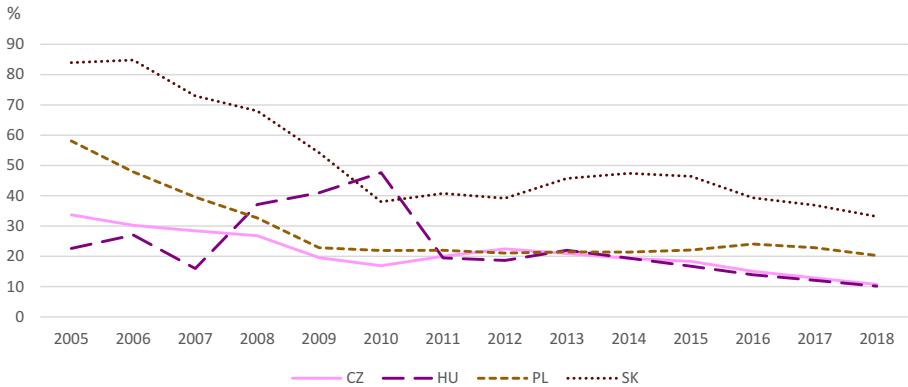
SK is the only V4 country that adopted the euro currency, in 2009. We observe a sharp decreasing trend in the SP rate at the beginning of the period analysed, with much more stability after 2010. We should therefore consider 2009/2010 as a break in the time series. Respondents typically state rounded values when assessing their monthly minimum income needed in MIQ. With the exchange rate of around 34 SKK/EUR in 2008, rounding of the answers to MIQ in euros instead of Slovak Koruna naturally led to less variation in the answers and possibly smoothed further development. Nevertheless, as discussed by Mysíková et al. (2019b), the adoption of the euro cannot be fully responsible for the changes in the SP rates after 2010.

Table 4.1 Correlations between poverty indicators, V4, 2018

	SP	Inability to MEM	AROP	MD	MSD	WI
CZ						
SP	1					
Inability to MEM	0.312	1				
AROP	0.734	0.266	1			
MD	0.201	0.305	0.232	1		
MSD	0.327	0.443	0.357	0.651	1	
WI	0.289	0.222	0.330	0.236	0.272	1
HU						
SP	1					
Inability to MEM	0.152	1				
AROP	0.736	0.227	1			
MD	0.175	0.393	0.315	1		
MSD	0.231	0.515	0.338	0.637	1	
WI	0.253	0.135	0.289	0.209	0.208	1
PL						
SP	1					
Inability to MEM	0.207	1				
AROP	0.699	0.251	1			
MD	0.134	0.355	0.184	1		
MSD	0.217	0.471	0.258	0.612	1	
WI	0.183	0.172	0.267	0.156	0.187	1
SK						
SP	1					
Inability to MEM	0.294	1				
AROP	0.520	0.239	1			
MD	0.193	0.320	0.352	1		
MSD	0.246	0.426	0.330	0.637	1	
WI	0.237	0.239	0.414	0.404	0.372	1

Source: EU-SILC 2018.

Notes: All Pearson correlation coefficients are significant at the 0.01 level (2-tailed). SP – subjective poverty, MEM – make ends meet (see Chapter 4.1); AROP – at risk of poverty, MD – severe material deprivation (see Subchapter 1.2.1), MSD – material and social deprivation (see Subchapter 1.2.1), WI – very low work intensity (see Subchapter 1.2.2).

Figure 4.6 Subjective poverty (based on MIQ) rates, V4 (%)

Source: EU-SILC 2005–2018. Author's computations.

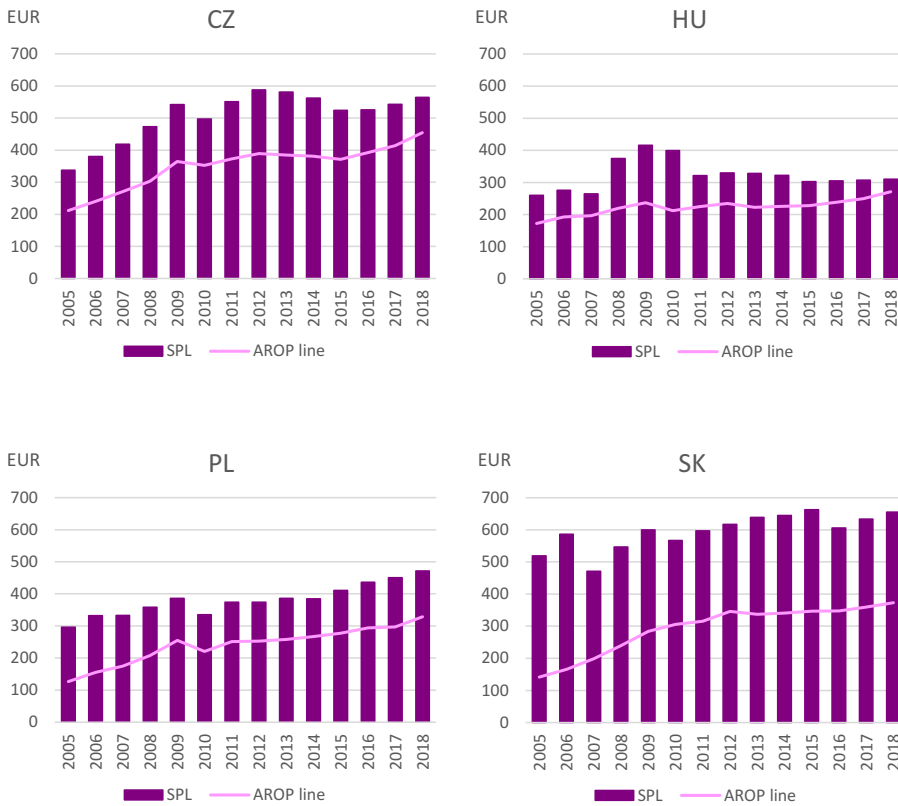
Notes: Subjective poverty based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2).

As noted in Subchapter 1.1.2, poverty rates can be highly sensitive to established poverty lines. When the population's income is heavily accumulated around the poverty line, the resulting poverty rate is highly sensitive and loses its explanatory power. Comparing the poverty lines can thus provide an additional picture of the trends in national living standards. In order to compare subjective poverty lines with the official AROP poverty lines, Figure 4.7a shows SPLs for households of single adults (see Table A.4.6a for SPLs in EU countries), in which the AROP line is expressed in equivalised income, so the value in fact corresponds to the poverty line only for the households of single adults.³¹

Note that the downward movements in AROP lines expressed in EUR in 2010 in the three non-euro zone V4 countries are caused by exchange rates (Figure 4.7a). Due to the economic crisis, in 2010 the national currencies weakened in CZ, HU, and PL (see Table 2.2). The survey data are collected in national currencies, hence, these drops are somewhat artificial. The lines are expressed in nominal values, so the general increasing trend is natural and is due to inflation and economic growth. Nevertheless, the relations of SP and AROP lines within a year are still valid. Moreover, the lines are also displayed in PPS (Figure 4.7b; see Table A.4.6b for EU countries), where the drop in the AROP line remains only in CZ, where it occurred one year earlier.

³¹ For instance, the value of the AROP line for a two-adult household would correspond to the AROP line * 1.5 (the equivalised household size is 1.5).

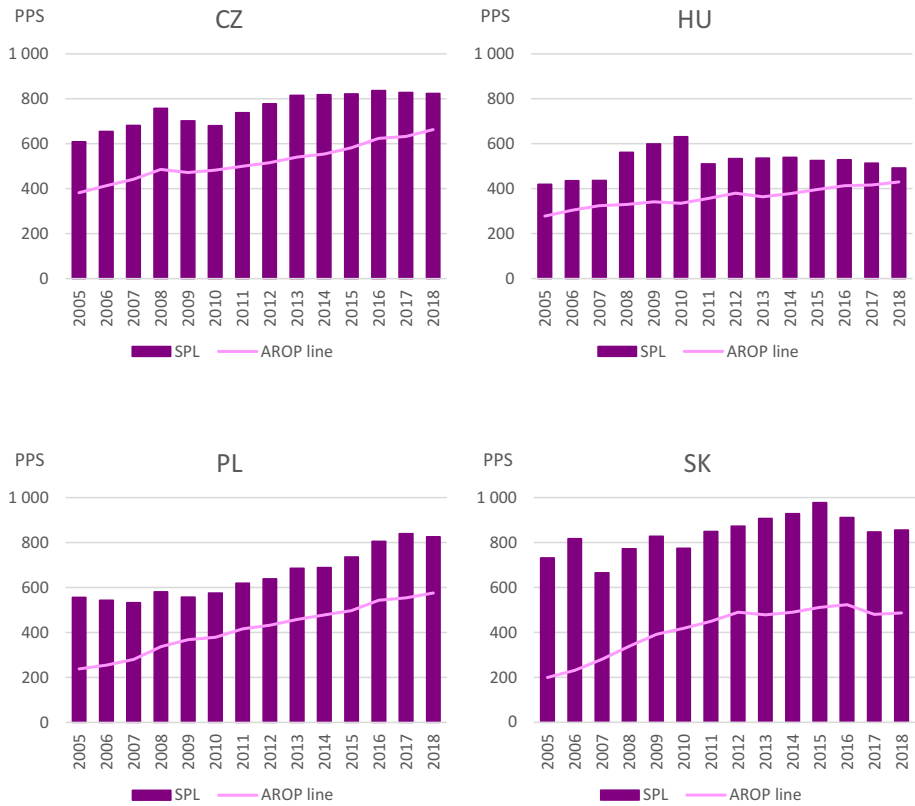
Figure 4.7a Subjective poverty (based on MIQ) line for singles, AROP line, V4 (monthly, EUR)



Source: EU-SILC 2005–2018. Author’s computations.

Notes: SPL - Subjective poverty line based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2). AROP – at risk of poverty.

In all V4 countries, the AROP and SP lines converged over the period analysed. The values are converging, especially in CZ and HU, where the SP lines for single households is 1.24 and 1.14 times higher than the AROP line in 2018 (Figure 4.7a). In PL and SK, the convergence was strong in the second half of the 2010s, with the two lines developing in parallel later. The SP line remains almost 50% higher than the AROP line in PL, and 75% in SK. In all the countries, the SPLs are higher than 60% of median equivalised income (the definition of AROP line). For an overview of all EU countries, compare Tables A.1.1 and A.4.6.

Figure 4.7b Subjective poverty (based on MIQ) line for singles, AROP line, V4 (monthly, PPS)

Source: EU-SILC 2005–2018. Author's computations.

Notes: SPL - Subjective poverty line based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2). AROP – at risk of poverty.

European Appendix

Table A.4.4 Subjective poverty (based on MIQ) and AROP rates – the overlap, EU, 2018 (%)

	AROP rate	SP rate: without controls	SP rate: with controls	SP (with controls) and AROP rates overlap			
				Only SP	Both SP and AROP	Only AROP	None
AT	14.1	7.1	7.4	0.2	7.2	6.9	85.7
BE	16.3	23.2	23.1	8.3	14.8	1.5	75.4
BG	22.0	91.1	90.3	68.3	22.0	0.0	9.7
CY	15.4	20.2	19.7	6.5	13.2	2.2	78.1
CZ	9.5	10.0	10.7	3.0	7.7	1.9	87.4
DE	15.3	15.3	15.5	2.7	12.7	2.6	82.0
DK	13.0	4.7	5.2	0.6	4.7	8.1	86.7
EE	21.7	49.8	52.3	30.7	21.6	0.1	47.6
EL	18.2	81.2	82.1	64.0	18.2	0.0	17.9
ES	21.0	34.4	34.2	13.8	20.4	0.7	65.2
FI	11.4	1.5	2.1	0.1	2.1	9.2	88.7
FR	13.4	20.2	21.9	10.6	11.3	2.0	76.0
HR	20.6	52.3	53.3	32.7	20.6	0.0	46.7
HU	12.6	9.9	10.1	1.5	8.7	4.0	85.9
IE	14.8	3.8	4.6	0.3	4.3	10.5	84.9
IT	19.6	25.2	25.3	6.8	18.5	1.1	73.6
LT	22.9	44.3	45.3	22.4	22.9	0.0	54.7
LU	17.7	13.4	13.6	1.7	11.9	5.5	80.8
LV	23.5	67.0	68.0	44.5	23.5	0.0	32.0
MT	16.5	7.7	7.6	0.7	6.8	9.6	82.8
NL	13.0	4.2	4.8	0.3	4.5	8.4	86.8
PL	14.6	20.3	20.3	7.4	12.9	1.7	78.0
PT	17.1	15.8	16.2	2.7	13.5	3.6	80.2
RO	23.2	48.3	49.0	26.1	22.9	0.2	50.8
SE	14.2	5.9	6.0	0.6	5.4	8.4	85.6
SI	13.3	17.3	17.9	6.0	11.9	1.3	80.7
SK	12.3	32.8	33.1	21.0	12.1	0.2	66.7
UK	17.9	4.8	5.7	0.1	5.6	12.2	82.0

Source: EU-SILC 2018. Author's computations.

Notes: SP (MIQ) – subjective poverty based on the Minimum Income Question (model with controls applied, see Subchapter 2.1.2 for a list of control variables). AROP – at risk of poverty.

Table A.4.5 Subjective poverty (based on MIQ) rates, EU (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	6.5	7.8	8.0	11.2	8.8	12.0	7.2	7.9	8.6	5.7	7.2	7.6	7.7	7.4
BE	23.5	22.6	20.8	25.5	21.3	22.7	23.6	24.4	20.0	19.7	21.2	22.4	23.2	23.1
BG			96.7	94.7	94.9	90.7	89.8	92.9	90.1	85.3	86.4	89.0	86.1	90.3
CY	39.6	33.2	27.6	24.6	22.4	30.4	29.2	18.8	17.4	23.8	24.4	22.8	19.3	19.7
CZ	33.7	30.3	28.4	26.8	19.6	16.9	20.0	22.5	20.9	19.3	18.3	15.1	12.8	10.7
DE	18.3	17.9	16.7	16.1	15.6	15.9	18.1	18.1	18.0	20.2	17.4	16.5	14.9	15.5
DK	4.4	4.4	3.6	4.2	6.0	6.1	5.6	5.1	5.5	5.7	4.9	4.9	6.8	5.2
EE	77.6	72.5	69.0	61.8	50.1	54.0	68.7	67.7	68.7	66.5	64.3	59.6	58.3	52.3
EL	78.8	69.5	67.0	71.4	68.9	65.2	64.9	76.5	81.2	85.1	82.5	82.3	83.5	82.1
ES	46.1	45.7	49.6	37.7	33.7	34.2	34.2	34.3	35.1	38.7	38.7	38.8	32.7	34.2
FI	3.3	3.9	3.8	4.1	3.2	3.3	3.2	3.3	2.6	2.9	2.7	2.9	2.5	2.1
FR	34.0	32.8	35.6	24.1	23.5	22.7	25.3	25.3	24.6	26.4	24.8	24.2	21.1	21.9
HR						64.6	71.3	76.3	77.5	77.3	69.0	62.1	56.8	53.3
HU	22.6	27.1	15.9	37.1	41.0	47.6	19.5	18.7	22.0	19.4	16.7	13.9	12.1	10.1
IE	8.4	8.0	6.6	5.9	6.2	8.7	10.9	12.6	11.8	11.3	10.0	6.6	6.0	4.6
IT	35.3	35.1	33.7	29.8	30.4	28.1	26.2	28.5	27.7	25.8	25.9	27.4	26.1	25.3
LT	75.7	65.7	48.0	51.3	42.0	52.8	60.0	52.4	47.9	45.4	45.7	48.0	48.0	45.3
LU	5.0	5.7	3.6	5.7	6.9	6.0	5.7	7.8	9.8	10.6	12.7	18.1	16.6	13.6
LV	90.3	90.2	86.0	82.4	64.6	73.1	79.4	80.7	80.9	77.0	77.1	74.2	70.9	68.0
MT			9.8	11.3	9.0	13.7	12.5	11.5	10.3	5.5	5.3	7.1	4.2	7.6
NL	9.7	7.6	6.5	5.2	7.0	7.3	6.2	7.1	7.4	7.5	6.6	4.6	4.6	4.8
PL	58.1	47.8	39.5	32.7	22.8	21.9	22.0	21.1	21.5	21.4	22.1	24.0	22.8	20.3
PT	42.1	42.3	44.6	46.3	47.2	36.5	39.9	30.4	27.3	30.1	29.5	23.1	19.0	16.2
RO			73.7	78.2	74.7	32.7	77.9	73.1	75.2	68.4	66.8	62.7	55.5	49.0
SE	11.2	14.3	11.0	10.1	9.7	10.0	8.4	8.3	8.0	8.6	9.1	7.1	7.3	6.0
SI	29.1	17.6	13.6	16.2	14.3	17.6	19.2	18.6	23.4	22.3	20.5	22.7	20.7	17.9
SK	83.9	84.8	73.0	68.0	54.2	38.0	40.7	39.2	45.8	47.4	46.4	39.3	36.9	33.1
UK	5.0	4.4	3.3	4.3	4.4	4.4	3.8	5.1	4.8	5.3	4.7	5.1	2.6	5.7

Source: EU-SILC 2005–2018. Author's computations.

Notes: Subjective poverty based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2).

Table A.4.6a Subjective poverty (based on MIQ) lines – single households, EU (monthly, EUR)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	953	978	1001	1082	1053	1154	1078	1097	1119	1093	1116	1163	1158	1179
BE	1205	1275	1254	1358	1353	1355	1365	1442	1407	1475	1444	1484	1523	1594
BG			269	395	477	437	437	439	463	447	480	491	515	583
CY	1110	1103	1188	1272	1191	1289	1303	1208	1054	1029	1014	1007	974	1002
CZ	337	381	418	473	542	497	551	588	581	563	524	526	543	565
DE	1114	1058	1107	1103	1132	1151	1227	1250	1278	1333	1271	1276	1264	1321
DK	1100	1100	1110	1181	1301	1301	1340	1327	1319	1325	1363	1411	1417	1412
EE	352	392	445	505	498	495	573	636	653	729	761	757	830	832
EL	1308	1297	1312	1460	1467	1475	1336	1292	1327	1346	1242	1205	1243	1223
ES	1127	1204	1271	1368	1367	1398	1279	1267	1277	1287	1295	1283	1233	1311
FI	766	803	778	857	866	864	910	936	918	960	935	963	962	898
FR	1353	1406	1444	1403	1424	1428	1472	1471	1492	1590	1572	1611	1561	1587
HR						631	651	644	664	624	615	609	618	630
HU	260	276	265	375	416	399	321	330	328	322	302	305	308	310
IE	1017	1077	1185	1191	1200	1240	1247	1271	1307	1318	1321	1259	1230	1201
IT	1263	1250	1285	1254	1273	1252	1257	1300	1284	1253	1233	1302	1301	1265
LT	279	284	299	367	379	374	412	421	408	400	430	476	535	588
LU	996	1196	1246	1470	1624	1694	1749	1916	1980	2057	2097	2191	2194	2274
LV	340	384	452	608	550	504	525	581	609	615	691	700	705	752
MT			540	610	679	733	747	745	690	684	703	728	708	797
NL	1077	1047	1060	1077	1134	1196	1172	1187	1214	1230	1186	1120	1131	1151
PL	296	332	333	359	386	335	374	374	386	385	411	436	451	472
PT	710	733	838	871	905	847	838	714	679	653	658	614	591	603
RO			236	325	344	183	372	370	346	345	338	367	387	439
SE	1117	1199	1208	1169	1175	1028	1160	1261	1298	1309	1300	1181	1279	1260
SI	689	645	670	783	782	782	835	847	883	860	849	870	861	863
SK	519	586	471	547	600	567	596	617	639	645	663	606	634	656
UK	745	726	747	663	615	677	677	869	869	920	947	929	752	860

Source: EU-SILC 2005–2018. Author's computations.

Notes: SPL – Subjective poverty line based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2).

Table A.4.6b Subjective poverty (based on MIQ) lines – single households, EU (monthly, PPS)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AT	923	954	982	1055	1002	1070	1026	1036	1060	1020	1055	1132	1093	1087
BE	1129	1198	1164	1264	1226	1207	1239	1308	1281	1331	1328	1420	1401	1437
BG			599	867	966	853	874	874	934	912	991	1050	1081	1172
CY	1247	1241	1354	1448	1358	1436	1470	1361	1140	1126	1126	1162	1134	1144
CZ	608	655	681	758	702	680	739	778	816	819	822	837	829	825
DE	1064	1024	1079	1085	1093	1076	1185	1225	1271	1298	1252	1269	1230	1278
DK	788	784	802	860	931	910	954	939	949	950	980	1051	1011	1015
EE	558	606	649	689	650	641	766	838	854	934	1006	1039	1098	1058
EL	1493	1470	1473	1627	1600	1553	1414	1367	1434	1520	1454	1454	1478	1438
ES	1239	1321	1385	1474	1438	1431	1324	1307	1346	1377	1403	1439	1348	1421
FI	619	650	634	717	718	697	748	766	757	780	764	814	795	733
FR	1231	1299	1330	1299	1286	1272	1337	1341	1369	1448	1460	1530	1447	1444
HR						827	866	882	969	924	931	956	940	934
HU	420	436	437	562	599	631	510	534	536	539	525	529	514	492
IE	816	869	952	941	925	1018	1053	1069	1101	1082	1078	1027	978	938
IT	1204	1194	1233	1224	1243	1194	1242	1261	1250	1213	1198	1301	1299	1255
LT	521	518	521	612	575	559	648	653	632	630	685	790	856	913
LU	967	1072	1119	1281	1386	1394	1430	1554	1667	1694	1741	1857	1788	1816
LV	639	679	750	916	732	660	744	797	842	865	959	1018	987	1029
MT			722	808	878	939	965	950	874	838	869	923	873	967
NL	1015	1000	1019	1056	1089	1109	1087	1096	1120	1107	1080	1044	1017	1032
PL	556	544	533	582	558	576	619	638	685	690	736	805	841	827
PT	813	862	986	1016	1030	949	959	840	815	804	805	755	705	697
RO			410	510	545	318	648	670	667	643	636	708	750	839
SE	920	1007	1020	1011	1041	955	969	1002	1023	989	1035	983	1020	1007
SI	907	841	874	993	945	889	970	997	1059	1035	1040	1076	1032	1028
SK	732	817	665	772	828	775	848	873	908	929	978	912	848	857
UK	679	657	663	650	636	628	623	746	779	757	801	760	646	738

Source: EU-SILC 2005–2018. Author's computations.

Notes: SPL - Subjective poverty line based on a Minimum Income Question (model with controls applied, see Subchapter 2.1.2).

Conclusion

Income represents one of the most commonly applied metrics of well-being. Though income is definitely not the only, and likely not the main factor that matters to people's well-being from many points of view, ultimately, it is the easiest and the most transparent metric statistics can capture. This book revises the information it provides in the context of income poverty in the EU, focusing on the Visegrád countries (V4). Income poverty in the EU is measured in relative terms, meaning that each country has a specific poverty line, derived from its income distribution. The income poverty line in EU countries is set at 60% of the national median equivalised income; the share of people with equivalised income below it constitutes the at-risk-of-poverty (AROP) rate. The book first overviews the AROP and related statistics, then revises and somewhat questions the methodology of its measurement, and finally, introduces alternative subjective measures of income poverty.

The V4 region can be characterised by low AROP rates compared to the EU average. This is not a common feature to all Central and East European countries: Romania, Bulgaria, and the Baltic states are located at the opposite tail of the European AROP rate ladder. The bottom tail with low AROP rates is occupied by the V4 countries together with Scandinavian countries, the Netherlands, and France. Though absolute income levels and living conditions obviously differ across these countries, this is not inconsistent with similarly low AROP rates. The AROP lines are clearly informative about the differences in income levels: while the annual poverty line in the country with the lowest AROP rate, Czechia, equates to roughly 5,500 EUR in annual equivalised income in 2018, Finland, with the second lowest rate, equates to 14,700 EUR.

Within the V4 region, Czechia and Slovakia enjoy lower AROP rates than Hungary and Poland. Czechia is unique with its stable and steadily lowest rate across both the period of 2005–2018, and across the whole EU. In contrast, Poland has the highest AROP rate, but has experienced the most noticeable decrease in those at risk of poverty over time. Regarding the poverty lines, Czechia has the highest, and Hungary the lowest, which corresponds to the overall income levels and economic performance within the V4 region.

The statistics of the *at-risk-of-poverty* rate are supplemented by the *at-risk-of-poverty-or-social-exclusion* (AROPE) indicator in the EU. The AROP rate is one of the three dimensions of AROPE, with the other two capturing severe material deprivation (MD) and very low work intensity (WI). The AROPE rate thus expands on sole income metrics and aims to be a multidimensional indicator. Being identified as financially poor, materially deprived, or excluded from employment – at least at one of these three dimensions – categorizes a person as *at risk of*

poverty or social exclusion. Though income poverty is the main interest of this book, we devote space to the AROPE and its two supplementary dimensions. The composite AROPE indicator is mostly informed by the income poverty rate. Thus, the AROPE rate is again the lowest in Czechia.

Further, we discuss the updated version of the material deprivation index which also evaluates social deprivation (MSD) and was adopted for EU statistics in 2017, and which will substitute for the MD index in the composite AROPE indicator. Some of the items on the list of the original material deprivation index were dropped, and other, more up-to-date items were added. For instance, a question about the affordability of a phone was dropped, and having an internet connection was added, along with some items reflecting social exclusion. The new MSD rate often measures deprivation twice as high as does MD alone. Finally, in line with the future intentions of the European Commission, we supplement the description of the AROPE with the statistics of a hypothetical measure, in which we substitute MSD for MD. Obviously, the hypothetical AROPE rates exceed the official AROPE rate. The difference is the greatest in Hungary, with the highest MSD rate.

Returning to the income poverty rate, we raise concerns about one particular step in its construction: the equivalence scale applied to adjust the total household income into equivalent units. The EU income poverty indicator applies the OECD-modified scale, which assigns a weight of 1.0 to the first adult household member, a weight of 0.5 to second and next adult member, and a weight of 0.3 to each child in household; children being defined as persons aged <14. The OECD-modified scale was adopted in the 1990s and has not been adjusted since. The research at that time was at a peak, and numerous studies were devoted to the equivalence scales and their impact on income poverty (and inequality) measures. Yet, we were not able to find convincing documentation arguing for the adoption of the OECD-modified scale for the purposes of European statistics. Rather the contrary: even the leading researchers of that time referred to the choices of basically every step of income poverty construction as arbitrary: selecting the equivalence scale, defining the age boundary of children, and identifying the poverty line (Hagenaars et al., 1994). While leaving the definition of children and identification of the poverty line aside, we revive the discussion about the appropriateness of the OECD-modified scale for the purposes of current European income poverty statistics.

We employ two approaches to estimate the equivalence scale: expenditure-based and subjective. Unfortunately, no comparable data that would include the key variables needed for both these approaches exists. The official statistics of poverty in the EU are based on the household survey Statistics on Income and Living Conditions (EU-SILC). We employ the microdata from 2005–2018

throughout this book, not only for poverty statistics, but also for our estimations of the subjective equivalence scale and subjective income poverty rates. Further, we utilise Household Budget Survey (HBS) 2010 data for our estimates of expenditure-based equivalence scales.

The problem with the scale arises especially in countries where the AROP rate is highly sensitive to any change in the weights assigned to adults and children. If the applied scale does not fit national conditions and the AROP rate is highly sensitive to the scale, the resulting data may seriously fail to accurately inform social policies. We provide a visualisation of this sensitivity, in which the AROP rate for all possible combinations of adult and child weight is displayed, and supplement it using simple metrics quantifying the overall sensitivity and the sensitivity to adult and child weights separately. However, as certain combinations of adult and child weights are rather unrealistic, we also focus on sensitivity analysis where the adult weight ranges between 0.2 and 0.5, and the child weight ranges between 0.1 and 0.3. Given our resulting estimates of the equivalence scales, we thus consider the OECD-modified scale to be the upper bound of realistic adult and child weights.

The sensitivity of the AROP rate differs across countries and over time. The highest overall sensitivity in both V4 and the EU is observed in Czechia, followed by Hungary and Slovakia, with the lowest sensitivity in Poland out of the V4 countries. In all V4 countries (and with few exceptions in the EU), the AROP rate is more sensitive to the adult weight than to the child weight. An interesting empirical finding, valid across the EU, is that the sensitivity tends to be higher in countries with lower official AROP rates. There is a strong negative correlation between the official AROP rate (i.e., when the OECD-modified scale is used) and the sensitivity. This negative relationship is observed regardless of whether the whole range of possible weights or a limited range of more realistic adult and child weights is considered. Further, the negative relationship is stronger for the adult weight, though it is still fairly pronounced for the child weight. This suggests that countries with low AROP rates in particular should reconsider the equivalence scale they apply, in the V4 region pointing primarily to Czechia.

The main analytical part of this book is devoted to estimates of country-specific equivalence scales and their impacts on AROP rates if we employ the estimated scales instead of the OECD-modified scale. We believe that it may be the structure of consumption expenditures with different economies of scale that inform the cross-country differences in equivalence scales. The highest shares of consumption expenditures are on *Food* and *Housing*, each representing about one quarter of household budgets in V4 countries (as evidenced by the HBS 2010 data). The consumption structure differs across EU countries, and over time. The common tendency is a decreasing trend in food

expenditures. While the Western European *old* EU member states experienced changes in consumption expenditures structure decades ago, the Central and Eastern European countries, the *new* EU countries from the former socialist block, lagged behind the Western countries and underwent the most substantial changes in consumption structures later, during the economic transition period. According to HBS data, the share of food consumption expenditures was decreasing up to 2010 in Eastern European countries, though it was already rather stable in Western European countries before that time. Nevertheless, the share of food in household budgets remains substantially higher in Eastern European countries than in the West today (Mysíková and Želinský, 2019).

Regarding the expenditure-based equivalence scale, we start with the Engel method to estimate economies of scale for the two most extensive consumption bundles – food and housing expenditures – separately. While food expenditures are assumed to exhibit relatively low economies of scale, housing expenditures are assumed to exhibit the opposite. We express our doubts about the appropriateness of deriving the equivalence scale based solely on one consumption bundle, therefore, we only utilise these estimates to confirm that economies of scale differ for food and housing expenditures.

Our primary expenditure-based estimates of equivalence scales are based on the *Extended Linear Expenditure System* and HBS 2010 data. The logic is to estimate subsistence expenditures for various household types for a complete list of consumption bundles, though separately for each bundle. Next, the subsistence expenditures for each consumption bundle are summed up for each household type, and the equivalence scale are derived from these total subsistence expenditures.

The results indicate higher economies of scale than does the OECD-modified scale. This holds uniformly for the child weight, which barely exceeds half of the OECD-modified (0.3) value in EU countries. The adult weight reaches values similar to the OECD-modified (0.5) value in about half of EU countries, including Czechia, and lower values in the EU other countries, including Hungary, Poland, and Slovakia. However, our findings refer to one-time estimates based on HBS 2010 data. We recommend replicating the analysis over a longer time period when more recent waves of the HBS survey are available, to assess the stability of the results.

Regarding the subjective equivalence scale, we apply a Subjective Poverty Line approach that uses the Minimum Income Question available in EU-SILC data 2005–2018. This method builds on the positive (concave) relationship between a households' subjective minimum income needed to make ends need and their actual income. Taking the household size into account, there exists an income level at which a typical households' minimum required

income equals its actual income, which is defined as the subjective poverty line. Deriving the subjective poverty lines for various household types then enables derivation of the equivalence scale. The subjective equivalence scale indicates higher economies of scale than the OECD-modified scale. The trends in estimated subjective equivalence scales differ across the V4 countries: both adult and child weight decrease over time in Czechia; Hungarian adult weights trend downwards, while the child weight is stable; the adult weights increase and child weights are stable in Poland; and adult weights decline, while the child weight rises in Slovakia.

Previous literature has usually yielded lower economies of scale when expenditure-based approaches are applied than when subjective estimates are made. This mostly corresponds to our results. In other words, households' expenditures suggest that additional members in a household *cost* more than people *perceive* them to cost. A possible explanation may be that people consider their necessary needs and disregard non-necessary expenses when subjectively evaluating the minimum income they need.

Consequently, we apply the estimated equivalence scales instead of the OECD-modified scale and observe how the AROP rate changes. The most substantial impact is apparent in Czechia, where the rate is highly sensitive to the adult weight, and much less sensitive to the child weight. Therefore, using the expenditure-based scale with the adult weight similar to the OECD-modified one makes almost no difference: the AROP rate noticeably increases with the subjective scale, with a gap of around 3 pp.

In Hungary, the impact of the estimated equivalence scales on the overall AROP rate is relatively modest; the difference did not exceed 1 pp up to 2016. As the sensitivity to both adult and child weights increased in recent years, the impact has intensified in more recent years and the difference in rates using the OECD-modified and expenditure-based scales expanded to 2.5 pp in 2018.

Poland is characterised by the lowest sensitivity of the AROP rate to the equivalence scale in the V4, and, indeed, the rate remained almost unaffected by the equivalence scale, though the estimated adult and child weights are substantially lower than those imposed by the OECD-modified scale. The estimated scale rarely increased the AROP rate, and by no more than 1 pp throughout the period, and only exceeded the rate produced by the OECD-modified scale by 2 pp in 2018.

The AROP rate in Slovakia is relatively sensitive to the adult weight and much less sensitive to the child weight. Using the estimated scales increased the AROP rate by more than 3 pp at the end of the 2000s. Interestingly, in accordance with the overall sensitivity decreasing over time, the gap between the rates is shrinking over the period, closing at a 1 pp in recent years.

The choice of equivalence scale in Slovakia thus seems to be gradually losing importance. While the results might draw attention to the choice of equivalence scale in Hungary and Poland in more recent years, they signal rising importance of the choice in Czechia. Moreover, the impact of applied scales on the overall AROP rate hides the effects for various subpopulations. The most alarming impacts are upon single older people. Lowering the weights in the equivalence scale inevitably favours larger families, and the impact on AROP rates of single older people is relatively harsh.

Poverty also includes a subjective dimension. We overview available *subjective* income poverty measures to complement the picture provided by the *objective* relative income poverty rate. First, we utilise a categorical question on households' ability to make ends meet, where respondents select their answer on a predefined scale. Considering only the share of population experiencing *great difficulty* or *difficulty to make ends meet*, the situation is again the most favourable in Czechia, with double the shares of people experiencing difficulties in Hungary. The objective income poverty measure solely considers received income though the financial liabilities of households/persons who are not defined as income-poor under the objective approach may still cause them to experience difficulties making ends meet and *vice versa*. Indeed, these two dimensions overlap to a relatively low degree: roughly one quarter (one third in Poland) of those with difficulties to make ends meet were identified as income-poor in the V4 in 2018. The inability to make ends meet correlates more to material (and social) deprivation than to the relative income poverty.

Second, the Minimum Income Question can be used not only to derive the subjective equivalence scale but also to estimate the subjective income poverty (SP) rate. Conversely to the results using the simple indicator of households' difficulties to make ends meet, the model-based SP rate is the lowest in Hungary, closely followed by Czechia (at roughly 10%), while the rate was double in Poland, and triple in Slovakia, in 2018. The overlap with the AROP is relatively high, while there are relatively low shares of people identified as poor solely by the AROP; in most V4 countries, *subjectively poor* data assigns additional people to the pool of poor. The subjective income poverty correlates to the objective AROP much more than to the inability to make ends meet or material (and social) deprivation.

We focus on income poverty in this book because we believe that income poverty inevitably is and will remain the leading poverty indicator in the EU, though it has been recognised that income does not capture all poverty

dimensions. Material deprivation, for instance, is typically an outcome of long-lasting income poverty (Boarini and d'Ercole, 2006). While some types of deprivation can be targeted by benefits in kind, social policies commonly target monetary benefits and financial transfers to households, allowing households to allocate the resources according to their perceived needs. Even if we accept the monetary metrics, the relative income poverty indicator provides only basic and partial information. While a poverty line might be indicative for households of singles, we impugn its information value when it comes to economies of scale of living together and, thus, its indicators related to equivalised income. Economies of scale depend on consumption structures in particular countries, which can differ significantly across countries, even within the EU (Mysíková and Želinský, 2019). Further, thanks to changes in the consumption structure, the economies of scale may change across time even in a country. The cross-time and cross-country uniformity of the equivalence scale applied in the EU thus lacks justification.

When we apply our estimated model-based equivalence scales, the relative income poverty rate mostly increased in the V4 countries. Though we do not specify an ideal country-specific equivalence scale, it is possible that the income poverty rates are generally undervalued. Further, the subjective poverty rates, which are estimated based on households' assessment of the required minimum income to make ends meet and which do not rely on any pre-defined equivalence scale, are also mostly higher. We have sought to shed light upon the information value the relative income poverty provides, as we are inclined to believe that the true picture of income-poor might be somewhat more extensive than current official measurements. The aim of this book is to direct more attention towards supplementary information, methods, and approaches to capturing income poverty, hopefully encouraging future research, fresh statistics and more effective policy developments.

Abbreviations

AROP	At risk of poverty
AROPE	At risk of poverty or social exclusion
CAPI	Computer Assisted Personal Interview
CAWI	Computer Assisted Web Interview
COICOP	Classification of Individual Consumption by Purpose
CSP	Centre of Social Policy in Antwerp
CV	Coefficient of variation
ECHP	European Community Household Panel
ELES	Extended linear expenditure system
EU	European Union
EU-SILC	European Union–Statistics on Income and Living Conditions
FGT	Foster–Greer–Thorbecke indices
HBS	Household Budget Survey
HFCS	Household Finance and Consumption Survey
IEQ	Income Evaluation Question
IR	Income ratio
LPL	Leyden Poverty Line
MD	(Severe) material deprivation
MEM	Make ends meet
MIQ	Minimum Income Question
MSD	Material and social deprivation
OECD	Organisation for Economic Co-operation and Development
PAPI	Pen And Paper Interview / Paper Assisted Personal Interview
PPP	Purchasing power parity
PPS	Purchasing power standard
SES	Subjective equivalence scale
SP	Subjective poverty
SPL	Subjective poverty line
TSE	Total subsistence expenditures
V4	Visegrád countries (Czechia, Hungary, Poland, Slovakia)
WI	Work intensity

Country abbreviations

AT	Austria	EE	Estonia	IE	Ireland	PL	Poland
BE	Belgium	EL	Greece	IT	Italy	PT	Portugal
BG	Bulgaria	ES	Spain	LT	Lithuania	RO	Romania
CY	Cyprus	FI	Finland	LU	Luxembourg	SE	Sweden
CZ	Czechia	FR	France	LV	Latvia	SI	Slovenia
DE	Germany	HR	Croatia	MT	Malta	SK	Slovakia
DK	Denmark	HU	Hungary	NL	Netherlands	UK	United Kingdom

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Summary

This study recapitulates the methodology of income poverty measurement applied in the EU and provides statistics and characteristics of the *poor* in Visegrád countries, supplemented by appendices with results for EU countries. After introducing the data, which is drawn from EU-SILC 2005–2018 and HBS 2010, the main analytical chapter focuses on methodological issues around measuring income poverty in the European concept, with a focus on the suitability of the currently applied equivalence scales. Sensitivity of the at-risk-of-poverty rate to the OECD-type equivalence scale differs across countries. If the equivalence scale applied does not fit national conditions well, resulting income poverty rates may fail to accurately inform social policies, especially in countries with high sensitivity. Two sets of country-specific equivalence scales are estimated in this work: an expenditure-based scale using HBS data, and a subjective equivalence scale based on subjective poverty lines and EU-SILC data. The study discusses impacts of the estimated scales on income poverty rates and provides alternative subjective income poverty measures, which can usefully complement the *objective* income poverty data.

Shrnutí

Studie shrnuje metodologii měření příjmové chudoby v EU, uvádí statistiky a charakteristiky *příjmově chudých* v zemích Visegrádské čtyřky, doplněné o přílohy s výsledky pro všechny země EU. Data z šetření EU-SILC 2005–2018 a HBS 2010 jsou použita v hlavní analytické kapitole, která se zaměřuje na metodologická úskalí měření příjmové chudoby v evropském konceptu, a to primárně na vliv ekvivalenčních škál. Citlivost míry ohrožení příjmovou chudobou na použitou ekvivalenční škálu se v jednotlivých zemích liší. Pokud aplikovaná ekvivalenční škála neodpovídá národním specifikům, může míra příjmové chudoby zejména v zemích s vysoce citlivou mírou chudoby podávat zkreslené informace. Studie odhaduje ekvivalenční škály pro jednotlivé země dvěma metodami. Zprvė jsou odhadovány škály na základě výdajů domácností (s využitím dat HBS) a zadruhé subjektivní škály dle hranic subjektivní chudoby (s využitím dat EU-SILC). Posléze je diskutován vliv použití odhadnutých ekvivalenčních škál na míru příjmové chudoby. Nakonec nabízíme alternativní subjektivní ukazatele příjmové chudoby, které doplňují obrázek vykreslený *objektivním* ukazatelem ohrožení příjmovou chudobu.

About the author

PhDr. Martina Mysíková, PhD. has been a senior researcher in the department of Economic Sociology at the Institute of Sociology of the Czech Academy of Sciences since 2008. She earned her PhD. in economics from the Institute of Economic Studies, Faculty of Social Sciences, Charles University (Prague, Czech Republic) with a thesis entitled *Three Comparative Essays on Gender Earnings Inequality in the Czech Republic* in 2012. She worked in the Czech Statistical Office in the department of Social Statistics from 2004 to 2008, and participated in the methodology development and coordination of the international household survey *Statistics on Income and Living Conditions* (EU-SILC). Her fields of specialisation have gradually developed from labour economics, gender and educational wage inequalities, and job satisfaction, through household economics, to well-being, poverty and income inequality.

She has participated in various national (Czech Science Foundation) and European (7th Framework Programme EU) research projects focused primarily on poverty, living conditions, and satisfaction of individuals and households, work and job values, and (un)employment. She focuses primarily on Czechia and Slovakia in comparative studies of EU countries. She has authored chapters in several books published both at home and abroad, and regularly publishes in local and international journals (recently in *European Journal of Development Research*, *Social Indicators Research*, *Economics Letters*, *Applied Economics Letters*, *Innovation: The European Journal of Social Science Research*, and *Eastern European Economics*). She received an Otto Wichterle Award, an honour for outstanding young scientists, from the Czech Academy of Sciences in 2016.

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